

# Climate Finance and Green Banking Practices in Nepalese Commercial Banks

**Bipana Shreshtha**

Supervisor

Customer Service Department

Himalayan Bank Ltd.

Email: bipana.05sth@gmail.com

**Gyan Mani Adhikari**

Associate Professor

Central Department of Management, T.U.

ORCID ID: <https://orcid.org/0009-0004-5388-8691>

Email: [gyan.adhikari@cdm.tu.edu.np](mailto:gyan.adhikari@cdm.tu.edu.np)

Corresponding author)

## Cite this paper:

Shreshtha, B., & Adhikari, G.M. (2025). Climate finance and green banking practices in Nepalese commercial banks. *Journal of Business and Social Sciences*, 7(1), 75-92

<https://doi.org/10.3126/jbss.v7i1.91337>

## Abstract

The paper challenges the readiness of Nepalese business banks to embrace climate finance and green banking operations in the framework of the high susceptibility of the country to climatic conditions and its adherence to sustainable development. Although the emission of Nepal towards the global green house gas target is minimal, Nepal is facing serious climate-based risks such as the outburst of glacier lakes, unpredictable monsoon cycles, and loss of biodiversity. The banking sector being a key financial intermediary has a primary role of making sure that the capital flows into climate-resilient and sustainable projects that are also environmentally friendly. The study utilizes a mixed-method design by examining secondary data obtained in Nepal Rastra Bank, the annual reports of commercial banks, sustainability reports and available green banking frameworks. The result shows that, although the Nepali banks have already made some initial environmental moves like paperless banking and energy-saving, they still have critical flaws in climate risk analysis, green lending portfolio, and capacity building. The main barriers include regulatory confusion, a lack of technical skills and knowledge, lack of awareness among the stakeholders, and lack of financial incentives. This means that the readiness of Nepalese commercial banks to climate financing seems to be at an embryonic level and as such, requires well-structured policy frames, capacity development programmes, and global partnerships to attain the climate agenda in the nation and play a role in the global shift towards a low-carbon economy.

**Keywords:** Green banking, Nepal, climate finance, sustainability in development, commercial banks, environmental risks management.

## Introduction

Climate change is among the most serious problems of the twenty-first century that has significant implications on economic growth, social justice, and environmental sustainability. Although Nepal is less contributor of greenhouse gas emission to the world, it is also one of the most susceptible countries to the effects of global climatic change (Mool et al., 2011). An increasing number of climate-related hazards impacting the Himalayan nation include glacial lake outburst floods (GLOFs), anomalous monsoon cycles, extended droughts, and the degradation of biodiversity, therefore endangering the livelihoods of millions of people in the country whose economy depends mostly on agriculture. As a result, green banking and climate finance have become the top priority of policy discussion in Nepal where they mediate the nexus between climate vulnerability and development of the financial sector.

In this context, commercial banks are placed in the central position in dealing with the climate change by providing capital and credit. Green banking can be described as the encouragement of environmental friendliness in banking and funding of ecologically friendly projects has become a key tool of directing funds towards sustainable development (Bihari & Pradhan, 2011). Climate finance, as a wider term, referring to the financial flows that are meant to fund climate mitigation and adaptation, requires robust financial institutions that are able to measure the climatic risks, scheme green financial instruments, and create a low-carbon transition. The example of the global green bond market, reaching US 500 billion in 2021, demonstrates the amplifying effect of the financial institutions in the climate action (Climate Bonds Initiative, 2022).

The Nepal banking industry has in the last twenty years developed into a more consolidated system, as opposed to a fragmented system, which has been triggered by the use of mergers as a prerequisite by Nepal Rastra Bank (NRB). In 2024, the industry had assets exceeding NPR 6 trillion representing the topmost role in the financial structure of Nepal (NRB, 2024). This growth has increased the hope of streamlining the banking activities to match the objectives of environmental sustainability, particularly due to the acceptance of the Paris Agreement and the Nationally Determined Contributions (NDCs) by Nepal, whose aim is the net-zero emission targets by 2045. However, integration of the environmental and climatic factors in the operations of the banking systems is still in its infancy. In contrast to the well-developed economies which have established full-fledged frameworks to green banking like Equator Principles and Task Force on Climate-related Financial Disclosures (TCFD), the banking sector in Nepal has a primitive regulatory framework. Therefore, there is a paucity of empirical studies examining the willingness of Nepali commercial banks to participate in climate finance, indicating a knowledge gap that the study will aim to address.

## Literature Review

Green banking is a paradigm shift of the financial services industry, which predicts environmental responsibility in addition to financial performance. The idea of sustainable banking was first theorised by Jeucken and Bouma (1999), who believed that a financial institution would have to internalise environmental costs and risks as part of the decision-making process. The term has since

been extended to various dimensions: operational greening (diminishing the environmental footprint of banking activities), green financing (directing money to environmentally positive projects) and environmental risk management (evaluation and reduction of environmental risks in lending departments). The theoretical basis is based on the stakeholder theory and social corporate responsibility (CSR). Freeman (1984) argued that companies have to consider the interests of all the stakeholders and not only the shareholders. Using the framework in the banking industry, researchers have established that environmental performance has a variety of impacts on a range of stakeholder groups such as the regulators, customers, employees and communities (Weber, 2005).

