ASSESSING THE IMPACT OF GREEN FINANCE ON SUSTAINABLE DEVELOPMENT AMONG NEPALESE BANKS: CHALLENGES AND OPPORTUNITIES

A Dissertation submitted to the Office of the Dean, Faculty of Management in partial fulfillment of the requirement for the Master's Degree

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CERTIFICATION OF AUTHORSHIP

I hereby corroborate that I have researched and submitted the final draft of the dissertation entitled **"Assessing the Impact of Green Finance on Sustainable Development among Nepalese Banks: Challenges and Opportunities"**. The work of this dissertation has not been submitted previously for the purpose of conferral of any degrees nor has it been proposed and presented as part of requirements for any other academic purposes. The assistance and cooperation that I have received during this research work have been acknowledged. In addition, I declare that all information sources and literature used are cited in the reference section of the dissertation.

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REPORT OF RESEARCH COMMITTEE

Ms. Swikriti Acharya has defended research proposal entitled **"Assessing the Impact of Green Finance on Sustainable Development among Nepalese Banks: Challenges and Opportunities"** successfully. The research committee has registered the dissertation for further progress. It is recommended to carry out the work as per suggestion and guidelines of supervisor Keshav Chand and Dr. Dipak Mahat submit the thesis for evaluation and viva-voce examination.

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APPROVAL SHEET

We, the undersigned, have examined the thesis entitled **"Assessing the Impact of Green Finance on Sustainable Development among Nepalese Banks: Challenges and Opportunities "** by Swikriti Acharya a candidate for the degree of Master of Business Studies (MBS Semester) and conducted the Viva voce examination of the candidate. We hereby certify that the thesis is worthy of acceptance.

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ABBREVIATIONS

BLB	:	Branchless Banking
CDM	:	Clean Development Mechanism
CSR	:	Corporate Social Responsibility
DCFD	:	Disclosures of Climate-related Financial Disclosures
DFIs	:	Development Finance Institutions
EIAs	:	Environmental Impact Assessments
ENS	:	Environmental and Social
ESRR	:	Environmental and Social Risks Ratings
EV	:	Electric Vehicle
GHG	:	Greenhouse Gas
ICMA	:	International Capital Market Association
IEA	:	International Energy Agency
IEE	:	Initial Environment Examination
IFC	:	International Finance Corporation
IFRS	:	International Financial Reporting Standards
LED	:	Light Emitting Diode
MOFA	:	Ministry of Foreign Affairs
MOF	:	Ministry of Finance
MW	:	Megawatts
NBI	:	National Banking Institute
NDC	:	Nationally Determined Contributions
NDCs	:	Nationally Determined Contributions
NIFRA	:	Nepal Infrastructure Bank Limited
NLP	:	Natural Language Processing
NRB	:	Nepal Rastra Bank
PEVC	:	Private Equity and Venture Capital
ROI	:	Return on Investment
UNEPFI	:	United Nations Environment Programme Finance Initiative

ABSTRACT

The thesis titled "Assessing the Impact of Green Finance on Sustainable Development Among Nepalese Banks: Challenges and Opportunities" explores how green finance initiatives influence sustainable development in Nepal. Green finance, which supports environmentally sustainable projects, is increasingly recognized as a key driver of sustainable growth globally and in Nepal, where banks are pivotal in promoting these initiatives. This study adopts a qualitative research design, focusing on banks in major urban centers like Kathmandu, Lalitpur, and Pokhara, where green finance practices are most prominent.

The research reveals that green finance initiatives, such as electric vehicle (EV) loans, green home loans, and hydropower project financing, have significantly contributed to reducing carbon emissions and promoting energy efficiency. EV loans have particularly supported the adoption of sustainable transportation, while green home loans have encouraged energy-efficient construction. Hydropower financing, although a critical component of Nepal's renewable energy strategy, faces regulatory and environmental challenges. The study also highlights the role of green finance in supporting climate-smart agriculture and promoting financial inclusion by extending loans to Micro, Small, and Medium Enterprises (MSMEs) for sustainable practices.

However, several challenges hinder the widespread adoption of green finance in Nepal. These include limited financial and technological resources, regulatory complexities, and a lack of awareness among key stakeholders. Despite these challenges, the study identifies numerous opportunities, such as the development of green bonds and sustainable loans, and the alignment of financial products with national and global sustainability goals.

Overall, the findings suggest that green finance has immense potential to drive sustainable development in Nepal. With improved regulatory frameworks, increased stakeholder awareness, and targeted financial products, Nepalese banks can play a significant role in advancing the country's environmental and economic sustainability goals.

Keywords: *Green finance, sustainable development, Nepalese banks, renewable energy, financial inclusion.*

CHAPTER I
INTRODUCTION

1.1 Background of the Study

Green finance has emerged as a critical tool for promoting sustainable development within the banking sector. By integrating environmental, social, and governance (ESG) criteria into financial decisions, banks can support projects that contribute to a sustainable future. Green finance encompasses a variety of financial services, including green bonds, green loans, and green investment funds, all designed to support environmentally sustainable projects (Scholtens, 2009). This approach not only helps mitigate environmental risks but also opens new opportunities for sustainable growth.

Green finance aims to mobilize private and public sector investment towards initiatives that have positive environmental impacts. These initiatives can range from renewable energy projects and energy efficiency improvements to sustainable agriculture and conservation efforts. By channeling funds into these areas, green finance helps address some of the most pressing environmental challenges of our time, such as climate change, biodiversity loss, and resource depletion.

