FROM DIRECTED LENDING TO GREEN TAXONOMY: SUSTAINABLE FINANCE ADOPTION IN NEPAL'S COMMERCIAL BANKING SECTOR

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ABSTRACT

Amid escalating environmental challenges, green finance has emerged as a critical mechanism for aligning economic growth with sustainability, particularly in developing nations like Nepal. This study comprehensively investigates the green finance practices adopted by Nepalese commercial banks, evaluating their alignment with regulatory frameworks such as the Nepal Rastra Bank's (NRB) Environmental and Social Risk Management (ESRM) Guidelines and the Nepal Green Finance Taxonomy. Employing a mixed-methods approach by integrating an extensive literature review, analysis of secondary data from NRB and bank reports, and in-depth interviews with banking professionals from diverse institution, the research identifies key practices, including green lending for renewable energy, sustainable agriculture, and waste management. It also uncovers persistent barriers, such as limited technical expertise, regulatory inconsistencies, and heightened risk perceptions. Findings reveal that while innovative initiatives, such as green bond issuances, are gaining traction, adoption remains largely compliance-driven rather than strategically embedded. These practices contribute to modest improvements in financial performance, stakeholder trust, and environmental outcomes, yet broader systemic reforms are essential. By providing a detailed analysis, this study enriches the sparse literature on sustainable finance in South Asia, offering actionable recommendations for policymakers, regulators, and banks to amplify green investments in support of Nepal's Sustainable Development Goals (SDGs).

Keywords: green finance, Nepalese commercial banks, sustainable development, ESRM guidelines, green banking, Nepal Rastra Bank, SDGs

INTRODUCTION

Nestled in the Himalayas, Nepal grapples with severe environmental threats—melting glaciers, erratic monsoons, deforestation, and urban pollution, all intensified by climate change. These challenges not only degrade ecosystems but also imperil the livelihoods of millions dependent on agriculture, hydropower, and tourism, which collectively account for a significant portion of Nepal's GDP. Green finance offers a strategic solution, channeling capital into projects that balance economic growth with environmental preservation while integrating environmental, social, and governance (ESG) factors into financial decision-making to mitigate risks and enhance resilience (United Nations Development Programme, 2022). In Nepal, commercial banks, controlling over 80% of the nation's financial assets, are pivotal in driving this transition toward sustainability (Nepal Rastra Bank, 2024).

The Nepal Rastra Bank (NRB), as the central bank, has introduced robust policies to promote green finance. The 2022 ESRM Guidelines mandate banks to assess environmental and social risks in lending, categorizing projects into high, medium, and low risk and requiring due diligence for high-risk ventures (Nepal Rastra Bank, 2022). The 2024 Nepal Green Finance Taxonomy further supports this by classifying activities—such as renewable energy, sustainable agriculture, and waste

management as "green," "amber," or "red" based on environmental impact, aiming to attract sustainable investments (Nepal Rastra Bank, 2024a). Despite these progressive frameworks, green finance adoption in Nepal remains uneven, often perceived as a regulatory obligation rather than a strategic opportunity. Nepal faces an estimated $46 billion funding gap by 2030 to develop climate-resilient infrastructure, and commercial banks could bridge this through innovative instruments like green bonds, low-interest loans, and blended finance (United Nations Development Programme, 2022).

This study explores the green finance practices of Nepalese commercial banks, their drivers, barriers, and impacts. It addresses three key questions: What green finance practices are adopted? What factors shape their adoption? How do these practices impact financial performance and sustainability goals? By examining these, the study contributes to the limited but growing literature on sustainable finance in least developed countries, situating Nepal's efforts within broader South Asian and global trends. Effective green finance could propel Nepal toward achieving SDG targets, including affordable and clean energy (SDG 7), sustainable cities (SDG 11), and climate action (SDG 13), while fostering economic growth, job creation, and innovation.

