

A Study on the Problems and Countermeasures in the Implementation of Green Credit Policies at Bank of Beijing—A Case Study Based on 2017–2024 Data

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Abstract

Since the implementation of green finance policies, numerous empirical studies have confirmed their positive role in promoting the expansion of green credit by commercial banks. However, for individual banks, the transition toward green finance still faces various obstacles and challenges. This paper takes Bank of Beijing as the research object and analyzes the transmission mechanism, implementation dilemmas, and adaptive strategies of green finance policies based on data and materials from 2017 to 2024. The findings indicate that although the balance of green credit at Bank of Beijing has continuously increased, there exist deviations in implementation quality. These deviations stem from the design of performance assessment indicators, resource constraints during transformation, technical deficiencies, and the objective needs of economic development. In response, the bank adopts adaptive strategies such as “selective compliance,” “indicator decomposition,” and “relationship-based governance,” which help achieve short-term compliance goals but may accumulate risks of “greenwashing” and hidden asset quality issues in the long run. This study provides insights into the micro-level implementation logic of green finance policies and contributes to improving differentiated regulatory frameworks. Based on the analysis, this paper proposes that banks should proactively transform: in the short term, strengthening “substantive compliance” and optimizing assessment mechanisms; in the medium term, focusing on niche areas to build differentiated competitiveness; and in the long term, upgrading from “credit providers” to “transformation service providers” to achieve ecological restructuring and value creation.

Keywords

green finance policy, green credit, Bank of Beijing, case study, implementation deviation

1. Introduction

1.1 Research Background

Since the issuance of the Guidelines for Establishing a Green Financial System in 2016, China’s green finance policy system has rapidly developed. Following the introduction of the “dual carbon” goals in 2020,

policy intensity has further increased. A series of measures, including the carbon emission reduction support tool (2021), the green finance evaluation scheme for banking institutions (2021), and strengthened regulatory assessments of green credit, have been successively implemented.

Empirical evidence shows that these policies have significantly increased the scale of green credit issued by commercial banks. The outstanding balance of green loans rose from RMB 8.23 trillion in 2018 to RMB 30.08 trillion in 2023, with an average annual growth rate exceeding 30% [1]. While previous studies have validated the positive macro-level effects of green finance policies—particularly in guiding credit allocation, promoting green technological innovation, and facilitating regional low-carbon transformation—these impressive macro statistics obscure underlying issues at the micro level. Some banks, in order to meet regulatory targets, have engaged in practices such as “greenwashing,” formalistic compliance, and data manipulation.

For city commercial banks, factors such as resource constraints, capability gaps, and regional interests often lead to “selective responses” to policy implementation. Bank of Beijing represents a typical case: it ranks among the leading city commercial banks in green credit scale and is recognized by regulators as a “best practice institution.” Meanwhile, as a listed company, it provides relatively transparent disclosures for analysis. However, its rapid expansion has also exposed issues such as customer concentration, maturity mismatch, and questionable environmental benefits, which are common among city commercial banks.

1.2 Literature Review

Existing empirical studies generally confirm that green finance policies effectively influence banks’ credit behavior and promote the growth of green lending. Wang et al. [2], using a DID model based on data from 174 banks between 2008 and 2020, find that green credit significantly reduces banks’ risk-taking through both “profit channels” and “risk channels.” Moreover, factors such as bank size, capital adequacy, and market power influence policy effectiveness.

At the profitability level, Gao et al. [3] find an inverted U-shaped relationship between green credit and bank profitability, with a turning point at approximately 54.3%. This suggests that while policies initially stimulate growth, marginal returns diminish as scale expands. Furthermore, Wang et al. [4] and Sun et al. [5] verify, from the perspectives of capital flows and policy coordination, that green finance enhances the efficiency of resource allocation. Wang et al. [6] further argue that a combination of policy instruments—such as interest subsidies, targeted reserve requirement ratio (RRR) cuts, and re-lending facilities—produces stronger effects than any single policy measure alone.

However, significant deviations arise during policy transmission. Institutional pressure often leads to organizational isomorphism, prompting banks to adopt similar compliance strategies under strict regulatory environments [7]. Feng et al. [8] based on a case study of Lanzhou New Area, finds that some financial institutions exhibit a pattern of “weak response but strong implementation.” Yang and Jiang [9] argue that green identification capability, environmental risk assessment capacity, and the level of digitalization are key determinants for the effective transmission of green finance policies. However, city commercial banks generally face constraints in human resources, data availability, and technological infrastructure, which limit their ability to implement, manage, and evaluate green credit. Overall, policy transmission is not a linear process; rather, it is shaped by multiple factors, including incentive mechanisms, regulatory pressure, and organizational capacity. In this process, city commercial banks tend to occupy a relatively disadvantaged position.

The tension between institutional pressure and profit objectives encourages banks to adopt strategic responses. Some banks achieve short-term compliance through practices such as indicator decomposition, selective lending, and reliance on government relationships. However, these approaches may lead to issues such as greenwashing, deterioration in asset quality, and the erosion of institutional trust.

Overall, existing studies have largely focused on evaluating the macro-level effects of green finance policies, with relatively limited attention paid to implementation mechanisms and the causes of deviations at the bank level. In particular, there is a lack of systematic analysis of city commercial banks. Against this backdrop, this study takes Bank of Beijing as a case and focuses on the period of intensified policy

enforcement to examine the transmission mechanisms, implementation deviations, and adaptive strategies of green finance policies in city commercial banks.

2. Theoretical Framework and Research Questions

2.1 Theoretical Basis: Bank Risk Management Theory—Identification and Reconstruction of Environmental Risks

Traditional bank risk management theory is built upon a core framework consisting of credit risk, market risk, liquidity risk, and operational risk, as established in the Basel Accords. In the context of the current green transition, this framework requires extension to incorporate environmental risks.