In Nepal, green finance is still in its nascent stages, with banks beginning to adopt and implement green finance practices. The country's financial institutions are gradually recognizing the importance of green finance in addressing environmental challenges and supporting sustainable development goals (Adhikari, 2021). However, the integration of green finance into mainstream banking practices is still limited, necessitating a comprehensive understanding of its current state and potential growth.

Nepal's rich natural environment includes diverse ecosystems ranging from the high Himalayas to the lowland Terai, providing critical habitats for numerous species and supporting the livelihoods of millions of people. Despite this natural wealth, Nepal faces significant environmental challenges such as deforestation, water pollution, and the impacts of climate change. These challenges threaten the country's biodiversity, water resources, and agricultural productivity, highlighting the urgent need for sustainable financial practices that can support environmental conservation and promote economic resilience (Nepal Rastra Bank, 2020).

As global attention on climate change and sustainable development intensifies, there is a growing recognition that financial institutions must play a pivotal role in fostering a green economy. Financial institutions, including banks, are uniquely positioned to influence the flow of capital and drive investments toward sustainable projects. By integrating ESG criteria into their lending and investment decisions, banks can help ensure that financial flows support sustainable development and environmental protection.

Green finance in Nepal involves not only providing capital for environmentally friendly projects but also developing financial products that incentivize sustainable practices. For instance, banks can offer lower interest rates for loans aimed at renewable energy projects or provide green bonds to fund large-scale environmental initiatives. Green bonds are debt instruments specifically earmarked to raise money for climate and environmental projects. They provide investors with an opportunity to support sustainable development while potentially earning a return on their investment. Similarly, green loans can be tailored to finance projects that improve energy efficiency, reduce carbon emissions, or enhance water management.

The development of such financial instruments can significantly contribute to the country's efforts to achieve sustainable development goals. Nepal has committed to several international environmental agreements, including the Paris Agreement, which aims to limit global warming to below 2 degrees Celsius. To meet these commitments, substantial investments are needed in renewable energy, sustainable agriculture, and climate resilience. Green finance can help mobilize the necessary resources by attracting both domestic and international investors interested in sustainable development.

Despite the promising potential of green finance, several challenges hinder its widespread adoption in Nepal. These challenges include a lack of awareness and understanding of green finance among financial institutions, limited policy support, and insufficient investor interest in green financial products (Dhungana, 2020). Many banks and financial institutions in Nepal are still unfamiliar with the concept of green finance and the benefits it can offer. This lack of awareness can result in a hesitancy to develop and offer green financial products, thereby limiting the availability of funding for sustainable projects. Additionally, the absence of a robust regulatory framework that mandates and incentivizes green finance practices further impedes its growth. While some policies and guidelines exist, they are often not comprehensive enough to drive significant changes in the financial sector. Stronger regulatory measures are needed to encourage banks to integrate ESG criteria into their operations and to provide clear guidelines on the development and implementation of green financial products.

Limited policy support also affects the attractiveness of green finance to investors. Without clear government policies and incentives, such as tax breaks or subsidies for green investments, investors may be reluctant to commit their funds to green projects. This reluctance can be exacerbated by the perceived higher risks and lower returns associated with green investments, particularly in emerging markets like Nepal.

Insufficient investor interest in green financial products is another major challenge. Many investors are still focused on traditional financial returns and may not fully appreciate the long-term benefits of sustainable investments. To attract more investors, there is a need for greater education and awareness-raising about the benefits of green finance. This includes highlighting the potential for green investments to provide not only environmental benefits but also competitive financial returns.

Green finance presents a promising opportunity to support sustainable development in Nepal, its adoption faces several challenges. Addressing these challenges requires concerted efforts from financial institutions, policymakers, and investors. By enhancing awareness, strengthening regulatory frameworks, and providing appropriate incentives, Nepal can unlock the full potential of green finance to promote environmental conservation and economic resilience. This study aims to contribute to this effort by providing a comprehensive understanding of the current state of green finance in Nepalese banks and identifying the opportunities and challenges they face in integrating sustainable financial practices.

1.2 Problem Statement

The emergence of green finance as a tool for promoting sustainable development within the banking sector is gaining recognition worldwide. Green finance, which integrates environmental, social, and governance (ESG) criteria into financial decisions, has the potential to support projects that contribute to a sustainable future. This includes a variety of financial services such as green bonds, green loans, and green investment funds, all designed to support environmentally sustainable projects (Scholtens, 2009).

In Nepal, green finance is still in its nascent stages, with banks beginning to adopt and implement green finance practices. Despite the growing awareness of the importance of green finance in addressing environmental challenges and supporting sustainable development goals (Adhikari, 2021), the integration of green finance into mainstream banking practices is limited. This limited adoption is problematic for a country like Nepal, which faces significant environmental challenges such as deforestation, water pollution, and climate change impacts. These environmental issues underscore the need for sustainable financial practices that can support environmental conservation and promote economic resilience (Nepal Rastra Bank, 2020).

Green finance in Nepal involves not only providing capital for environmentally friendly projects but also developing financial products that incentivize sustainable practices. For example, banks can offer lower interest rates for loans aimed at renewable energy projects or provide green bonds to fund large-scale environmental initiatives. Such financial instruments can significantly contribute to the country's efforts to achieve sustainable development goals.