LITERATURE REVIEW

Green finance globally involves directing capital toward environmentally sustainable projects, such as renewable energy, green infrastructure, and energy-efficient technologies. By 2023, global green bond issuance had reached significant milestones, reflecting growing investor interest in sustainable finance (Climate Bonds Initiative, 2023). In developing countries, central banks are increasingly embedding sustainability into financial systems, with initiatives like the Network for Greening the Financial System (NGFS) advocating for climate-risk integration into monetary and supervisory frameworks (Dikau & Volz, 2021). Research indicates that green finance practices can enhance financial performance, with Asian banks adopting ESG standards reporting higher returns on assets (ROA) and lower credit risks due to diversified portfolios.

In Nepal, green finance is still nascent but evolving rapidly. The NRB's 2022 ESRM Guidelines require banks to implement environmental and social risk assessments, using exclusion lists to avoid financing high-pollution projects and mandating action plans for high-risk loans (Nepal Rastra Bank, 2022). The 2024 Nepal Green Finance Taxonomy provides a detailed framework, classifying 17 economic sectors based on criteria like carbon emissions, biodiversity impact, and resource efficiency, aligning with international standards like the EU Taxonomy (Nepal Rastra Bank, 2024a). These policies aim to position Nepal as a regional leader in green finance, yet implementation faces challenges.

Local studies highlight a narrow understanding of green finance among bankers, often limited to internal operational changes like paperless banking or energy-efficient branches. Training gaps and a limited pipeline of bankable green projects further hinder progress. The NRB mandates that banks allocate 1% of profits to corporate social responsibility (CSR), including environmental initiatives, but implementation varies widely (Nepal Rastra Bank, 2024). Despite these challenges, some banks are pioneering innovative practices, such as green bonds and loans for renewable energy projects, supported by international partners like the Global Green Growth Institute.

Barriers to adoption include low awareness, perceived financial risks, and insufficient regulatory incentives. The UNDP estimates Nepal's climate funding needs at $46 billion by 2030, underscoring the urgency of a national green finance roadmap (United Nations Development Programme, 2022). Stakeholder theory suggests that green finance enhances corporate reputation and long-term viability, while institutional theory highlights the role of regulatory pressures in driving adoption (Dikau & Volz, 2021). However, there is a paucity of empirical studies quantifying the financial and environmental impacts of green finance in Nepal or

comparing its progress with other South Asian nations. This study addresses these gaps by combining quantitative data with qualitative insights from banking professionals.

METHODOLOGY

This study adopts a mixed-methods approach, integrating quantitative data for measurable trends and qualitative interviews for contextual depth, as recommended for exploratory research in complex financial systems (Creswell & Plano Clark, 2017). This design enables triangulation, cross-verifying findings from multiple sources to enhance validity and provide a holistic understanding of green finance adoption.

Participants and Sampling

As of mid-January 2025, Nepal had 20 licensed commercial banks (Class 'A' institutions) under NRB supervision (Nepal Rastra Bank, 2025). Six banks were purposively selected to reflect diversity in ownership and operational models: two state-owned (e.g., Rastriya Banijya Bank), two joint-venture, and two private. This stratification captures varying priorities, as state-owned banks often emphasize social objectives, while private banks focus on profitability. From each bank, two professionals were interviewed: a senior manager involved in strategic decision-making and a sustainability or risk officer responsible for green finance implementation, totaling 12 participants. All had at least five years of banking experience, ensuring informed perspectives. The sample size was determined by data saturation, a standard practice in qualitative research, and aligns with similar studies in Nepalese banking. Purposive sampling was chosen to target expertise, though it limits generalizability to all banks.

Data Collection

Quantitative data were sourced from authoritative NRB publications, including the Bank Supervision Report 2023/2024 (March 2025), Financial Stability Report (April 2025), and monthly Banking & Financial Statistics up to mid-July 2025 (Nepal Rastra Bank, 2024; Nepal Rastra Bank, 2025a). These provided reliable metrics on green loan portfolios, CSR spending on environmental projects, ESG compliance rates, and sectoral lending trends (e.g., renewable energy, agriculture) from 2023 to 2025. These data are audited and publicly available, ensuring objectivity.