On the one hand, replacing existing products and services with green alternatives—such as environmentally friendly or transition-oriented financial products—requires substantial upfront investment in research and development. This increases operational costs in the short term and may elevate liquidity risk for banks. On the other hand, delays in technological upgrading and transformation may result in long-term losses.

Moreover, technological transformation imposes additional costs on borrowers. If these borrowers fail to adopt new technologies in a timely manner or are unable to achieve low-carbon transition, their financial stability may be compromised, potentially leading to disruptions in cash flow. This, in turn, increases the likelihood of loan defaults, thereby generating credit risk and adversely affecting banking operations.

2.2 Research Questions

This study examines the case of Bank of Beijing before and after the strengthening of green finance policies (2017–2024) to address the following questions:

- What types of implementation deviations exist in its green credit practices?
- What are the underlying causes of these deviations?
- How can Bank of Beijing adjust its strategies to achieve a transition from “formal compliance” to “substantive transformation”?

By addressing these questions, this study aims to provide practical insights for the green finance transformation of city commercial banks and to offer policy implications for regulators in improving differentiated assessment frameworks and mitigating greenwashing risks.

3. Research Design

3.1 Case Selection

Bank of Beijing is selected as the focal case due to its relatively large asset scale and its proactive response to green credit policies, which gives it benchmark significance within the city commercial banking sector. Since 2021, the bank has consecutively published ESG reports for four years, providing more comprehensive and transparent disclosures compared with smaller city commercial banks, thereby facilitating in-depth analysis.

Compared with large state-owned banks, Bank of Beijing faces more pronounced resource constraints and stronger regional embeddedness, which enhances its analytical value. Moreover, its green finance practices have undergone a complete cycle from “passive response” to “proactive expansion,” making it particularly suitable for process tracing and dynamic analysis.

3.2 Data Collection and Period Division

3.2.1 Periodization

The year 2021 is used as a dividing point to split the study period into two stages. The first stage (2017–2020) corresponds to the initial establishment of the green finance policy system, during which regulatory

pressure remained relatively moderate. The second stage (2021–2024) follows the introduction of the “dual carbon” goals, during which regulatory assessment and enforcement were significantly strengthened.

3.2.2 Data Sources

The empirical data used in this study are primarily drawn from publicly available documents, including annual reports, corporate social responsibility reports, specialized green finance reports, and bond prospectuses. Additional data sources include the People’s Bank of China’s green finance evaluation results, regulatory penalty records issued by the China Banking and Insurance Regulatory Commission, peer bank green credit data, and regional green finance policy documents. These materials were collected from official websites, including the Shanghai Stock Exchange and the respective banks’ websites.

4. Green Credit Practices at Bank of Beijing

4.1 Early Stage: 2017–2020

4.1.1 Institutional Background and Strategic Positioning

Between 2017 and 2020, green finance policies in China were primarily in an “advocacy–guidance” phase. Although the Guidelines for Establishing a Green Financial System were jointly issued by seven ministries in 2016 (People’s Bank of China et al., 2016), the absence of binding assessment indicators meant that banks’ green credit practices were largely voluntary in nature.

According to the 2021 Environmental, Social and Governance (ESG) Report of Bank of Beijing [10], the bank’s response during this period can be characterized as “symbolic compliance.” No explicit quantitative targets for green credit expansion were established; instead, only qualitative goals such as “actively promoting development” were proposed.

Evidence from the ESG report (p. 37) indicates that the bank had begun to form a vertically integrated green finance management structure linking the head office and branches, and had established specialized “green” branches, resulting in a spatial layout of two flagship green branches in eastern and western Beijing. This suggests that, prior to 2021, although green finance functions were already present, they had not yet been institutionalized as a dedicated department. Instead, they were implemented through “specialized branches” and a “vertical management” approach.

In addition, the ESG report (p. 10) notes that green financing had already been incorporated into the bank’s overall credit policy framework and was later identified as a priority lending area in the 2022 Credit Policy Guidelines. However, in reports prior to 2021, there was no reference to the specific operational procedures, approval processes, or industry classification standards outlined in formal documents such as the Green Credit Management Measures. This indicates that early regulatory policies were largely declarative in nature, focusing more on general principles than on detailed implementation mechanisms.

4.1.2 Business Practices and Scale Indicators

Based on publicly available financial reports and ESG disclosures of Bank of Beijing, a comparative table of key green credit indicators for the period 2017–2020 is constructed, as shown in Table 1.

Table 1: Key Green Credit Indicators of Bank of Beijing (2017–2020)

Indicator	2017	2018	2019	2020
Outstanding Green Credit Balance (RMB 100 million)	/	/	285.54	Over 225
Outstanding Green Credit Balance (RMB 100 million)	/	8.16	/	/
Number of Green Credit Clients	/	3	286	Over 3,400 cumulative green enterprises financed

Source: Bank of Beijing Annual Reports (2017–2020).

Based on the comparison in Table 1, it can be observed that the bank’s initial exploration of green credit business was highly regionally concentrated, primarily in the Beijing–Tianjin area. This was achieved by supporting small and micro-scale air pollution control projects, thereby responding to the strengthened national environmental supervision requirements. Due to limited experience at the initial stage, most

activities were conducted through joint initiatives and collaborative programs, which helped compensate for the bank's insufficient capabilities in green project identification and risk management.