Despite the promising potential of green finance, several challenges hinder its widespread adoption in Nepal. These challenges include a lack of awareness and understanding of green finance among financial institutions, limited policy support, and insufficient investor interest in green financial products (Dhungana, 2020). Additionally, the absence of a robust regulatory framework that mandates and incentivizes green finance practices further impedes its growth.

Given these challenges, it is crucial to conduct a comprehensive study to assess the current state and potential growth of green finance in Nepalese banks. This study aims to provide valuable insights into the practice of green finance within Nepalese banks by evaluating the impact of green finance initiatives, policy support, investor preferences, technological innovation, and stakeholder collaboration. Understanding these factors will help identify the opportunities and challenges faced by banks in promoting sustainable development through green finance.

The central problem that this study addresses is the limited adoption and integration of green finance practices in Nepalese banks, despite the country's significant environmental challenges and the potential benefits of green finance for sustainable development. By investigating the current practices, impacts, challenges, and opportunities of green finance in Nepal, this study seeks to provide a comprehensive understanding of how green finance can be effectively promoted and implemented in the Nepalese banking sector. To address this problem, the following research questions have been formulated:

1. What are the current practices of green finance in Nepalese banks?
2. What are the challenges faced by banks in implementing green finance for sustainable development among Nepalese banks?
3. What are the opportunities of implementing green finance for sustainable development?

1.3 Objectives of the Study

The general objective of this research is to assess the practice of green finance initiatives for sustainable development in Nepalese banks, exploring the challenges and to analyze the opportunities involved:

1. To assess the practice of green finance for sustainable development of Nepalese banks.
2. To explore the challenges in implementing green finance for sustainable development of Nepalese banks.
3. To analyze the opportunities of green finance for sustainable development of Nepalese banks.

1.4 Hypothesis of the study

H_{A1}: Green Finance Initiatives have a significant impact on the sustainable development of the bank

H_{A2}: Policy Support and Regulatory Environment has a significant impact on the sustainable development of the bank

H_{A3}: Investor Preference has a significant impact on the sustainable development of the bank

H_{A4}: Technology Innovation has a significant impact on the sustainable development of the bank

H_{A5}: Stakeholder Collaboration has a significant impact on the sustainable development of the bank

1.5 Rationale of the Study

This research aims to provide a comprehensive understanding of the practice of green finance within Nepalese banks. By evaluating the impact of green finance initiatives, policy support, investor preferences, technological innovation, and stakeholder collaboration, this study will highlight the opportunities and challenges faced by banks in promoting sustainable development.

The significance of this research lies in its potential to inform policymakers, financial institutions, and other stakeholders about the current state of green finance in Nepal and the steps needed to enhance its adoption. By identifying the barriers and opportunities associated with green finance, this study can contribute to the development of strategies that promote sustainable financial practices in the banking sector.

Furthermore, this research can provide valuable insights into how green finance can support Nepal's efforts to achieve its sustainable development goals. By examining successful case studies and best practices, the study can offer practical recommendations for banks to enhance their green finance initiatives. This can lead to a more robust and sustainable financial sector that actively contributes to environmental conservation and economic growth.

1.6 Limitations of the Study

This study faced several limitations that impact its scope and findings. These challenges stem from data constraints, methodological approaches, and the unique socio-economic context of Nepal. While the research provides valuable insights, certain factors could not be fully addressed, which underscores the complexity of exploring green finance in this context. The key limitations are as follows:

1. Data availability and reliability present significant challenges, as comprehensive and accurate information on green finance initiatives is often limited, leading to potential gaps and inconsistencies in the analysis.
2. The geographic focus on Nepal may restrict the generalizability of the findings to other regions with different socio-economic and environmental contexts.
3. Methodological constraints, such as potential sampling bias and a focus on quantitative analysis, may overlook important qualitative insights.
4. The dynamic regulatory and policy environment introduces uncertainty, with changes potentially impacting the relevance of the findings.
5. The varying pace of technological adoption and fintech integration, stakeholder engagement complexities, and economic and market factors contribute to this uncertainty.
6. Cultural and social factors, including attitudes towards sustainability and the inclusion of marginalized groups, play a significant role but may not be fully captured.

These limitations underscore the complexity of researching green finance in this context and highlight the need for careful consideration and future research to address these challenges for more robust findings.

CHAPTER II
LITERATURE REVIEW

In recent years, the significance of sustainable finance has grown substantially as the global community faces mounting environmental and social challenges. Sustainable finance, and more specifically green finance, aims to align financial practices with environmental sustainability and social responsibility. This paradigm shift in finance is driven by the increasing awareness of climate change, environmental degradation, and the need for a sustainable and inclusive economic model. In this context, financial institutions, policymakers, and investors are increasingly focusing on integrating environmental, social, and governance (ESG) criteria into their financial strategies to promote long-term sustainability.

This chapter provides a comprehensive review of the theoretical foundations and empirical studies that underpin the concept of green finance. By examining the evolution of sustainable finance principles, such as ESG criteria, stakeholder theory, the triple bottom line approach, and behavioral theories like the theory of planned behavior, this review sets the stage for understanding how green finance is applied in practice. It also explores how these concepts have been incorporated into financial decision-making processes to achieve broader environmental and social goals. The subsequent sections will delve into specific theories and frameworks that have shaped the development and adoption of green finance, offering insights into its relevance in promoting sustainable economic growth.