Qualitative data were collected through semi-structured interviews conducted virtually in July 2025, each lasting 45–60 minutes to allow flexibility while maintaining focus. The interview guide, adapted from established frameworks, covered themes such as the understanding of green finance, specific practices (e.g., ESRM application), barriers (e.g., training gaps), and impacts (e.g., financial performance, stakeholder trust). Open-ended questions encouraged detailed responses, with probes to elicit specific examples. Interviews were recorded with informed consent, transcribed verbatim in English (translating Nepali segments where necessary), and anonymized to protect participant identities. This approach ensured ethical data handling and captured nuanced insights not available in quantitative reports.

Data Analysis

Quantitative analysis was conducted using SPSS to generate descriptive statistics, including means, percentages, and growth rates for green loan portfolios and CSR spending. Metrics like ROA were calculated to compare green-adopting banks with others, providing insights into financial impacts. Visualizations, such as tables and trend charts, aided interpretation.

Qualitative data were analyzed using NVivo, following Braun and Clarke's (2006) thematic analysis framework: familiarization with transcripts, inductive coding (e.g., "regulatory compliance"), theme generation (e.g., "barriers to adoption"), review, and definition. Codes were initially data-driven, then aligned with theoretical frameworks like institutional theory. Inter-coder reliability was assessed by having a second researcher code 20% of transcripts, achieving 85% agreement. Member checking—sharing theme summaries with participants—further enhanced credibility and ensured accuracy of interpretations.

Reliability, Validity, and Ethical Considerations

Reliability was ensured through standardized interview guides and consistent use of audited NRB data. Validity was strengthened by triangulation, combining quantitative trends with qualitative insights, and providing thick descriptions for transferability to other contexts. Ethical protocols included approval from an institutional review board equivalent, voluntary participation, confidentiality via pseudonyms, and secure data storage on encrypted servers. Participants could withdraw at any time without consequence. Limitations include the small sample size (six banks), which may miss perspectives from all 20 commercial banks, and potential self-report bias in interviews, mitigated by cross-referencing with NRB data. Future studies could include all banks or longitudinal designs to enhance generalizability.

RESULTS

Quantitative Findings

Historical directed lending to agriculture and energy sectors-both central to the NRB Green Finance Taxonomy-provides the most reliable proxy for green finance activity as banks begin formal reporting under the new taxonomy. As of mid-July 2025, combined lending to these two sectors reached NPR 1,104.52 billion, reflecting strong and accelerating growth over the past three years.

Table 1: Directed Lending to Agriculture and Energy Sectors (Mid-July 2022-2025)

Year (Mid-July)	Agriculture (NPR bn)	Energy (NPR bn)	Combined (NPR bn)	YoY Change (Combined, NPR bn)	YoY % Change (Combined)
2022	516.09	238.81	754.90	-	-
2023	555.89	300.16	856.05	+101.15	+13.4%
2024	589.33	362.94	952.27	+96.22	+11.2%
2025	666.42	438.10	1,104.52	+152.25	+16.0%

Source: Nepal Rastra Bank Banking & Financial Statistics (various issues, 2022–2025)
Note: Energy lending predominantly comprises hydropower and renewable energy projects; agriculture lending increasingly incorporates climate-resilient and sustainable practices.

Table 1 illustrates the robust and accelerating expansion of directed lending to the agriculture and energy sectors—two core areas that directly overlap with the green categories defined in the NRB's 2024 Green Finance Taxonomy. Between mid-July 2022 and mid-July 2025, combined lending to these sectors rose from NPR 754.90 billion to NPR 1,104.52 billion, delivering a cumulative growth of approximately 46%. This trajectory underscores Nepalese commercial banks' growing capacity and institutional experience in financing green-aligned activities even before the formal introduction of Taxonomy-based reporting.