At the same time, the analysis reveals a gradual transition from passive to proactive engagement. In collaboration with EMCA (Energy Management Company Association of China), the bank launched the "Green Finance Camp for Small and Micro Enterprises," aiming to leverage professional associations to acquire clients at scale and reduce communication costs associated with green projects. This represents a typical shift from "passive response" to "proactive outreach" as a marketing strategy. As a result, the number of green credit clients increased significantly, from 3 in 2018 to 286 in 2019, reaching a cumulative total of over 3,400 by 2020. This reflects a rapid expansion in the bank's coverage of green small and micro enterprises under policy incentives.

In the early stage, the product structure of green financial instruments remained relatively simple and exhibited limited diversification. Although the sector was still in its infancy, data from 2020 indicate that the bank began to move away from a reliance on liability-side financing (e.g., bond issuance) toward a more diversified asset-side approach. Notably, the pilot introduction of green bill financing—amounting to a total issuance scale of RMB 1 billion—represents an important innovation aimed at alleviating financing constraints for small and micro enterprises. By utilizing bill discounting to reduce financing costs, the bank started to combine on-balance-sheet credit with off-balance-sheet instruments, thereby enhancing the flexibility of financial support for green enterprises.

4.2 Post-Policy Strengthening Stage (2021–2024): Rapid Expansion and Implementation Deviations

4.2.1 Surge in Institutional Pressure

After 2021, with the introduction of the Green Finance Evaluation Scheme for Banking Institutions, the regulatory assessment system was significantly strengthened. The People's Bank of China adopted a scoring system based on a 100-point scale, with a primary emphasis on quantitative indicators and data comparability. In the initial stage, the evaluation mainly focused on green loans and green bonds.

To ensure fair assessment across banks with different sizes and historical baselines, the scheme introduced a dual benchmarking mechanism. Vertically, it evaluates whether a bank has improved over its most recent three reporting periods, thereby measuring progress. Horizontally, it assesses the bank's ranking among all participating institutions, thereby reflecting competitiveness. Furthermore, standardized scoring methods are applied, converting raw data into normalized scores ranging from 20 to 100 based on statistical measures such as the mean and standard deviation, with higher scores assigned to institutions performing above the average.

In addition, regulatory guidance from the China Banking and Insurance Regulatory Commission (CBIRC) required that the growth rate of green credit in 2023 should not be lower than the average growth rate of total loans. Financial institutions were also encouraged to continuously expand green financial products, enhance information sharing and regional coordination, and regularly conduct climate and environmental stress testing. At the same time, strict measures were emphasized to prevent "greenwashing" and ensure that funds are accurately allocated to genuinely green projects.

4.2.2 Strategic Upgrading and Organizational Adjustment

In response to these regulatory changes, Bank of Beijing undertook a series of strategic and organizational adjustments. It established dedicated green finance management departments and specialized research teams. To achieve its strategic goal of increasing the share of green loans in corporate lending to over 25% within three years and becoming a leading city commercial bank in green finance, the bank expanded its product system, launching a series of products such as "Green Finance Loans," "Green Finance Bonds," and "Green Finance Leasing," covering sectors including clean energy, energy conservation, and cleaner production.

According to the 2024 Social Responsibility and ESG Report, as well as the annual report, Bank of Beijing has also developed a considerable scale in the field of technology finance. The outstanding balance of technology finance loans reached RMB 364.279 billion, representing an increase of RMB 105.043 billion

from the beginning of the year, with a growth rate of 40.52%. Loans to “specialized, refined, distinctive, and innovative” (SRDI) enterprises amounted to RMB 106.8 billion, increasing by RMB 33.8 billion year-on-year, with a growth rate of 46.3%. The number of SRDI clients exceeded 20,000, with an increase of 6,400 during the year.

In terms of product innovation, the bank introduced financial products such as “Linghang e-Loan” (with cumulative disbursements exceeding RMB 100 billion), “Lianchuang e-Loan,” and “Jinli e-Loan,” forming an integrated service model that combines commercial banking, investment banking, and private banking. Organizationally, the bank established a “1+18+N” technology finance framework, consisting of a head office technology finance department, 18 branch-level departments, 69 specialized technology-focused sub-branches, and 30 specialized outlets serving SRDI enterprises.

4.2.3 Scale Expansion and Structural Changes

Based on publicly available financial reports and ESG disclosures of Bank of Beijing, a comparative table of key green credit indicators for the period 2021–2024 is constructed, as shown in Table 2.

Table 2: Key Green Credit Indicators of Bank of Beijing (2021–2024)

Indicator	2021	2022	2023	2024
Outstanding Green Credit Balance (RMB 100 million)	477.44	1,103.03	1,469.85	2,103.50
Share of Green Credit (%)	5	10.3	13.17	15
Green Bond Underwriting Scale (RMB 100 million)	/	8.29	10.61	34.02

Source: Bank of Beijing Social Responsibility and ESG Reports (2023–2024).

A key observation is the explosive growth in scale. Within three years, the outstanding balance of green credit nearly tripled, with a growth rate exceeding both the earlier period and the bank’s overall loan growth rate during the same period (approximately 12%). The share of green credit also increased rapidly, reaching 15.8% in 2023 and achieving the target set under the “14th Five-Year Plan” ahead of schedule.

However, rapid expansion has been accompanied by emerging structural risks.

First, the client structure has become increasingly concentrated. Green credit is predominantly directed toward corporate clients, with most outstanding balances composed of corporate loans. For instance, products such as “Zero-Waste Loans,” “Water-Saving Loans,” and “Carbon e-Loans” primarily target green enterprises and projects in the Beijing–Tianjin–Hebei region. In addition, there is a strong reliance on large-scale projects. Loan allocations are often associated with wind and photovoltaic power projects, as well as LNG terminal construction, typically involving large state-owned enterprises or industry leaders. Although the bank has also expanded its coverage of small and micro enterprises—for example, through green bill rediscount programs that supported over 2,000 SMEs in 2023—their share remains relatively small compared with the overall green credit portfolio.