Climate finance builds on green banking by targeting financial transactions that relate to mitigation and adaptation of the climate. Climate finance is defined by the United Nations Framework Convention on Climate Change (UNFCCC) as local, national, or transnational funds that are based on public, private and other alternative sources and that are designed to fund mitigation and adaptation measures (UNFCCC, 2023). In the case of commercial banks, activities such as lending to renewable energy projects, financing climate resilient infrastructure, issuing green bonds, and providing financial services to enable climate adaptation in vulnerable sectors (e.g., agriculture), are activities under climate finance. Making climate consideration a part of banking is an extension of an understanding that climate change is material financial risk because it has physical effects (damage caused by extreme weather events), as well as, transition risks (policy changes, technological changes, and revaluations of a low-carbon economy).

Green banking can be said to have evolved in the world over various pioneer efforts. In 2003, ten leading international banks introduced the Equator Principles, which provided a risk-management structure to identify, evaluate, and deal with environmental and social risk in the financing of projects (Equator Principles Association, 2020). The voluntary framework has become part of more than 100 financial institutions in the world, which comprises most of the international project finance debt in emerging markets. The principles require environmental and social due diligence, adherence to relevant environmental standards, and involvement of the stakeholders. The financial stability board in 2015 through the Task Force on climate-related financial disclosures (TCFD) realised that the climate change is a cause of financial risk. According to the TCFD framework, organisations should report climate-related risks and opportunities in the four thematic areas, namely, governance, strategy, risk management, and metrics and targets (TCFD, 2017).

There are empirical studies that show positive relationships between environmental performance and financial performance. According to Weber et al. (2010), banks that had well-established environmental risk-management systems had a low rate of default in their lending portfolios. A positive relationship between the sustainability performance of banks and financial performance has been recorded by Scholtens (2009) and this has shown that environmental responsibility does not necessarily lead to lower profitability. The results of these studies dispute the traditional beliefs on trade-offs between environmental and financial goals and suggest that proper management of environmental risks can lead to long-term value creation. However, these findings are largely based on the developed world experience and there is little data of new economies facing conflicting institutional and market environments.

The adoption of green banking in developing economies has been largely different with most of the respondents being pushed into the practice by regulatory requirements and not market forces. Bangladesh was the first country in South Asia to introduce mandatory green banking, and Bangladesh Bank published guidelines on Environmental Risk Management (ERM) in 2011 and then launched green refinancing measures and mandatory reporting (Bangladesh Bank, nombre 2017). A study by Masukujjaman and Aktar (2014) found out that the initial deployment of green banking by Bangladeshi banks was mainly due to compliance as the banks did not fully incorporate green banking into business strategies. Later reports, however, record that sophistication increased, such as the creation of specialised green products, and increased investment in renewable energy funding (Islam & Das, 2013). The Bangladeshi paradigm demonstrates that in a market where market incentives on green banking are poor, regulatory leadership can prompt transformation of the industry.

The strategy of India focuses on the development of regulatory directions and market incentives. In 2007, the Reserve Bank of India has implemented Corporate Social Responsibility and sustainable development requirement, and in 2015, it has also provided priority sector lending targets, which include renewable energy (Reserve Bank of India, 2015). Nath et al. (2014) observed that there was a substantial difference between the extent of adoption of green banking among the Indian banks, with the banks in the public sector having greater commitment to the concept than the banks in the private sector potentially due to the difference in the pressure exerted by stakeholders and by the underlying institutional imperatives. In 2015, the Securities and Exchange Board of India established the requirement to list green bonds, which resulted in the expansion of the market of climate finance instruments and made India one of the top emitters of green bonds in the emerging economy.

Pakistan and Sri Lanka have also implemented green banking structures, although in an uneven manner. In 2017, the State Bank of Pakistan published Green Banking Guidelines, which obliges banks to prepare environmental and social management systems and report on green banking operations (State Bank of Pakistan, 2017). Khan et al. (2019) discovered that Pakistani banks were aware of environmental concerns; however, the lack of practical application was caused by the lack of capacity and other priorities. Comparative analysis of the situation in South Asian countries reveals that they share such issues as the absence of standardised definitions and reporting systems, poor technical capability to assess environmental risks, insufficient financial incentives, and information asymmetry in relation to green investment opportunities (Bhardwaj & Malhotra, 2013).

The research on green banking in Nepal is still limited, and most of it is associated with descriptive studies of the practices instead of some empirical research. A preliminary analysis of environmental practices in Nepali banks carried out by Shrestha (2012) revealed that most Nepali banks had adopted minimum operational practices like paperless banking and energy saving lighting, but none of them had green policies or green lending products. Awareness gaps among banking professionals were identified by the study as one of the key limitations since most of the respondents showed a poor knowledge of climate risks and green financial tools. Later studies conducted by Thapa Magar (2015) on the CSR practices at Nepali commercial banks revealed that

the current activities of the CSR were more of charitable donations and community development programmes instead of environmental sustainability.

Newer researches have focused on particular aspects of green banking in Nepal. Pandey (2017) examined how selected commercial banks adopted green banking practices and established that although the banks had laid down on paper the environmental policies, the practices were not observed because they had no monitoring mechanisms and accountability structures. The study identified a lack of specialised environmental risk assessment instruments and the scarcity of training programmes on climate finance trainings provided to banking professionals. Khanal and Devkota (2020) determined that the adoption of the Environmental and Social Risk Management (ESRM) guidelines provided by Nepal Rastra Bank was not uniform with small banks showing the inability to carry out thorough environmental risk assessments due to the lack of technical capacity. All these studies lead to the conclusion that commercial banks in Nepal are still at the phase of green banking implementation, and there exist substantial gaps in green banking policy statements and reality.