The energy sector exhibited the most dynamic performance, with outstanding loans increasing by 83% over the same period (from NPR 238.81 billion to NPR 438.10 billion), reflecting the NRB's long-standing policy emphasis on hydropower and renewable energy as well as banks' early alignment with emerging green finance priorities. The particularly sharp 16.0% year-on-year surge recorded in 2025 signals that the recent adoption of the Green Finance Taxonomy is already beginning to exert a positive influence on lending behavior, accelerating momentum beyond historical trends. Notably, non-performing loans in these directed sectors have remained consistently low (below 2%

throughout the period), confirming that rapid portfolio expansion has been accompanied by effective risk management and sound credit discipline. Together, these trends provide a strong empirical foundation for future green finance

Qualitative Themes

Analysis of interview data revealed four key themes shaping green finance adoption in Nepalese commercial banks:

1. **Conceptual Understanding and Evolving Practices**: Participants defined green finance as funding for environmentally supportive projects, but early perceptions were narrow, often limited to internal efficiencies like paperless banking or energy-saving branches. Over time, practices have evolved to include concrete financial products, such as loans for solar panel installations, micro-hydropower projects, and pollution screening for industrial loans. A senior manager noted, "We're increasingly aligning with the NRB Taxonomy, prioritizing hydroelectric and solar projects labeled as green" (Nepal Rastra Bank, 2024a).
2. **Regulatory Drivers and Need for Incentives**: The NRB's ESRM Guidelines and Taxonomy are the primary catalysts for green finance adoption, mandating risk assessments and providing clear criteria for green investments (Nepal Rastra Bank, 2022; 2024a). However, participants emphasized the absence of tangible incentives, such as interest rate subsidies or reduced reserve requirements, which limits proactive engagement. One risk officer remarked, "Compliance is high, but without financial incentives, green lending feels like an added burden."
3. **Key Implementation Obstacles**: Bankers identified three major barriers: (1) insufficient training to evaluate green project viability, (2) high perceived costs of transitioning to green portfolios, and (3) a limited pipeline of bankable green projects, particularly in rural areas. These challenges align with findings in developing economies, where capacity constraints hinder sustainable finance growth.
4. **Perceived Benefits and Strategic Motivations**: Despite obstacles, participants reported benefits, including enhanced corporate reputation, increased stakeholder trust, and potential for job creation in green sectors like renewable energy. The success of green bonds in the region was cited as a model, inspiring banks to explore similar instruments to diversify funding sources.

The green finance adoption is progressing but remains inconsistent, driven primarily by regulatory mandates and constrained by operational and systemic challenges. A more robust ecosystem, including incentives and capacity-building, could accelerate adoption and deepen impact.

DISCUSSION

The findings of this study are consistent with the global pattern in which central banks in emerging and developing economies act as primary catalysts for sustainable finance through mandatory regulatory frameworks (Dikau & Volz, 2021). The sustained and accelerating growth in directed lending to agriculture and energy sectors—from NPR 754.90 billion in mid-July 2022 to NPR 1,104.52 billion in mid-July 2025, representing a cumulative increase of 46%—demonstrates that Nepalese commercial banks already possess considerable experience and capacity in financing activities that are now formally recognized as "green" under the 2024 Nepal Green Finance Taxonomy. The particularly rapid expansion of energy-sector lending (an 83% cumulative rise over the same period, reaching NPR 438.10 billion) reflects long-standing national priorities in hydropower and renewable energy and aligns closely with SDG 7 (Affordable and Clean Energy). This trajectory provides a robust historical baseline against which future green finance reporting under the Taxonomy can be measured and evaluated.

monitoring and demonstrate that Nepal's banking sector is well-prepared to scale sustainable investments under the new regulatory framework.

Nevertheless, qualitative evidence reveals that the bulk of this growth continues to be driven by pre-existing directed-lending mandates rather than by proactive, strategic embrace of the new Taxonomy. In the absence of tangible financial incentives—such as lower risk weights, reduced reserve requirements, or preferential refinancing facilities for Taxonomy-aligned assets—most banks still perceive green finance primarily as an additional compliance burden rather than a business opportunity. This compliance-oriented mindset mirrors experiences in other South Asian jurisdictions during the early phases of green finance regulation (e.g., Bangladesh and India) and underscores a classic institutional theory dynamic: coercive isomorphism induced by regulation, but limited mimetic or normative pressures that would encourage voluntary, strategic integration (Dikau & Volz, 2021).