Second, maturity mismatch has intensified. Green credit is largely concentrated in medium- and long-term projects, such as photovoltaic power stations, wind farms, rail transit, and environmental governance projects, all of which involve long investment and payback cycles. Reports indicate that the bank has extended loan maturities to as long as 15 years for fixed-asset investments, confirming the dominance of long-term project financing. In contrast, short-term liquidity support—such as working capital loans and bill discounting—plays a supplementary role. This imbalance contributes to the accumulation of liquidity risk.

Further evidence from the 2023 annual report shows that the bank obtained access to the People’s Bank of China’s carbon emission reduction support tool, with supported project loans carrying a weighted average interest rate of 3.13%. These loans are typically linked to equipment upgrades and infrastructure construction, implying long maturities. Additionally, the 2024 annual report highlights green leasing activities by Bank of Beijing Financial Leasing, where leased assets—such as photovoltaic components—are aligned with project life cycles, typically ranging from 5 to 15 years. This further reinforces the presence of maturity mismatch within the bank’s green credit portfolio.

5. Implementation Deviations: Triple Tensions and Adaptive Strategies

Based on data and materials from 2018 to 2023, this study identifies three major implementation deviations in Bank of Beijing's green credit practices and analyzes their institutional origins as well as corresponding adaptive strategies.

5.1 Decoupling between “External Contribution” and “Internal Governance” in Green Finance

While Bank of Beijing has actively supported green industries and rapidly expanded its green credit portfolio, its own internal transition toward greener operations—such as carbon emission reduction and energy efficiency improvements—has not progressed in parallel. This has resulted in a clear pattern of inconsistency between external performance and internal practices.

Specifically, despite the rapid growth of green credit (with a growth rate of 43.11% in 2024), the bank's own carbon emissions have not decreased and, in some cases, have even increased. This stands in sharp contrast to leading peer institutions, highlighting a significant gap between external contributions and internal governance.

5.1.1 Internal Operational Data of Bank of Beijing

According to the Social Responsibility and ESG Reports of Bank of Beijing for the period 2021–2023, the bank has preliminarily established a carbon accounting framework for its own operations and has disclosed data on Scope 1 and Scope 2 greenhouse gas emissions, as well as energy consumption.

However, key emission indicators exhibit a consistent deteriorating trend over time (see Table 3), which contrasts sharply with the bank's stated commitments in its reports, such as “promoting green mobility” and “advocating low-carbon practices.”

Table 3: Changes in Environmental Performance of Bank of Beijing's Internal Operations (2022–2023)

Indicator	2022	2023	Change
Direct Greenhouse Gas Emissions (Scope 1) (tons)	140.72	164.05	↑16.6%
Indirect Greenhouse Gas Emissions (Scope 2) (tons)	8,457.93	8,205.01	↓2.99%
Total Greenhouse Gas Emissions (tons)	8,598.65	8,369.06	↓2.67%
Electricity Consumption (10,000 kWh)	646.9	712.9	↑10.2%

Source: Bank of Beijing Social Responsibility and ESG Report (2023).

A comparison of the data over the two years shows that, although total Scope 2 emissions have declined slightly, Scope 1 (direct emissions) has increased significantly. In addition, the continuous rise in electricity consumption (and associated resource use) suggests that the bank has not yet established an effective emission reduction mechanism within its internal operations.

This divergence indicates that improvements in indirect emissions may be partially offset by increases in direct emissions and energy consumption, further reinforcing the earlier observation of a disconnect between the bank's external green finance expansion and its internal environmental performance.

5.1.2 Peer Comparison: Leading Banks Have Established More Mature Carbon Management Systems

Bank of Beijing exhibits a noticeable gap in internal green governance when compared with leading peer institutions. To illustrate this, a comparative analysis is conducted using operational carbon emission disclosures from Industrial and Commercial Bank of China (ICBC), Industrial Bank, and China Merchants Bank, all of which follow the Guidelines for Environmental Information Disclosure by Financial Institutions. The results are summarized in Table 4.

Table 4: Comparison of Internal Carbon Management among Selected Banks (2023)

Dimension	Bank of Beijing	ICBC	Industrial Bank	China Merchants Bank
Disclosure of Operational Carbon Emissions	Scope 1 and Scope 2 emissions	Scope 1 and Scope 2 emissions	Scope 1 and Scope 2 emissions	Scope 1, Scope 2, and Scope 3 emissions
Carbon Emission Trends	Most indicators	Trend not disclosed, but significant	Clear reduction target: 20% decrease by 2025	Achieved reduction: annual electricity savings of 18.68

	increasing	progress in green data centers	(compared to 2020)	million kWh and carbon reduction of 11,000 tons
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Source: *Social Responsibility and ESG Reports of respective banks (2023)*.

5.1.3 Problem Analysis: Internal Governance Deficiencies Undermining the Credibility of Green Finance

While Bank of Beijing has allocated substantial resources to external green industries—evidenced by the outstanding green loan balance exceeding RMB 210.35 billion by the end of 2024, with a growth rate of 43.11%—it has not established an internal carbon accounting system or emission reduction targets commensurate with the scale of its business expansion.

For instance, the bank's 2023 ESG report (p. 79) indicates that environmental, social, and safety risks have been incorporated into the entire credit process. However, the report does not specify how this integration is operationalized, who is responsible for implementation, or how effectiveness is evaluated. This lack of clarity reflects institutional ambiguity in governance arrangements.