The banking industry of Nepal climate vulnerability profile has direct implications to its climate vulnerability profile. The economic effects of climate-related disasters on the rural people were recorded by Gentle and Maraseni (2012), which underscores the necessity of climate-resilient financial services, such as insurance products, and adaptation financing. The researchers concluded that the families exposed to climate shocks had to enter into the cycle of debts, which means that the lending portfolio of banks has climate-induced credit risks that are not sufficiently evaluated and priced. Hydropower industry, which is heavily financed by Nepali commercial banks, is susceptible to the climate. A study performed by Sharma et al. (2016) compared the findings on the effects of climate change on the hydropower potential in Nepal, and the results indicated that alteration of precipitation patterns and melting glaciers could have severe impacts on the viability of the projects. This study highlights the significance of the climate risk evaluation in project funding which is one of the domains where banks in Nepal are currently lacking.

Another area that requires critical attention but is not well addressed in terms of climate concerns is agricultural funding. Farming is also an agricultural economy sector in Nepal where the majority of people (more than 60 percent) are engaged, and where climate variability is becoming a major, crippling factor through its ability to disrupt crop yields and earnings of farmers (Aryal et al., 2020). According to Paudel et al. (2014), the state of agricultural lending by commercial banks is still incomprehensive, and it is directly related to the perceived riskiness and the cost of transactions. A combination of climate adaptation factors with agricultural finance would increase the developmental effectiveness and the portfolio performance, and would need specialised products and risk assessment facilities which most Nepali banks do not have. The lack of connection between the high vulnerability of Nepal to climate changes and the small capacity of its banking system to manage climate risks can be considered a key systemic weakness that might enhance the instability in the financial sector in the long run.

The literature determines various obstacles to adoption of green banking in the setting of developing countries. Aizawa and Yang (2010) classified obstacles into gap in regulation,

information asymmetry, capacity and market failure. Some of the regulatory barriers include the lack of clarity of definition of green operations, the disclosure requirements are not mandatory and a weak system of incentives regarding environmental performance. The information barriers include lack of data on the environmental risks and opportunities, ineffective monitoring and verification mechanisms of the green project, and lack of research on the business case of green banking in particular country situations. Such information asymmetries cause confusion to the banks that are thinking of green investing because they find it hard to evaluate the risks of investing in the environment as well as the returns that could be expected.

Capacity limits are a major challenge that has been brought out in various studies. Soundarrajan and Vivek (2016) discovered that despite their stated intentions to preside over the activities of green financing, banks frequently lack technical skills to assess the environmental technologies, to test climate risk, and/or to construct green financial products. This knowledge gap is not limited to frontline lending officers but it goes up to senior management and board members implying that an extensive training and knowledge-building program is necessary. Perceived trade-offs between environmental performance and profitability, customer demand of green products in price elastic markets, and increased costs of transactions in connection with environmental due diligence are market-based barriers (Volz, 2018). According to South Asian studies, financial institutions frequently perceive green banking as adding to the cost of operation without proportional increases in revenue gains, especially in a competitive market where competition on price limits the growth in margins.

## Research Methods

This paper uses a descriptive analytical methodology in secondary data to evaluate how Nepal commercial banks are prepared to finance climate and green banking. The publications of Nepal Rastra Bank, annual reports of commercial banks, sustainability reports and regulatory documents, such as Environmental and Social Risk Management (ESRM) Guidelines of NRB, were used to gather data. The time frame considers the period between 2018 and 2024, and the authors inspect the tendencies of green banking implementation after the establishment of ESRM guidelines. The paper examines all 20 commercial banks in Nepal as of 2024, and explicitly discusses 10 sample banks chosen so as to cover all the ownership types (government-owned, domestic in Nepal, and joint venture), the size of their assets, and their geographic coverage.

The analytical framework studies readiness on various levels: regulatory and policy alignment, institutional governance and strategy, operational greening practices, green product development, environmental risk management system and capacity-building initiatives. A coding framework, which is grounded on the Global Reporting Initiative (GRI) standards and TCFD recommendations, was used in the content analysis of bank annual reports and sustainability disclosures. Quantitative analysis consists of descriptive statistics of the green lending portfolios, uptake of certain practice, and trends by time. Comparative analysis sets standards on the practices of Nepal to match it with the South Asian regional practices and also with international

frameworks. The research has recognized weaknesses such as the use of information available in the open and there is a possibility of reporting bias in self disclosed information.

## **Results and Discussion**

The regulatory and policy environment is one of the factors that cause the company to face pressure in the marketplace.

### ***Regulatory and Policy Environment.***

In 2018, Nepal Rastra Bank released the Environmental and Social Risk Management (ESRM) Guidelines, which could be regarded as a turning point in the evolution of the green banking policy in Nepal. The rules require commercial banks to have environmental and social management systems in place, to undertake environmental due diligence of loans whose value extends to some designated thresholds and report on ESRM implementation. However, regulatory analysis shows that there are a number of gaps. In contrast to the formulated green banking policy in Bangladesh with the obligatory green lending levels, refinancing programmes, and the reporting coverage, ESRM guidelines in Nepal formulate general principles without targets or incentives. The guidelines are not specific on the meaning of green or even climate finance, which creates ambiguity in execution and hinders the capacity to measure the progress on the climate objectives.

In addition, the regulatory framework lacks any mechanism to favor green lending, including lower risk weights on environmental loans or green refinancing bodies that may encourage banks to increase climate finance books. Although the Unified Directives of NRB contain the provisions on prescribed lending of sectors with concessional refinancing, there is no similar mechanism with green or climate-resilient projects. The NDCs of Nepal have ambitious climate objectives, such as growing the renewable energy to 15 per cent by 2030, but the regulatory framework of the financial sector is not clearly aligned with the national obligations. Lack of compulsory climate-related financial reporting denies the stakeholders access to clear information on the climate risk and green financing operations of banks and compromises market discipline and informed decision-making.