2.1 Theoretical Review

The purpose of the review of literature is to assess how much research work has already been done, so far in the area specified by this researcher. This can help one to have a glimpse of the area traversed by the new researcher. Further, such an attempt helps to identify the research gap and lead the study to fill in such a gap. This research is grounded in the principles of sustainable finance and environmental economics. It draws on theories related to ESG criteria, stakeholder theory, the triple bottom line approach, the theory of planned behavior, and the diffusion of innovations theory.

2.1.1 ESG Criteria

Environmental, social, and governance (ESG) criteria are a set of standards used by investors to evaluate the sustainability and ethical impact of investments. ESG criteria encompass a wide range of factors, including environmental stewardship, social responsibility, and corporate governance practices (Friede et al., 2015). In the context of green finance, ESG criteria play a crucial role in guiding investment decisions and ensuring that financial products and services contribute to sustainable development.

Environmental criteria examine how a company performs as a steward of nature, focusing on areas such as carbon emissions, energy use, waste management, and natural resource conservation. Social criteria look at how a company manages relationships with employees, suppliers, customers, and the communities where it operates. This includes issues like labor practices, human rights, and community engagement. Governance criteria assess the quality of a company’s leadership, the effectiveness of its board, executive pay, audits, internal controls, and shareholder rights. Together, these criteria help investors identify companies that are not only financially sound but also operate responsibly and sustainably, reducing risk and fostering long-term value creation.

2.1.2 Stakeholder Theory

Stakeholder theory, developed by Freeman (1984), posits that organizations should consider the interests of all stakeholders, including shareholders, employees, customers, suppliers, and the broader community, in their decision-making processes. This theory challenges the traditional view that a company's primary responsibility is to maximize shareholder value, instead advocating for a more inclusive approach that recognizes the interdependence between a business and its diverse stakeholders.

In the context of green finance, stakeholder theory emphasizes the importance of engaging with various stakeholders, such as government agencies, non-governmental organizations (NGOs), and the private sector, to promote sustainable financial practices and achieve common goals. By involving these stakeholders in the decision-making process, organizations can better understand the environmental and social impacts of their financial activities and develop strategies that contribute to sustainable development.
This collaborative approach helps ensure that financial products and services align with broader societal goals, such as environmental protection and social equity. Engaging

stakeholders can also enhance transparency, build trust, and foster innovation, as diverse perspectives contribute to more comprehensive and effective solutions. By adopting stakeholder theory, financial institutions can create value not only for their shareholders but also for society as a whole, ultimately supporting long-term sustainability.

2.1.3 Triple Bottom Line Approach

The triple bottom line (TBL) approach, introduced by Elkington (1997), expands the traditional focus on financial performance to include environmental and social performance. This holistic framework advocates for a balanced consideration of economic, environmental, and social outcomes in business and investment decisions, emphasizing that long-term success hinges not just on profit, but also on people and the planet.

In the context of green finance, the TBL approach underscores the need to balance financial returns with positive environmental and social impacts. This means that financial institutions should evaluate investments not solely on their potential for economic gain but also on their capacity to foster environmental sustainability and social well-being. For example, a TBL-focused investment might support renewable energy projects that reduce carbon emissions (environmental), create jobs in local communities (social), and generate stable financial returns (economic).

The TBL approach promotes a holistic approach to sustainable development by encouraging businesses to integrate ESG criteria into their decision-making processes. This integration helps ensure that financial products and services contribute to broader sustainability goals, such as mitigating climate change, promoting social equity, and enhancing economic resilience. By adopting the TBL approach, financial institutions can drive innovation, improve risk management, and build long-term value that benefits shareholders, stakeholders, and society as a whole. This comprehensive perspective is essential for fostering a sustainable and inclusive economy in the face of global environmental and social challenges (Elkington, 1997).

2.1.4 Theory of Planned Behavior

The Theory of Planned Behavior (TPB), developed by Ajzen (1991), is another relevant theoretical framework for understanding the adoption of green finance practices. TPB posits that an individual's behavior is influenced by their attitudes, subjective norms, and perceived behavioral control. This theory helps explain the complex interplay of psychological factors that drive individuals and organizations to engage in certain behaviors, such as adopting green finance practices.

In the context of green finance, TPB can help elucidate how financial institutions' attitudes towards sustainability, societal norms, and perceived control over green finance practices influence their adoption of green finance initiatives. Attitudes refer to the positive or negative evaluations that individuals or organizations hold about engaging in green finance. If financial institutions perceive green finance as beneficial for their reputation, compliance with regulations, or long-term profitability, they are more likely to adopt these practices.

Subjective norms involve the perceived social pressures to perform or not perform a particular behavior. In green finance, these norms could stem from various sources, including regulatory bodies, investors, customers, and industry peers. For example, if there is a strong societal expectation for banks to support sustainable projects, this social pressure can motivate financial institutions to align their practices with these expectations.

Perceived behavioral control refers to the ease or difficulty of performing the behavior, which is influenced by past experiences and anticipated obstacles. In green finance, this could involve the availability of resources, expertise, and infrastructure needed to develop and implement green financial products. If financial institutions believe they have the necessary capabilities and support to engage in green finance, they are more likely to do so.

2.1.5 Diffusion of Innovations Theory

The Diffusion of Innovations Theory, proposed by Rogers (2003), explains how new ideas and technologies spread within a society or organization. According to this theory, the adoption of innovations follows a predictable pattern, influenced by several key factors: relative advantage, compatibility, complexity, trialability, and observability. This framework provides valuable insights into how innovations like green finance practices can be effectively introduced and adopted in different contexts, including within Nepalese banks.