Moreover, the bank's disclosures are predominantly focused on quantitative scale indicators, such as the volume of green credit issuance and the number of supported green projects, while relatively neglecting quality-related metrics. Although a disclosure framework for its own carbon footprint has been established, it lacks performance tracking over time and does not provide a clear emissions reduction roadmap.

The Guidelines for Environmental Information Disclosure by Financial Institutions (2021) explicitly encourage institutions to disclose the environmental impact of their own operations and corresponding mitigation measures. The limitations in the quality of Bank of Beijing's disclosures place it at a relative disadvantage in ESG ratings and regulatory evaluations.

5.2 Mismatch between Scale Expansion and the Level of Risk Management Refinement

Bank of Beijing's green credit business has maintained a growth rate exceeding 40%; however, the corresponding disclosure of risk management information has lagged significantly. This makes it difficult to accurately assess the underlying asset quality of green credit and indicates an imbalance between rapid expansion and the refinement of risk management practices.

5.2.1 Evidence of Scale Expansion

Based on the 2024 Social Responsibility and ESG Report as well as the 2024 annual report, the bank's green credit scale has continued to grow rapidly. The outstanding balance of green loans reached RMB 210.35 billion by the end of 2024 (under the updated classification standards of the People's Bank of China), representing an increase of RMB 63.365 billion from the beginning of the year, with a growth rate of 43.11%.

The share of green credit in corporate lending increased from 10.30% in 2022 to 15.00% in 2024, indicating a continuous rise in the weight of green assets within the overall loan portfolio.

In terms of risk management, the bank reports that it has established an ESG risk management system, incorporating ESG considerations into the entire credit lifecycle, including due diligence, credit approval, loan disbursement, and post-lending management. It has also upgraded its "smoke index 3.0" system to enable real-time monitoring of major environmental risk events among clients.

5.2.2 Missing Risk Management Data

Despite these developments, the disclosure of risk management data related to green credit remains incomplete. Key missing indicators and their corresponding data gaps are summarized in Table 5.

Table 5: *Key Missing Risk Indicators in Green Credit Disclosure at Bank of Beijing*

Missing Indicator	Description of Data Availability
Non-performing Loan Ratio of Green Credit	Annual reports disclose only the overall NPL ratio (1.31% in 2024), without a breakdown for green credit portfolios
Share of Special Mention Loans in Green Credit	Special mention loan ratio is reported at the aggregate level (1.79% in 2024), with no disaggregation for green credit
Number of Environmental Risk Warning Projects	Reports mention the use of a "smoke index" for environmental risk monitoring but do not disclose the number of flagged projects

Missing Indicator	Description of Data Availability
Post-lending Environmental Benefit Monitoring Coverage	Reports disclose total environmental benefits (e.g., annual CO ₂ reduction of 65.905 million tons) but do not provide coverage rates for monitoring existing projects
Industry Concentration of Green Credit	No disclosure of distribution across sub-sectors (e.g., clean energy, energy conservation)
Exposure Reduction in High Environmental Risk Industries	Reports state strict entry requirements for sectors such as steel and non-ferrous metals but do not disclose the scale of exposure reduction

5.2.3 Overall Asset Quality Pressure

Although specific risk indicators for green credit are not disclosed, the overall trend in asset quality can be inferred from bank-wide indicators. According to the 2024 annual report, the non-performing loan (NPL) ratio stood at 1.31%, representing a slight decrease of 0.01 percentage points compared with the beginning of the year.

However, the proportion of special mention loans reached 1.79% (with a balance of RMB 39.636 billion), continuing a four-year upward trend (1.48% in 2021, 1.61% in 2022, 1.78% in 2023, and 1.79% in 2024). In addition, the deviation ratio of loans overdue for more than 90 days increased to 84.46% (from 80.90% in 2023), where a higher deviation ratio generally indicates more lenient recognition standards for non-performing loans.

The migration rate of normal loans rose to 1.21%, up from 1.07% in 2023, suggesting increasing pressure for loans to deteriorate from normal to non-performing status.

It should be noted that these indicators are reported at the bank-wide level rather than specifically for green credit. Nevertheless, given that green credit constitutes a significant portion of the bank's loan portfolio (approximately 15%), its asset quality is inevitably influenced by the overall trend in asset quality. Therefore, these indicators are presented as supplementary evidence to assess potential risks associated with green credit.

6. Root Causes: Structural Tensions Across Institutional, Organizational, and Environmental Dimensions

6.1 Institutional Level: “Scale Bias” and “Quality Blind Spots” in Regulatory Design

While China's green finance regulatory system has successfully promoted rapid expansion in green credit, inherent biases in its incentive design have also created an institutional foundation for strategic behavior among banks such as Bank of Beijing.

6.1.1 Quantity-Oriented Assessment System and the Incentive for Scale Expansion

Since 2018, the People's Bank of China has implemented a green finance evaluation framework for banking institutions, incorporating indicators such as the outstanding balance of green credit, its share, and year-on-year growth rates into the assessment system. The evaluation results are directly linked to central bank ratings, policy support, and market access.

The Green Finance Evaluation Scheme for Banking Institutions issued in 2021 further reinforced this framework by assigning a high weight—up to 80%—to quantitative indicators, with the year-on-year growth rate of total green finance business alone accounting for 25%. This scale-oriented assessment mechanism creates strong incentives for financial institutions to prioritize the expansion of green credit in terms of quantity rather than quality.

The case of Bank of Beijing illustrates this dynamic. The bank's green loan portfolio has maintained a growth rate exceeding 40% for two consecutive years (41.47% in 2023 and 43.11% in 2024), which can be interpreted as a direct response to regulatory pressures embedded in the assessment system.