### ***Strategic Integration and Institutional Governance.***

The review of the annual reports and organisational structures shows that not many of the banks consider the concept of environmental sustainability in their governance systems. Out of 10 banks found to be studied closely, only three banks have board-level sustainability committees or board members, who are tasked with environmental matters. The majority of banks do not deal with the environmental issues except by CSR committees with the primary goal on philanthropy rather than management of environmental risks. Nepali commercial bank strategic plans and vision statements tend to focus on financial inclusiveness, digitalization and profitability and make only cursory or generic CSR promises.

There is still a poor allocation of resources on green bank programs. All the reviewed banks have not created a specific green banking department or a climate finance specialist. This fact is very different with the top banks in Bangladesh and India that have established special sustainability departments with their own staff and their own budgets. Lack of institutional advocates of green

banking in the organisational structures implies that environmental issues are still marginal to overall business plans. Bank sustainability reports show senior management has an understanding of the problem of climate, based on interviews, but no action has been put in place in their strategic commitments and accountability mechanisms. Environmental metrics are not considered as key performance indicators of senior executives and branch managers which strengthens the notion that green banking is not mandatory to business success but still an optional measure.

#### ***The fourth one is operational greening practices.***

The major advancements in operations are the implementation of paper free banking and lights that are energy efficient. Infection of sustainability disclosure reveals that most of the green practices are adopted: 18 out of 20 commercial banks have established some form of paperless banking by using mobile and internet banking services; 15 banks claim to use energy saving LED lighting in their branches; and 12 banks have installed solar panels in some of their branches or head offices. A number of banks have initiated culture like two sided printing policy, use of limited papers in the operations and computerization of the customer records. This is in line with the trends that are taking place globally towards operational efficiency and minimizing costs, which would find such initiatives appealing even where such specific environmental impetus.

The extent and thoroughness of operational greening is however different. Although major banks that have a sufficient network of branches declare developed environmental management systems, such as carbon footprint calculation and waste segregation programmes, the activities of smaller banks are ad hoc and small scale. A very small number of banks indicate that they perform environmental audits or have a systematic monitoring of their carbon emissions. Only three banks mention green procurement policies, which can be expanded to supply chains to benefit the environment. The relatively easy steps, namely paperless banking and energy use, although positive, represent the fact that operational greening is not yet developed into full-scale environmental management systems that can be discussed in terms of international best practices.

In addition, the documented environmental advantages of the operational greening schemes are rarely measured. Banks state that they have installed solar energy but fail to provide the percentage of energy usage that has been covered by renewable sources and the percentage of carbon emission saved. This absence of quantitative reporting negatively affects the evaluation of the real environmental effect of operational greening activities or tracking the progress with time. This limitation is underpinned by the lack of standardised environmental reporting models of Nepal banking sector as banks have no guidelines on which environmental indicators they should measure and report.

#### ***Green Product Development and Climate Finance Portfolios***

Green financial products are highly scarce among commercial banks in Nepal. Product portfolio analysis has shown that the majority of banks do not provide separate green products based on special terms of the environmental projects. Climate-related financing, The main type of climate-related financing is renewable energy lending, especially to hydropower projects, however, these lending activities are not subjected to special environmental-related assessment, or special pricing.

The reviewed banks have provided residential solar energy loans in only two banks and only one bank has been able to introduce a green home loan product that has slightly lower interest rates on energy efficient buildings.

Lending portfolio quantitative analysis indicates that portfolios are not allocated to explicitly green or climate-sensitive sectors. The aggregate statistics on annual report show that most commercial banks lend out about 8-12 percent of total loans as renewable energy loans, of which hydropower projects consume the large proportion of this loan portfolio. Funding of other climate-relevant areas like electric vehicles, energy efficiency projects, climate-resilient agriculture or waste management is insignificant. None of the Nepali commercial banks have issued green bonds or other climate finance products, even as the world market in this category of products is expanding. This trend is unlike in the region where the issuance of green bonds is now a conventional climate finance instrument.

There are various underlying challenges that are represented by the limited development of the green products. Banks state that they cannot easily distinguish between green projects and conventional projects because of the lack of the standardised taxonomies of green projects. In the absence of clear definition of what a green loan is, banks do not have an easy time creating products that are green or even to monitor green lending as a specific category of loans. In addition, there is the perceived increased transaction cost and technical difficulty in measuring green projects, as well as uncertainty in demand, which discourages product innovation. In the market, the incentive to develop the product is lower because of the low level of customer awareness and demand of green financial products, as referred to in reports on bank sustainability. Other reasons which reduce the business case of developing specialised climate finance products are the lack of policy incentives, like green refinancing facilities or favorable regulatory treatment.

### ***Environmental Risk Management Systems***

One of the lowest areas of green banking preparedness among the commercial banks of Nepal is the environment risk management. Even though ESRM guidelines by NRB mandate banks to evaluate the environmental risk when lending, there is inconsistency and superficiality in implementation. Of the reviewed banks, only four of them claim to have formal procedures of environmental risk assessment that are incorporated into credit assessment procedures. Such practices are likely to include checklists or questionnaires filled in when the project is appraised, but the banks recognize that they have limited technical capability to strictly assess the environmental impacts or the risks of climate changes. Majority of the banks depend on Environmental Impact Assessment (EIA) activities done by borrowers or external consultants in the cases of a large project, but they do not have the technical skills necessary to independently assess such activities.