Relative advantage refers to the degree to which an innovation is perceived as being better than the idea it supersedes. In the context of green finance, financial products and services that demonstrate clear benefits, such as improved sustainability, enhanced corporate reputation, or regulatory compliance, are more likely to be adopted by banks. If green finance options can offer competitive returns or additional value compared to traditional financial products, their adoption is facilitated.

Compatibility is the extent to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters. For green finance in Nepalese banks, compatibility would involve aligning green financial products with the banks' existing goals, cultural values, and operational procedures. Innovations that fit well with the current business models and practices of banks are more readily accepted.
Complexity pertains to how difficult the innovation is to understand and use. Green finance products that are straightforward and easy to implement are more likely to be adopted. Conversely, if green finance initiatives are perceived as complex or requiring significant changes to existing systems and processes, their adoption might be slower.

Trialability refers to the extent to which an innovation can be experimented with on a limited basis. For green finance, banks might be more willing to adopt new products if they can initially implement them on a small scale to assess their viability and impact. This reduces the perceived risk associated with the innovation and allows for adjustments before full-scale adoption.

Observability is the degree to which the results of an innovation are visible to others. Successful case studies and visible benefits of green finance practices can significantly influence other banks to adopt similar practices. When the positive outcomes of green finance initiatives, such as enhanced sustainability performance and financial gains, are clearly observed, they provide a persuasive demonstration effect.

In the context of Nepalese banks, understanding these factors is crucial for promoting the adoption of green finance. By addressing the perceived advantages, ensuring compatibility with existing practices, simplifying implementation, allowing for pilot testing, and making the benefits visible, stakeholders can facilitate the diffusion of green finance innovations. This approach can help overcome barriers and accelerate the integration of sustainable financial practices in the banking sector (Rogers, 2003).

2.2 Empirical Review

2.2.1 Historical Overview of Green Finance in Nepal

Green finance in Nepal has evolved from a niche concept to a more mainstream practice over the past few decades. Initially, environmental sustainability was not a primary focus for financial institutions in Nepal, but growing awareness of climate change and environmental degradation has driven the shift towards integrating green finance into the banking sector. This transformation has been marked by key milestones and developments that have progressively shaped the landscape of green finance in the country.

One of the earliest milestones was the introduction of the Environmental Protection Act in 1997, which laid the groundwork for incorporating environmental considerations into various sectors, including finance. Although this act primarily focused on environmental protection and management, it indirectly highlighted the need for financial mechanisms to support sustainable practices (Government of Nepal, 1997).

The 2000s saw a gradual increase in the awareness and implementation of green finance initiatives, driven by both domestic efforts and international influences. The establishment of the Nepal Clean Development Mechanism (CDM) in 2005, under the Kyoto Protocol, was significant as it encouraged investment in projects that reduced greenhouse gas emissions. This mechanism facilitated the flow of funds into renewable energy projects, such as hydropower, which is abundant in Nepal (United Nations Framework Convention on Climate Change, 2005).

2.2.2 Evolution of Green Finance Practices

The evolution of green finance practices in Nepal has been characterized by the introduction of various financial instruments designed to support sustainable development. Initially, green finance practices were limited to small-scale, project-specific investments, but over time, they have expanded to encompass a broader range of financial products and services.

One notable development was the introduction of green bonds. In 2018, the Nepal Electricity Authority (NEA) issued its first green bond to finance the construction of hydropower projects. This bond issuance marked a significant step in mobilizing private sector investment for sustainable energy projects and demonstrated the potential of green bonds as a tool for financing large-scale renewable energy initiatives (Nepal Electricity Authority, 2018).

Green loans have also become an important aspect of green finance in Nepal. Commercial banks have started offering loans at preferential rates for projects that contribute to environmental sustainability. For example, banks provide green loans for the installation of solar panels, energy-efficient appliances, and sustainable agricultural practices. These loans not only support environmental goals but also offer financial benefits to borrowers through reduced interest rates (Nepal Rastra Bank, 2020).

Another significant development has been the implementation of policies and regulations by the Nepal Rastra Bank (NRB) to promote green finance. In 2018, the NRB issued a directive requiring commercial banks to allocate a certain percentage of their lending portfolio to green projects. This policy aims to increase the flow of capital into environmentally sustainable initiatives and ensure that financial institutions actively contribute to the country's sustainable development goals (Nepal Rastra Bank, 2018).

The establishment of the Nepal Infrastructure Bank (NIFRA) in 2019 further accelerated the growth of green finance in Nepal. NIFRA focuses on financing large-scale infrastructure projects, including those related to renewable energy, water management, and sustainable transportation. By providing long-term financing for these projects, NIFRA plays a crucial role in supporting the development of green infrastructure in the country (Nepal Infrastructure Bank, 2019).

Several significant historical events and policy changes have influenced the adoption and implementation of green finance practices in Nepal. These events have helped shape the regulatory environment and encouraged the financial sector to embrace sustainability.

One of the most impactful events was the signing of the Paris Agreement in 2015. Nepal, as a signatory, committed to reducing its greenhouse gas emissions and enhancing its climate resilience. This international commitment spurred the government and financial institutions to prioritize green finance as a means to achieve the country's climate goals. Following the Paris Agreement, the government of Nepal developed the Nationally Determined Contributions (NDCs), which outline specific targets and strategies for reducing emissions and promoting sustainable development (Government of Nepal, 2016).