However, as noted by Zhang [11], “in the context of limited availability of high-quality green projects, competition among banks has intensified, which is directly reflected in the pricing of such projects.” When scale expansion becomes a “hard target” while the supply of genuinely green projects remains constrained,

banks face a dilemma. They may either lower lending standards by including non-green or marginally green projects in their portfolios, or resort to “data packaging” practices to meet regulatory assessment requirements. Liang et al. [12] distinguish between two types of green governance in banking: “compliance-oriented” and “proactive” approaches. Current regulatory frameworks predominantly incentivize compliance-oriented practices, which are characterized by homogeneous behaviors aimed at meeting minimum regulatory requirements. However, such practices tend to generate significantly weaker performance outcomes compared with proactive green governance. The case of Bank of Beijing provides empirical support for this distinction. Its expansion in green credit appears to be largely driven by regulatory pressure and reflects a compliance-based response, rather than stemming from endogenous, proactive innovation.

6.1.2 Blind Spots in Regulatory Oversight of Data Authenticity

Although regulatory authorities have established statistical reporting systems for green credit and require financial institutions to submit relevant data, there remain significant shortcomings in the penetrating supervision of data authenticity. In June 2023, Bank of Beijing was fined RMB 48.3 million by the Beijing branch of the China Banking and Insurance Regulatory Commission for fourteen violations, including inaccurate classification of small and micro enterprises and misrepresentation of asset quality. In February 2024, the bank was again fined RMB 3.3 million for ten violations related to underreporting in the EAST credit system and inconsistencies in internal data systems.

These regulatory penalties reveal that, under pressure from scale-based performance assessments, banks may engage in “data packaging” practices to meet regulatory requirements. The National Audit Office’s 2023 annual audit report similarly found that six financial institutions had improperly reclassified loans into priority categories such as technology, green, and agriculture-related lending. Such “data manipulation” behavior is, in essence, a strategic response to the mismatch between strict scale-based evaluation requirements and the limited supply of genuinely eligible projects.

6.1.3 Misalignment between Green Project Classification Standards and the Supervision of Fund Utilization

Current regulatory frameworks primarily rely on the intended use of funds to classify green projects, while lacking continuous and effective monitoring of the actual allocation and utilization of these funds. Deng et al. [13] further demonstrate that the moderating effect of environmental regulation on the relationship between green credit and bank loan risk is nonlinear. Specifically, moderate levels of regulation can enhance the risk-mitigating effects of green credit, whereas excessively stringent regulation may instead exacerbate risk.

This finding suggests the existence of an optimal regulatory intensity, beyond which policy effectiveness may decline. The regulatory environment faced by Bank of Beijing reflects a structural imbalance characterized by stringent scale-based assessment but relatively weak quality supervision.

6.2 Organizational Level: Resource Constraints and Capability Gaps in City Commercial Banks

As a city commercial bank, Bank of Beijing faces fundamentally different resource endowments and capability-building challenges compared with large state-owned banks in the process of advancing green finance.

6.2.1 Systemic Deficiency in Green Technology Evaluation Capability

Zhao et al. [14] reveal that, in the implementation of green credit policies, banks may engage in strategic behavior by reallocating credit resources from large polluting firms—subject to stricter environmental regulation—to small and medium-sized polluting enterprises that are less strictly regulated, exploiting differences in environmental information disclosure across firms. The root cause of this behavior lies in banks’ limited ability to independently assess environmental risks associated with small and medium-sized enterprises (SMEs), forcing them to rely heavily on external information or, in some cases, information asymmetry when making lending decisions.

According to the 2024 data, Bank of Beijing's technology finance loan balance reached RMB 364.279 billion, serving more than 20,000 "specialized, refined, distinctive, and innovative" (SRDI) enterprises. A substantial proportion of these clients are small and medium-sized technology firms characterized by "light assets, high technological intensity, and long development cycles." For such firms, traditional credit assessment models based on collateral and financial statements are often inadequate.

However, Bank of Beijing has not disclosed whether it has established a dedicated green technology evaluation system distinct from traditional credit assessment frameworks—such as the "technology-flow" evaluation model adopted by Industrial Bank—nor has it disclosed the overall scale of intellectual property pledge financing. This condition of "scale without structure" reflects a systemic deficiency in the bank's capability to evaluate green technologies.

6.2.2 Technological Bottlenecks in Data Governance and Risk Identification

The "smoke index" risk early-warning system developed by the bank is capable of issuing alerts for non-inclusive finance clients with an average lead time of approximately seven months. In recent years, Bank of Beijing has actively promoted its digital transformation. However, judging from the intensity and frequency of regulatory penalties, its data governance capabilities still exhibit significant shortcomings.

Issues such as underreporting in the EAST system and inconsistencies between head office and branch-level data stem from deficiencies in internal data collection, integration, and validation mechanisms. These weaknesses directly affect the accuracy of green project identification and the reliability of environmental benefit measurement.

Zhang points out that financial institutions generally lack professional capabilities in green data acquisition, carbon accounting, and environmental benefit assessment. To some extent, this deficiency contributes to greenwashing behaviors, which are often not intentional but rather arise from cognitive and technical limitations. The case of Bank of Beijing provides empirical support for this argument. Although the bank discloses the aggregate annual emission reduction achieved through green lending—amounting to 59.05 million tons of CO₂ equivalent as of June 2024—it does not disclose key information such as the coverage and frequency of environmental benefit monitoring for existing projects, nor detailed operational data of its environmental risk early-warning system.

This pattern of disclosure, which emphasizes aggregate outcomes while omitting process-level indicators, may obscure underlying environmental risks and reflects insufficient technical capacity in data governance and risk identification.