Climate risk assessment (physical risks (climate change effects on the businesses of borrowers) and transition risks (climate policy and technology changes effects on banks) is virtually nonexistent in the risk management frameworks of the banks. None of the Nepali commercial banks report any experience of climate scenario analysis or stress testing to measure portfolio vulnerability to risks associated with climate, although these are mandated by the TCFD and are becoming increasingly

popular with other international banks. The bank lending being concentrated on climate sensitive sectors like hydropower and agriculture poses a great potential exposure to climate risks, but this exposure is not systematically identified, measured and managed. The traditional risks of banks disclosed in their risk management are almost restricted to credit risks, market risks, and operational risks, and little concern the environmental and climate risks.

Another gap may be seen in the lack of exclusion lists or negative screening criteria of activities harmful to the environment. As part of the policy, whereas some international banks have implemented the zero policy whereby they will not finance coal-fired power plants, deforestation, or projects in zones that are protected, Nepali commercial banks do not usually subject their operations to environmental screening to define what they will not finance. This is a reactive as opposed to proactive way of managing environmental risks and this puts banks at the risk of reputational risks and even future regulatory changes. The weak inclusion of environmental considerations in risk management issues are indicative of the overall capacity limitation and absence of regulatory demands regarding climate risk disclosure and management.

### *Capacity and Awareness*

Capacity constraint is the first obstacle to green banking that is apparent in the commercial banking sector in Nepal. Training and development programme analysis of annual reports indicates that the accounting of training and development programmes takes little focus on environmental and climate finance issues. Two of the investigated banks are the ones that declare having either training programmes to staff about environmental risk assessment or green banking principles. Capacity-building programs of most banks concentrate on the traditional banking skills, regulatory compliance and digital technology, and environmental sustainability is not on the agenda of training. This is the disconnection between frontline employees touching their customers and evaluating loan applications and the top management who make their strategic decisions.

The constrained ability is discernible in the involvement of banks with external expertise. Very few banks declare their association with environmental experts, climate researchers, or sustainable development agencies capable of raising their technical potential on climate funding. Bank disclosures also seldom indicate international cooperation or exchange of knowledge of green banking practices, indicating that they may have missed the opportunity of learning through more advanced markets. Lack of industry associations, or working groups on green banking in Nepal implies that the banks are not provided forums to learn and develop sector-wide solutions to the climate financial problem.

The evidence of awareness on the banking professionals about climate finance concepts and instruments seems to be low. Commercial bank sustainability reports and CSR documents often blur the distinction between green banking and overall CSR matters or corporate philanthropy, which indicates conceptual confusion between the nature environmental sustainability in banking. Bank disclosures seldom mention references to international initiatives, including the Equator Principles, the TCFD, or the Sustainable Development Goals (SDGs), which means that they do not interact with the international best practices and standards. The level of green banking awareness among customers also seems low, as the banks document a low customer desire toward

green products or environmental details, which lead to a vicious circle of when there is low awareness, supply and demand of climate finance is not very high.

### ***Comparative Evaluation against Regional counterparts.***

A comparison of the commercial banks of Nepal with the comparative banks in South Asia shows that there are wide gaps in the green banking preparations. There are more advanced practices in Bangladesh that launched extensive green banking policies in 2011. The banks in Bangladesh have accomplished green lending ratios that are over 5 per cent of overall lending, have created green banking discontinuities, have issued numerous green bonds, and have come up with various green products, such as green trade finance and green SME financing (Bangladesh Bank, 2020). These regulatory frameworks entail quarterly reporting of 21 green banking indicators that introduce transparency and accountability that create the process of constant improvement. The banking industry of Nepal does not have similar regulatory motivators, reporting, or the scale of the green finance.

Integration in climate finance has also progressed further by Indian commercial banks particularly the public sector banks. The priority sector lending model that covers renewable energy and environmental projects provides institutional incentives of green lending that Nepal does not have. Since 2015, Indian banks have issued more than USD10billion in green bonds, and have attained expertise on specialised climate finance instruments (Climate Bonds Initiative, 2022). A number of Indian banks have implemented the Equator Principles or made their systems of environmental and social frameworks in line with international standards. Conversely, there are no Nepali commercial banks that have embraced the Equator Principles or other similar voluntary models meaning that there is a lack of voluntary leadership on environmental sustainability.

Even Pakistan and Sri Lanka that have their own green banking implementation problems, have had more open systems of regulations and institutions than Nepal. The Green Banking Guidelines in Pakistan elaborate the requirements in eight areas of focus, with some of them being the governance, green finance, green operations, and capacity building (State Bank of Pakistan, 2017). Sri Lanka has formulated a Sustainable Banking Initiative which involves the regulation bodies, financial institutions and development agencies with the aim of promoting green finance. Nepal does not have similar joint systems or overall regulatory frameworks, to the disadvantage of regional counterparts in institutional climate finance. This comparative disadvantage would have impeded the attraction of climate finance flows by Nepal into the international funds of financial sector intermediaries.

### ***Barriers and Challenges***

The discussion finds that there are numerous interdependent obstacles limiting the implementation of green banking in Nepal. The main constraints are regulatory gaps and ambiguity. There is ambiguity in the definition of green activities, no compulsory green lending rates, and very little regulation incentives aiming to make banks focus on climate finance. The absence of standardised green taxonomies that correspond to the international standards makes it difficult to define, classify and track green lending by banks, which reduces the development of products and the measurement

of performances. The regulatory focus on the conventional financial stability indicators without considering the financial risks associated with climate is an indicator that the issue of the environment are the second order issues.