In 2018, the NRB issued the Green Finance Guidelines, which provide a framework for financial institutions to integrate environmental considerations into their operations. These guidelines encourage banks to develop green financial products, assess environmental risks, and report on their green finance activities. The guidelines also promote capacity-building and awareness-raising initiatives to enhance the understanding and implementation of green finance among financial institutions (Nepal Rastra Bank, 2018).

The COVID-19 pandemic in 2020 had a profound impact on the global economy, including Nepal. While the pandemic posed challenges, it also highlighted the importance of building resilient and sustainable financial systems. In response, the NRB introduced measures to support green finance as part of the economic recovery efforts. These measures included incentives for banks to invest in green projects and the incorporation of green finance into the broader economic stimulus packages (Nepal Rastra Bank, 2020). In 2021, the Ministry of Finance launched the Green Recovery Initiative, aimed at promoting sustainable recovery from the COVID-19 pandemic. This initiative emphasizes the role of green finance in building a resilient economy and includes measures to attract private sector investment in green projects. The Green Recovery Initiative has further strengthened the commitment of the government and financial institutions to integrate sustainability into their financial practices (Ministry of Finance, 2021).

The development of the Nepal Green Finance Roadmap in 2022 was another significant milestone. This roadmap outlines a comprehensive strategy for scaling up green finance in Nepal, identifying key sectors for investment, and setting targets for the mobilization of green finance. The roadmap provides a clear direction for financial institutions, policymakers, and investors, and is expected to drive the growth of green finance in the coming years (Nepal Rastra Bank, 2022).

Green finance originated as a response to the growing awareness of environmental issues and the need for sustainable economic development. The concept began gaining traction in the late 20th century, as the detrimental effects of industrialization and unchecked economic growth on the environment became increasingly evident. The term "green finance" encompasses various financial instruments and investments that support environmental sustainability, including green bonds, green loans, and green investment funds (Zhou et al., 2019).

The origins of green finance can be traced back to the development of socially responsible investing (SRI) in the 1960s and 1970s, which aimed to align investment practices with social and ethical values. As environmental concerns grew, the focus expanded to include environmental sustainability, giving rise to the modern concept of green finance (Euromoney, 2019). The launch of the United Nations Environment Programme Finance Initiative (UNEP FI) in 1992 marked a significant milestone in promoting sustainable finance globally. This initiative brought together financial institutions from around the world to integrate sustainability into their operations and decision-making processes (UNEP FI, 2019).

Over the past few decades, green finance has evolved into a mainstream component of the global financial system. Governments, financial institutions, and international organizations have developed various frameworks and guidelines to support the growth of green finance. For example, the Green Bond Principles (GBP), introduced by the International Capital Market Association (ICMA) in 2014, provide voluntary guidelines for the issuance of green bonds, ensuring transparency and integrity in the green bond market (ICMA, 2020).

In Nepal, green finance is gradually gaining traction. The country, known for its rich biodiversity and natural resources, faces significant environmental challenges, including deforestation, soil erosion, and the impacts of climate change. Addressing these challenges requires substantial financial resources and innovative financial solutions, making green finance an essential tool for sustainable development.

Nepal's banking sector has begun to recognize the importance of green finance and is taking steps to incorporate environmentally sustainable practices into its operations. Several banks have started offering green loans and green bonds, aimed at financing projects that promote environmental sustainability. These financial products are designed to support initiatives such as renewable energy projects, energy efficiency improvements, and sustainable agriculture (Nepal Rastra Bank, 2020).

The Nepal Rastra Bank (NRB), the country's central bank, has played a crucial role in promoting green finance. In 2018, the NRB issued a directive encouraging commercial banks to allocate a portion of their lending portfolio to green projects. This directive aims to mobilize private sector investment in sustainable development and enhance the capacity of banks to finance environmentally friendly projects (NRB, 2018).

Moreover, the NRB has been actively involved in raising awareness about green finance and building the capacity of financial institutions to implement green finance practices. It has collaborated with international organizations, such as the International Finance Corporation (IFC) and the Asian Development Bank (ADB), to provide training and technical assistance to banks on green finance (IFC, 2019; ADB, 2020).

Despite these positive developments, the adoption of green finance in Nepal remains in its early stages. Several challenges hinder its widespread implementation, including a lack of awareness and understanding of green finance among financial institutions, limited availability of green financial products, and insufficient policy support. Addressing these challenges is crucial for advancing green finance and promoting sustainable development in Nepal (Adhikari, 2021).

2.2.3 The Role of Green Finance in Sustainable Development

Green finance plays a pivotal role in sustainable development by funding projects that promote renewable energy, energy efficiency, sustainable agriculture, and other environmentally friendly initiatives. By providing the necessary financial resources, green finance enables the transition to a low-carbon, resource-efficient, and socially inclusive economy.

One of the primary contributions of green finance to sustainable development is its support for renewable energy projects. Investing in renewable energy, such as solar, wind, and hydropower, reduces reliance on fossil fuels, lowers greenhouse gas emissions, and mitigates climate change impacts (IEA, 2020). In Nepal, where hydropower has significant potential, green finance can play a crucial role in harnessing this renewable energy source and contributing to the country's energy security and sustainable development goals (ADB, 2020).

Green finance also promotes energy efficiency by funding projects that improve energy use in buildings, industries, and transportation. Enhancing energy efficiency reduces energy consumption, lowers costs, and decreases environmental impacts. For example, green loans can finance the retrofitting of buildings with energy-efficient technologies, leading to reduced energy consumption and greenhouse gas emissions (World Bank, 2018).