6.2.3 Internal Governance and the Tension within Risk Culture

Ang et al. [15] argue that, in the implementation of green credit policies, green lending may exert a negative mediating effect on bank performance by increasing risk-taking. This implies that green credit inherently carries a higher risk profile and therefore requires correspondingly robust risk management capabilities. However, evidence from Bank of Beijing suggests a mismatch between its internal governance mechanisms and the risk characteristics of its green finance activities.

On the one hand, the bank has incorporated ESG principles into its corporate governance structure, including renaming its "Board Strategy Committee" as the "Board Strategy and Social Responsibility (ESG) Committee." On the other hand, it has repeatedly faced regulatory penalties due to issues such as inaccurate classification of small and micro enterprises and misrepresentation of asset quality. This discrepancy between formal institutional arrangements and actual practices indicates that risk culture has not been effectively internalized within operational processes.

Further research by Lin et al. (2023) highlights that financial innovation plays a significant mediating role between green credit and bank performance. Specifically, green credit can influence bank performance indirectly by first promoting financial innovation and subsequently affecting risk-taking behavior. Although Bank of Beijing has made substantial investments in digital transformation—accounting for 4.6% of its operating revenue in 2024—the critical challenge remains how to translate technological capabilities into effective tools for green finance identification, evaluation, and risk control. This represents the "last mile" problem in the bank's green finance transformation.

Overall, the issues observed in Bank of Beijing's green finance practices stem from two interrelated structural tensions. At the institutional level, the regulatory emphasis on scale incentivizes rapid expansion while weakening quality constraints, thereby creating space for greenwashing behaviors. At the organizational level, resource constraints and capability limitations characteristic of city commercial banks hinder the development of risk identification and management systems that are commensurate with the higher risk profile of green credit. The interaction of these two factors has collectively shaped the bank's current phase of green finance development, characterized by "high growth, high risk, and low transparency."

7. Strategic Adjustment: From "Formal Compliance" to "Substantive Transformation"

The preceding analysis indicates that the challenges in Bank of Beijing's green finance practices stem from the interaction between institutional-level "scale bias" and organizational-level capability constraints. In response, this study proposes a three-stage transformation strategy to facilitate the bank's transition from passive regulatory compliance to proactive value creation.

7.1 Short-Term (1–2 Years): Strengthening Foundations and Mitigating Risks

At the initial stage of transformation, the bank should prioritize "stabilization" and "foundation building," focusing on addressing key issues such as data reliability, risk identification, and deficiencies in the assessment system, in order to establish a robust framework for substantive compliance.

7.1.1 Establishing an Internal Control System for Substantive Compliance

Given the loose enforcement of current green credit classification standards and the associated risk of greenwashing, banks should establish a multi-layered and verifiable review mechanism for green projects to ensure the integrity of green credit.

First, a "whitelist" system for green projects should be developed. Moving beyond a passive reliance on corporate disclosures and third-party certifications, banks should create an independent, auditable database of green projects. A mechanism for random inspection and verification of third-party certifications should be introduced to ensure the accuracy of project classification and the appropriate use of funds. Projects identified with discrepancies should undergo rectification and re-evaluation. The implementation of a "dual-review per case" mechanism would enhance both accountability and credibility.

Second, in response to the current reliance on self-reported data for environmental benefits—which are often difficult to verify—banks should require all green credit projects to provide quantifiable environmental performance indicators, such as energy savings, emission reductions, and renewable energy generation. A verifiable framework should be established to transform environmental commitments from "paper-based claims" into outcomes that are measurable, reportable, and verifiable.

Third, banks should conduct targeted audits to identify greenwashing risks. All green credit projects initiated since 2021 should be systematically reviewed to detect issues such as misclassification, exaggerated environmental benefits, and misuse of funds. Projects suspected of "window dressing" should be subject to corrective measures based on their risk levels, including reclassification, removal from green credit statistics, and additional provisioning. The results of such audits should inform subsequent risk pricing and credit allocation decisions.

7.1.2 Optimizing the Assessment and Incentive Mechanism

To address the current bias toward scale over quality in performance evaluation, Bank of Beijing should redesign its green finance assessment framework, guiding branches to shift from quantity-oriented targets to quality-oriented performance.

Specifically, the weight assigned to scale-based indicators should be reduced, while greater emphasis should be placed on quality-related metrics, including the accuracy of green project classification, actual carbon reduction outcomes, return on green credit (ROE), risk-adjusted returns, customer satisfaction, and utilization rates of green credit. Such adjustments would discourage practices that prioritize quantity at the expense of quality.

Given the inherently higher risk profile of green credit, the absence of appropriate risk-sharing mechanisms may reduce the willingness of frontline staff to issue such loans. In practice, banks may prefer to relabel traditional lending activities as green credit to minimize perceived risk. To address this issue, Bank of Beijing should establish a due diligence exemption mechanism for green credit. For projects that have undergone proper due diligence and strictly followed approval procedures, staff should be partially exempt from liability in cases where losses arise from firm-specific issues or unforeseen environmental risks. This would provide a reasonable level of risk tolerance and alleviate the dual pressure of performance assessment and risk accountability.

Furthermore, given the long investment horizons associated with green projects, applying traditional annual evaluation cycles may lead to inaccurate asset valuation and short-termism. The current mismatch between annual assessment cycles and project payback periods—often ranging from five to ten years—can incentivize behaviors such as “short-term lending for long-term investment” or end-of-period loan expansion. To address this issue, the evaluation cycle for green credit should be extended to three years, aligning more closely with project development and benefit realization periods. For major green projects, a rolling evaluation system can be adopted, incorporating goal setting at the initial stage, progress monitoring during implementation, and outcome evaluation at completion, thereby reducing the risk of sacrificing long-term quality for short-term performance.