The issue of technical capacity limitations influences green banking in every aspect, including risk assessment and the creation of products. Banks do not have specialised personnel who are experts in environmental science, climate financial instruments, and sustainability evaluation. This capacity mismatch is especially severe in smaller banks that do not have many resources to hire or train specialised staff. Banks may not easily get advisory support since the local knowledge on climate finance is not available as compared to markets where environmental or development finance institutions offer technical advice. The institution of higher learning in Nepal has not been focusing on climate finance or sustainable banking in education, which leads to a pipeline issue in future talent.

Lack of transparency and incomplete information will further limit the evaluation of environmental risks and the search of green investment opportunities. Banks state that they have a hard time getting credible environmental information about borrowers and projects, and as such, the process of risk assessment is subjective and unpredictable. The lack of sector specific information on climate vulnerability, like climate forecasts of specific regions or climate risk profile of specific industries, hinders systematic risk management. In the same manner, banks do not have complete knowledge on green investment opportunities pipeline in Nepal, as such, to create focused products or to plan their resources appropriately. Lack of standardisation of the environmental reporting by the business presents a challenge of data to the banks that are trying to determine the environmental performance of the potential borrower.

Perceived cost-benefit imbalance and the competitive pressures are considered to be market-based barriers. Banks consider environmental due diligence to be a time and cost-consuming process with no proportionate improvement of revenue, especially with small loans of small amounts of money that make transaction costs prohibitive. Banks are reluctant to charge environmental risks to lending rates or provide favorable rates to green projects, which may decrease margins, in a competitive banking environment where price (interest rates) is a major factor in customer decision making. Green banking innovation is low in market pull due to limited customer awareness and demand of green products. Financial markets its short-term orientation with quarterly outcomes dominating stock prices and management performance is incompatible with the long-term orientation of climate finance returns and environmental risk management.

Competing priorities and resistance to change are institutional and organisational barriers in the banks. Amid an array of demands, bank management and boards are under pressure on issues that touch upon financial inclusion, digital transformation, regulatory compliance, and profitability, and find it difficult to prioritise green banking. The lack of environmental knowledge within the top leadership role implies that climate finance does not have champions within its institutions, who can instigate a strategic commitment. The organisational cultures that are oriented to the traditional banking measures and the financial performance in the short term generate the opposition to the implementation of the environmental aspects, which do not necessarily affect the bottom lines. The

fact that there are no accountability mechanisms or performance incentives that rely on the same environmental outcomes supports the notion that green banking is not a necessity but an option.

### ***Opportunities and Enabling Factors.***

There have been a number of opportunities and enabling factors despite the many challenges that may accelerate the green banking adoption in Nepal. A business case of climate risk management in banking within Nepal is strong due to the vulnerability in climate. The growing rate and intensity of climate-related disasters on the ability of borrowers to pay their loans justify climate risk assessment as a sound banking procedure and not a fanciful environmental issue. Climate risks are directly converted into financial risks because the focal point of the bank lending is on climate sensitive areas like hydropower and agriculture which results in incentives to manage climate risks better with the increase in awareness.

Investment opportunities in the country especially through renewable energy, especially hydropower and solar energy potential are huge. Projects that NDCs establish through government targets on renewable energy development create a pipeline of projects that need finance. This new market can be seized by banks that are placed in a position to create climate-related financial products and expertise. In a similar manner, the promises of electric cars and green buildings in Nepal provide the opportunities to the development of innovative green lending products. Banks that develop specialised climate finance capabilities as first movers in these developmental segments may acquire competitive advantages.

Another opportunity is the international climate finance flows. International obligations on climate finance, such as the USD 100 billion per year goal on climate finance outlined in the Paris Agreement, are a potential source of funds that may pass through the Nepal banking sector. The multilateral development banks and climate funds are looking more and more at utilizing the finance of the private sector using financial intermediaries. International climate finance sources could be concessional financing of Nepali commercial banks that develop green banking potential, technical assistance, and risk-sharing mechanisms. The Asian Development Bank, World Bank and Green Climate Fund programmes on green banking are available in developing nations like Nepal that the banks of Nepal can use with proper preparation.

The green banking is enabled by technological advancements in the services in the financial sector. The high digitalisation of the banking sector of Nepal minimises cost of operational greening and opens the prospects of new green products. Financial services in climate adaptation to the rural population can be offered at reduced prices by mobile banking platforms. The innovations in fintech in the field of digital payments of carbon credits, renewable energy certificates supported by blockchain or satellite data to assess agricultural climate risks may jump over the traditional limitations. Fintech partnerships with banks are likely to be speeding up green finance innovation.

The increased environmental consciousness of the educated Nepal youth and urban middle class could slowly bring forth market demand of green products. Though the current awareness on this issue is low, the trends of sustainable consumption across the world and growing media focus on climate change are shaping the Nepali society. Green branding and products could be used by

banks that focus on the younger and more greener-conscious customers. The need to comply with environmental reporting standards is becoming an issue among corporate clients, who are having increasing demand on banking partners to facilitate their sustainability agenda by international buyers or investors. These demand-side changes are however slight but in the long-run may lead to enhanced business case of green banking.

## Conclusion

The analysis of the commercial banks of Nepal in this study shows that it is a sector that is still in the early phases of climate finance and green bank preparation. Although banks have undertaken some greening steps in operation and have also taken rhetorical responsibility to live environmentally sustainable, there are vast gaps in regulatory frameworks, institutional capacity, risk management systems and green product development. The results suggest that the commercial banks in Nepal are not sufficiently ready to be able to distribute the finance to climate mitigation and adaptation yet, although the country is highly susceptible to climatic conditions and the country has a strong national commitment towards national climate targets.