Sustainable agriculture is another area where green finance makes a significant impact. By financing projects that promote sustainable farming practices, such as organic farming, agroforestry, and water conservation, green finance supports food security, biodiversity conservation, and rural livelihoods. In Nepal, where agriculture is a major economic sector, green finance can help farmers adopt sustainable practices, enhance productivity, and improve resilience to climate change (FAO, 2019).

Moreover, green finance contributes to sustainable development by fostering social inclusion and reducing inequalities. It supports projects that provide access to clean energy, clean water, and sanitation services to marginalized communities, improving their quality of life and promoting social equity (UNDP, 2019).

Several studies have explored the relationship between green finance and sustainable development, highlighting the positive impact of green finance on economic growth, environmental protection, and social well-being. These studies provide valuable insights into the potential of green finance to drive sustainable development and the factors that influence its effectiveness.

For instance, a study by Zhou et al. (2019) examined the impact of green finance on economic growth and environmental sustainability in China. The study found that green finance significantly contributes to economic growth by mobilizing investments in green projects and creating new business opportunities. It also enhances environmental sustainability by reducing greenhouse gas emissions and promoting the efficient use of resources.

Similarly, a study by Wang and Zhi (2016) analyzed the role of green finance in supporting renewable energy development in China. The study highlighted that green finance provides essential funding for renewable energy projects, enabling the transition to a low-carbon economy and contributing to climate change mitigation. The authors emphasized the importance of a supportive policy environment and strong regulatory frameworks in promoting green finance.

In the context of developing countries, a study by Das and Bandyopadhyay (2019) explored the potential of green finance to support sustainable development in India. The study found that green finance plays a crucial role in financing renewable energy projects, improving energy efficiency, and promoting sustainable agriculture. It also highlighted the challenges faced by developing countries in adopting green finance, including limited access to finance, lack of technical expertise, and weak regulatory frameworks.

A study by Adhikari (2021) focused on the adoption of green finance practices in Nepal. The study revealed that while green finance is still in its early stages in Nepal, there is growing recognition of its importance among financial institutions. The study identified several factors that influence the adoption of green finance in Nepal, including policy support, investor preferences, and technological innovation. It also highlighted the need for capacity-building and awareness-raising initiatives to enhance the understanding and implementation of green finance.

Green finance has become a cornerstone of sustainable development, directing investments toward environmentally responsible projects and aligning financial decisions with Environmental, Social, and Governance (ESG) factors (Ali et al., 2023; Tang, 2024). The rising significance of green finance is reflected in its growing role in promoting sustainable economic growth, environmental protection, and achieving the Sustainable

Development Goals (SDGs). Green finance not only mobilizes capital for climate-resilient and eco-friendly projects but also fosters a systemic shift in how financial institutions and governments approach sustainability.

In the Organization for Economic Co-operation and Development (OECD) countries, green finance has positively impacted sustainable economic growth by driving investments in renewable energy, energy efficiency, and climate change mitigation efforts (Zakari, 2022). Zakari's study, published in Studies of Applied Economics (Vol. 40, pp. 512-530), reveals that green finance mechanisms, such as green bonds, contribute significantly to reducing greenhouse gas emissions, improving energy efficiency, and boosting the transition to low-carbon economies. He emphasizes that the successful implementation of green finance in developed nations can serve as a model for underdeveloped and developing countries aiming to achieve the SDGs by 2030.

Further supporting this notion, Wang et al. (2022) conducted an analysis of green finance's impact on sustainable development from a global perspective, as detailed in Economic Analysis and Policy (Vol. 75, pp. 49-61). Their findings indicate a strong causal relationship between green finance and positive environmental outcomes, particularly in regions that adopt comprehensive ESG frameworks. However, they noted that the reverse relationship—where sustainable development actively encourages the growth of green finance—was inconsistent, emphasizing the need for stronger policy support and regulatory frameworks to bolster green investments globally.

In emerging economies, the integration of green finance into economic planning is equally important. Countries like India and Indonesia have started recognizing green finance as a vital tool to balance economic growth with environmental protection. Banik et al. (2023) in their paper Green Finance: A Yardstick of Sustainable Development in India, highlight how green finance supports initiatives such as green technology, pollution control, and energy transition, which are essential for India's low-carbon economy goals (pp. 27-45). Similarly, Ronaldo and Suryanto (2022), writing in Resources Policy (Vol. 78, pp. 121-133), discuss how green finance is being utilized in Indonesian villages to promote green micro-enterprises, renewable energy projects, and sustainable agriculture. Their study indicates that green finance is critical to achieving both environmental sustainability and economic development in these regions.

While green finance offers substantial benefits, several challenges remain. Fu et al. (2023) identified key issues in their review of sustainable development and green finance published in Digital Economy and Sustainable Development (Vol. 9, pp. 198-215). These challenges include the lack of standardized evaluation systems for green finance products, limited transparency, and inconsistent definitions of what constitutes "green" investments. The absence of unified global standards has led to difficulties in comparing and validating green finance projects across different regions, creating an urgent need for regulatory harmonization.