The persistently low non-performing loan ratios in these green-aligned sectors (consistently below 2%) and interviewees' reports of improved corporate reputation and stakeholder trust further confirm global evidence that well-managed sustainable portfolios can deliver both environmental impact and financial resilience. Yet without stronger positive incentives and systematic capacity-building, the risk remains that the ambitious NRB Green Finance Taxonomy will function mainly as a reporting framework rather than a transformative tool for capital reallocation.

Nepal's experience offers valuable lessons for other least-developed and lower-middle-income countries. Successful scaling of green finance appears to require three concurrent enabling conditions that are currently only partially present in Nepal: (i) clear and enforceable regulatory standards (now in place), (ii) positive economic incentives that offset perceived or real additional costs and risks (still largely missing), and (iii) sustained investment in technical skills and in a pipeline of bankable, Taxonomy-compliant projects (remains underdeveloped, especially outside hydropower).

Study limitations include the purposive sample of only six commercial banks—which, while diverse in ownership, may not fully represent the practices of all 20 Class A institutions—and the reliance on directed-lending aggregates as a proxy for green finance in the absence of comprehensive Taxonomy-based reporting. Future research should therefore expand to the full population of commercial banks, adopt longitudinal designs to track performance impacts over time, and undertake comparative analyses with regional peers such as Bhutan (which benefits from strong hydropower-green finance synergies) or Sri Lanka (facing more severe post-crisis constraints).

In this way, Nepalese commercial banks have already demonstrated substantial commitment and capability in financing green-aligned sectors. To convert this solid foundation into genuine leadership in sustainable finance, policymakers must complement the existing regulatory push with meaningful pull factors—incentives, concessional funds, and capacity-building—while banks themselves must elevate green finance from a compliance function to a core strategic priority. Only through this dual shift can Nepal fully mobilise its banking sector to close the estimated multi-billion-dollar climate finance gap and achieve its national SDG commitments.

CONCLUSION

Nepalese commercial banks have already established a strong foundation for green finance through more than a decade of substantial and consistent lending to agriculture and energy sectors-two pillars now formally classified as green under the Nepal Rastra Bank's 2024 Green Finance Taxonomy. The remarkable growth in combined directed lending from NPR 754.90 billion in mid-July 2022 to NPR 1,104.52 billion in mid-July 2025—a cumulative increase of 46%—demonstrates both the sector's financing capacity and its readiness to scale sustainable investments, particularly in renewable energy, where lending has risen by 83% over the same period.

Yet, despite this impressive trajectory and the progressive regulatory architecture provided by the

ESRM Guidelines and the Green Finance Taxonomy, the adoption of green finance remains predominantly compliance-driven. Limited technical expertise, the absence of meaningful financial incentives, and an underdeveloped pipeline of bankable green projects outside traditional hydropower continue to constrain deeper, strategic engagement.

To transform this solid base into genuine leadership in sustainable finance, a decisive shift is required on two fronts. Policymakers must complement regulatory mandates with positive economic incentives—such as lower risk weights, reduced reserve requirements, and concessional refinancing facilities for Taxonomy-aligned assets—while accelerating nationwide capacity-building and project development initiatives. Simultaneously, commercial banks must move beyond treating green finance as a regulatory obligation and embed it as a core strategic priority that drives innovation, risk management, and long-term profitability.

With these enabling measures in place, Nepal's banking sector is exceptionally well-positioned to mobilize the tens of billions of dollars in sustainable investment needed by 2030, bridge the country's climate finance gap, and deliver on its national commitments to the Sustainable Development Goals—particularly SDG 7 (Affordable and Clean Energy), SDG 11 (Sustainable Cities and Communities), and SDG 13 (Climate Action). The opportunity is clear: converting existing green-aligned lending momentum into proactive, market-driven sustainable finance can secure both environmental resilience and enduring economic prosperity for Nepal.

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