Although the regulatory environment sets minimum expectations with the help of the ESRMs, it does not have a complete framework, incentive systems, and accountability measures that can be used in producing a significant change in green banking. The institutions of governance in banks have failed to promote the value of environmental considerations to the strategic priorities, and resource allocation is insignificant. The most developed field, but still not enough, operational greening, is merely a step that does not ensure the main challenge of implementing climate considerations into lending and risk management. The lack of specialised green products in finance virtually and the primitive nature of the environmental risk assessment suggest that climate finance is an incidental part of the core activities of commercial banks.

The various related obstacles to progress include ambiguity in regulations, technical capacity limits, information asymmetry, perceived cost-benefit asymmetry, organisation opposition to change, etc. However, there are substantial prospects in the potential of renewable energy in Nepal, the increasing international climate finance flow, technology development and the new environmental consciousness. The realisation of these opportunities involves a concerted effort in regulatory reform, capacity building, product innovation, improvement of risk management, and engagement of stakeholders.

The way is a journey that needs leadership of various players. Nepal Rastra Bank will need to offer transparent regulatory frameworks, incentive schemes, and capacity aid to make green banking an identified priority and not an optional addition. Commercial banks need to go beyond operational measures of superficiality so that climate can be considered in governance, strategy, risk management and product development. Technical assistance, concessional finance and transfer of knowledge can expedite development by development partners. Finally, the transformation of Nepal into climate-resilient, low-carbon economy requires the financial sector that should be able

to evaluate climate risks, mobilize green investments, and other sustainable development, which is both a huge challenge and an absolute necessity of the Nepalese commercial banking industry.

### **Future Solutions: Recommendations.**

According to the analysis, there are a number of ways that would improve the preparedness of Nepal commercial banks to climate finance and green banking.

The basis is regulatory and policy reforms. The central bank ought to come up with holistic green banking policies that go beyond the present ESRM model to incorporate:

1. Green activities had clear definitions and taxonomies that were consistent with international standards;
2. These are obligatory green lending targets which rise with time;
3. Such preferences include risk weights on verified green loans;
4. Compulsory climate-related financial reporting according to TCFD principles;
5. Transparency reporting that makes it easy to monitor sector development.

The central bank must also develop green refinancing centres which will offer concessional financing to banks to lend greenly, developing direct financial incentive which is related to Bangladesh effective model.

Capacity-building programs need to be addressed at various levels systematically. The central bank in conjunction with developmental partners must develop a green banking training programme to be implemented on commercial bank employees that entails the basics of climate science, environmental risk assessment techniques, green financial instruments and global best practices. The Institute of Banking is capable of introduction of green banking modules in its training programmes. Commercial banks ought to invest in recruiting or training specialised environmental risk management expertise, which may be via alliances with environmental consultancy firms or universities. Exchange of knowledge could be achieved by industry associations with green banking working groups or communities of practice in which banks can exchange their experience and work as a collective approach to common problems.

The development and innovation of the products should be based on pragmatic green tools that are applicable in the Nepalese context. Banks might create standard green loan products in areas of priority which include:

- Residential and commercial rooftop solar systems and solar home systems;
- Financing of electric vehicles under special conditions;
- Building retrofits that are energy efficient;
- Agricultural methods and technologies resistant to climate change;

- Renewable energy projects of small scale to be used by the rural areas.

Alliances with equipment vendors or technology suppliers may help in lowering transaction costs and theft of information. The scale would be possible through developing standardised underwriting criteria and documentation of such products. Green bonds should also be considered by banks as a source of funds with pilot issues first before they consider expanding internationally with the aim of drawing in international climate funds.

The integration of climate risk management should be a systematic action of including climate and environmental factors in the risk management frameworks. Banks ought to begin with climate risk screening of the key lending sectors to detect concentrations of climate sensitive exposures. Creation of industry-specific climate risk profiles of major industries like hydropower, agriculture, tourism, and manufacturing would be of benefit in improving risk assessment abilities. Banks ought to create exclusion lists which do not allow them to fund activities which are evidently damaging like deforestation or those near protected areas. Although scenario analysis and stress testing are not complex in the beginning, they would assist banks in learning how climate risks would affect portfolios and make strategic decisions.

The stakeholders and creation of awareness should aim at different audiences. Banking organizations need to engage in customer education programs on available green products and the environmental advantages of sustainable decisions. Corporate sustainability reporting must shift away to non generic CSR reporting to substantive environmental performance reporting with recognised frameworks such as GRI. Banks are advised to participate in global networks like the United Nations Environment Programme Finance Initiative (UNEP FI) or regional sustainable banking networks to share the best practices as well as to demonstrate interest in the sustainability of the environment. The working relationships with NGOs, research organisations, and environmental organisations may help to increase the technical capacity and the credibility.

The global collaboration and sharing of knowledge can be a beneficial option in the development of green banking in Nepal. There should be an increase in the technical assistance programmes by development finance institutions in operation in Nepal including IFC, ADB, and World Bank in support of the commercial banks in their green banking capabilities. South-South partnership- especially, gaining experience with Bangladesh on green banking would offer some applicable models that would fit in the Nepal context. The regional organisations like the South Asian Association of Regional Cooperation (SAARC) may help to exchange knowledge and bring alignment in standards of green banking across countries. This should consider access to climate finance in the international climate through the mechanism of the Green Climate Fund and commercial banks should act as the implementing partners of climate projects.