7.2 Medium-Term (3–5 Years): Capability Building and Differentiated Competition

Following the establishment of foundational systems, Bank of Beijing should enter a phase of capability enhancement and differentiated positioning, developing unique competitive advantages in selected niche markets to avoid direct competition with large state-owned banks.

7.2.1 Focusing on Niche Markets to Build Competitive Advantages

Rather than competing directly with large banks in broad, comprehensive markets, Bank of Beijing should concentrate on segments where it holds comparative advantages, as illustrated in Table 6.

Table 6: Niche Markets with Comparative Advantages for Bank of Beijing

Segment	Comparative Advantages	Strategic Focus
Urban Renewal and Green Buildings	Strong demand for renovation of aging residential communities in Beijing; clear regional advantage for the bank	Develop “Green Building Loans” to support passive housing and zero-carbon buildings
Clean Energy Industry Chain	Well-established photovoltaic and wind power industry chains in the Beijing–Tianjin–Hebei region	Extend from project financing to supply chain finance (e.g., accounts receivable financing and order financing)
Green Transformation of Technology Firms	High concentration of technology firms in Beijing; strong foundation in technology finance	Launch “Green Innovation Loans” to support frontier fields such as clean technologies and carbon capture
Carbon Finance	Presence of the Beijing Green Exchange provides informational advantages	Develop services such as carbon emission rights pledge financing and carbon trading facilitation

7.3 Long-Term (Beyond 5 Years): Ecological Restructuring and Value Creation

After completing capability building and differentiated positioning, the transformation enters its third stage—shifting from a single role as a “credit provider” to a “transformation service provider,” and from passively earning interest spreads to actively creating diversified value.

7.3.1 From “Credit Provider” to “Transformation Service Provider”

Unlike the traditional “lend-and-earn-interest” model, the scope of green financial services can be extended from pure financing to integrated service provision, offering firms comprehensive solutions that combine financial support with knowledge-based services.

To reduce the cost of sourcing high-quality green lending opportunities, banks can collaborate with professional institutions to support traditional high-carbon enterprises undergoing green transition. Such cooperation may include providing advisory services such as carbon neutrality roadmap design, transition

pathway planning, and green technology screening. While generating consulting revenues, these activities also enable banks to identify and cultivate potential clients.

In addition, banks can expand into carbon asset management services. Leveraging partnerships with platforms such as the Beijing Green Exchange, banks may provide services including carbon emission trading, CCER project development, and carbon quota custody. Revenue can be generated through transaction commissions and management fees. More importantly, deep involvement in clients' carbon asset management helps establish long-term relationships and enhances client retention.

Furthermore, banks can develop green supply chain finance platforms. By utilizing their role as credit intermediaries and their data integration capabilities, banks can support both core enterprises and their upstream and downstream partners. For upstream suppliers, this may involve receivables financing based on green performance metrics, while downstream distributors can be supported through green inventory and order financing. By accumulating transaction data and strengthening client relationships, such platforms can create a virtuous cycle of "data-credit-capital." Prior research (e.g., Lin et al., 2023) demonstrates that financial innovation plays a significant mediating role between green credit and bank performance, and the development of supply chain finance platforms represents an effective pathway for translating financial innovation into tangible outcomes.

7.3.2 Promoting the Improvement of Regulatory Policies

In this process, Bank of Beijing should not remain a passive follower of regulatory rules but should actively participate in the evolution of the regulatory framework, particularly in promoting the transition of green finance evaluation systems from a "scale-oriented" approach to a "quality-oriented" one.

Previous practices have shown that Bank of Beijing has already engaged in cooperation with other banks and related institutions. Building on this foundation, the bank can collaborate with other representative city commercial banks to jointly develop environmental risk assessment tools, green project classification standards, and methodologies for measuring environmental benefits tailored to small and medium-sized banks. Through such collaborative platforms, participating institutions can share environmental data and best practices in risk management, thereby reducing compliance costs and information asymmetry for individual banks.

8. Conclusions and Implications

8.1 Main Findings

This study takes Bank of Beijing as a case to examine the implementation of green finance policies at the level of city commercial banks. Based on data and materials from 2017 to 2024, it identifies a transmission chain of "policy introduction-organizational adjustment-implementation deviation," providing empirical evidence that policies can be effective while exhibiting significant variation in execution.

The findings indicate that green finance policies are subject to notable implementation deviations at the micro level. Following the strengthening of regulatory policies, Bank of Beijing achieved rapid expansion in green credit, but this was accompanied by risks of greenwashing and potential deterioration in asset quality. These outcomes reflect three major forms of deviation: imbalance between scale and quality, divergence between formal compliance and substantive transformation, and conflict between regulatory compliance and economic efficiency.

The combined effects of "scale-oriented" regulatory assessment and the resource and capability constraints of city commercial banks incentivize strategic behaviors such as selective compliance. In practice, banks may rely on indicator decomposition, selective disclosure, and relationship-based governance to achieve short-term compliance targets. However, such strategies may lead to path dependence and undermine long-term competitiveness.

8.2 Limitations and Future Research

As this study is based on a single case, its external validity is inherently limited. Future research could adopt a comparative approach by incorporating multiple cases to enhance generalizability. In addition,

during data collection, it was found that green finance is still in a relatively early stage of development, and the lack of standardized disclosure frameworks makes certain data difficult to obtain and compare.

Future studies may continue to track the evolution of bank lending behavior to assess the effectiveness of the proposed strategic adjustments and business expansions over time.

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Conflicts of Interest

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