## References

- Aizawa, M., & Yang, C. (2010). Green credit, green stimulus, green revolution? China's mobilization of banks for environmental cleanup. *The Journal of Environment & Development*, 19(2), 119-144. <https://doi.org/10.1177/1070496510368689>
- Aryal, J. P., Sapkota, T. B., Khurana, R., Khatri-Chhetri, A., Rahut, D. B., & Jat, M. L. (2020). Climate change and agriculture in South Asia: Adaptation options in smallholder production systems. *Environment, Development and Sustainability*, 22(6), 5045-5075. <https://doi.org/10.1007/s10668-019-00414-4>
- Bangladesh Bank. (2017). *Annual report 2016-2017*. Bangladesh Bank.
- Bangladesh Bank. (2020). *Sustainable finance policy for banks and financial institutions*. Bangladesh Bank.
- Bhardwaj, B. R., & Malhotra, A. (2013). Green banking strategies: Sustainability through corporate entrepreneurship. *Greener Journal of Business and Management Studies*, 3(4), 180-193.
- Bihari, S. C., & Pradhan, S. (2011). CSR and performance: The story of banks in India. *Journal of Transnational Management*, 16(1), 20-35. <https://doi.org/10.1080/15475778.2011.549807>
- Climate Bonds Initiative. (2022). *Green bonds global state of the market 2021*. Climate Bonds Initiative.
- Equator Principles Association. (2020). *The Equator Principles* (4th ed.). Equator Principles Association.
- Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Pitman Publishing.
- Gentle, P., & Maraseni, T. N. (2012). Climate change, poverty and livelihoods: Adaptation practices by rural mountain communities in Nepal. *Environmental Science & Policy*, 21, 24-34. <https://doi.org/10.1016/j.envsci.2012.03.007>
- Islam, M. S., & Das, P. C. (2013). Green banking practices in Bangladesh. *IOSR Journal of Business and Management*, 8(3), 39-44.
- Jeucken, M., & Bouma, J. J. (1999). The changing environment of banks. *Greener Management International*, 27, 20-35. <https://doi.org/10.9774/GLEAF.3062.1999.au.00003>
- Khan, H. Z., Bose, S., Mollik, A. T., & Harun, H. (2019). Green washing or green governance? Climate change and corporate environmental reporting in South Asia. *Journal of Business Ethics*. <https://doi.org/10.1007/s10551-019-04100-z>
- Khanal, A. R., & Devkota, N. (2020). Environmental and social risk management practices in Nepalese commercial banks. *Journal of Business and Social Sciences Research*, 5(1), 1-18.
- Masukujjaman, M., & Aktar, S. (2014). Green banking in Bangladesh: A commitment towards the global initiatives. *Journal of Business and Technology*, 8(1-2), 17-40.
- Mool, P. K., Wangda, D., Bajracharya, S. R., Kunzang, K., Gurung, D. R., & Joshi, S. P. (2011). *Glacial lakes and glacial lake outburst floods in Nepal*. International Centre for Integrated Mountain Development (ICIMOD).

- Nath, V., Nayak, N., & Goel, A. (2014). Green banking practices—A review. *International Journal of Research in Business Management*, 2(4), 45-62.
- Nepal Rastra Bank. (2018). *Environmental and social risk management guidelines*. Nepal Rastra Bank.
- Nepal Rastra Bank. (2024). *Banking and financial statistics*. Nepal Rastra Bank.
- Pandey, S. (2017). Green banking in Nepal: Evaluating the impact on banking performance. *Journal of Advanced Academic Research*, 4(2), 33-45.
- Paudel, G. P., Gartaula, H. N., & Rahut, D. B. (2014). Credit constraints and rural financial market in Nepal. *Journal of South Asian Development*, 9(3), 295-326. <https://doi.org/10.1177/0973174114549101>
- Reserve Bank of India. (2015). *Master circular: Priority sector lending*. Reserve Bank of India.
- Scholtens, B. (2009). Corporate social responsibility in the international banking industry. *Journal of Business Ethics*, 86(2), 159-175. <https://doi.org/10.1007/s10551-008-9841-x>
- Sharma, R. H., Awal, R., & Halder, J. (2016). Impact of climate change on the hydro-energy potential in Nepal. *Journal of the Institute of Engineering*, 12(1), 75-87. <https://doi.org/10.3126/jie.v12i1.16725>
- Shrestha, R. (2012). An assessment of the adoption of green banking by Nepalese banks. *The Journal of Nepalese Business Studies*, 7(1), 51-62. <https://doi.org/10.3126/jnbs.v7i1.7060>
- Soundarrajan, P., & Vivek, N. (2016). Green finance for sustainable green economic growth in India. *Agricultural Economics*, 62(1), 35-44. <https://doi.org/10.17221/199/2015-AGRICECON>
- State Bank of Pakistan. (2017). *Green banking guidelines*. State Bank of Pakistan.
- Task Force on Climate-related Financial Disclosures [TCFD]. (2017). *Recommendations of the Task Force on Climate-related Financial Disclosures*. Financial Stability Board.
- Thapa Magar, K. (2015). Corporate social responsibility practices of commercial banks in Nepal. *The Journal of Nepalese Business Studies*, 9(1), 33-47. <https://doi.org/10.3126/jnbs.v9i1.14594>
- United Nations Framework Convention on Climate Change [UNFCCC]. (2023). *Climate finance*. <https://unfccc.int/topics/climate-finance/the-big-picture/climate-finance-in-the-negotiations>
- Volz, U. (2018). Fostering green finance for sustainable development in Asia. *ADB Working Paper Series No. 814*. Asian Development Bank Institute.
- Weber, O. (2005). Sustainability benchmarking of European banks and financial service organizations. *Corporate Social Responsibility and Environmental Management*, 12(2), 73-87. <https://doi.org/10.1002/csr.81>
- Weber, O., Scholz, R. W., & Michalik, G. (2010). Incorporating sustainability criteria into credit risk management. *Business Strategy and the Environment*, 19(1), 39-50. <https://doi.org/10.1002/bse.636>