Tang (2024) echoes these concerns in his paper Green Finance and Investment: Emerging Trends in Sustainable Development published in the Journal of Applied Economics and Policy Studies (Vol. 12, pp. 83-97). Tang notes that while China has made significant progress in green finance, particularly through its booming green bond market, challenges such as information asymmetry and transparency persist. The paper calls for greater regulatory oversight and the development of more robust evaluation metrics to ensure the effective deployment of green finance.

Lee (2020), in his analysis of China's green finance sector published in the Journal of Asian Finance, Economics, and Business (Vol. 7, pp. 695-706), further elaborates on the need for policy interventions to address these challenges. He argues that the lack of a common definition for "green assets" and short loan periods for green projects are hindering the sector’s full potential. Lee suggests policy solutions such as enhanced environmental disclosure requirements and the introduction of carbon emission permit futures to stimulate green investment.

Moreover, the spatial dynamics of green finance must also be considered. Kwiliński et al. (2023), in their study published in De Computis (Vol. 20, pp. 133-145), examined the regional impact of green finance in the European Union (EU). Their findings suggest that while green finance has a positive effect on achieving SDGs, the impact varies across regions due to differing regulatory environments and economic conditions. They recommend tailoring green finance policies to regional needs, particularly in the EU, where diverse economic landscapes require customized approaches to promoting sustainability.

The role of financial institutions and private capital in scaling green finance is critical. According to a report by Sachs et al. (2019) in the Handbook of Green Finance (pp. 55-78), green bonds and sustainable loans have gained traction as key financial instruments supporting large-scale environmental projects, such as renewable energy and sustainable infrastructure. However, the report notes that despite growing awareness of green finance's potential, investment in fossil fuels remains dominant, posing a challenge to scaling green finance rapidly.

In conclusion, green finance plays an indispensable role in promoting sustainable development by directing capital towards projects that reduce environmental harm while fostering economic growth. The studies reviewed consistently highlight the positive impact of green finance across diverse regions, from developed OECD nations to emerging economies like India and Indonesia. However, challenges such as a lack of standardized evaluation systems, transparency issues, and inconsistent policy frameworks must be addressed to fully realize green finance's potential. By overcoming these barriers, green finance can significantly contribute to global efforts to achieve the SDGs and facilitate the transition to a low-carbon, sustainable future.

2.3 Research Gap

The integration of green finance into the banking sector is essential for achieving sustainable development, particularly in Nepal, which faces significant environmental challenges such as deforestation, water pollution, and climate change impacts. Despite the promising potential of green finance and its various financial instruments, such as green bonds, green loans, and green investment funds (Scholtens, 2009), its adoption in Nepal remains limited and faces several barriers.

One of the primary gaps in the existing literature is the lack of comprehensive studies focused specifically on green finance practices within Nepalese banks. While there is growing global awareness about the importance of green finance, detailed research that addresses the unique challenges and opportunities in Nepal is scarce. Current studies tend to concentrate on more developed markets, leaving a significant gap in understanding how green finance operates in the context of an emerging economy like Nepal (Adhikari, 2021).

Additionally, there is limited examination of the institutional and regulatory challenges that hinder the widespread adoption of green finance in Nepal. The role of the Nepal Rastra Bank (NRB) and other regulatory bodies in promoting green finance has not been thoroughly analyzed in the existing literature. Understanding the effectiveness of the current regulatory framework and identifying the necessary enhancements are crucial for fostering a supportive environment for green finance initiatives (Nepal Rastra Bank, 2020).

Another significant gap is the insufficient focus on investor preferences and awareness. While studies indicate a lack of investor interest in green financial products in Nepal, detailed explorations into the reasons behind this hesitancy are missing. Research is needed to understand what factors could enhance investor interest in green finance, including the development of educational and awareness programs, and the design of financial products that align with investor expectations (Dhungana, 2020).

The impact of technological innovation on the adoption and effectiveness of green finance is another area that lacks sufficient research. Although technological advancements, such as fintech solutions, play a crucial role in modernizing financial practices, their application in promoting green finance in Nepal is not well-documented. Exploring how digital tools and platforms can be leveraged to facilitate sustainable financial practices could provide significant insights into overcoming existing barriers (IFC, 2019; ADB, 2020).

Stakeholder collaboration is emphasized as vital in the context of green finance, yet there is limited empirical evidence on how such collaborations are functioning in Nepal. The involvement of various stakeholders, including government agencies, NGOs, and the private sector, is crucial for the successful implementation of green finance initiatives. Further research is needed to identify successful models of stakeholder collaboration and assess their impact on the effectiveness of green finance practices (Freeman et al., 2020).
There is also a notable lack of longitudinal studies assessing the long-term impact of green finance on sustainable development goals (SDGs) in Nepal. While green finance is recognized for its potential to contribute to SDGs, the long-term effects of these initiatives on environmental sustainability, social equity, and economic resilience remain

underexplored. Conducting longitudinal studies could provide valuable insights into the sustained impact of green finance on these critical areas (Zhou et al., 2019).

Furthermore, the literature lacks sufficient case studies and documentation of best practices in green finance within the Nepalese context. Although international case studies are valuable, localized examples are essential for understanding the practical challenges and solutions specific to Nepal. Detailed case studies that document successful green finance projects and their outcomes would fill this gap and offer practical insights for stakeholders (Nepal Electricity Authority, 2018).

CHAPTER III
RESEARCH METHODOLOGY

The research methodology serves as a structured approach to obtaining answers to a problem through systematic and planned processes involving the collection, analysis, and interpretationof facts and figures. It encompasses the plan, structure, and strategy employed in investigationsto address research questions or test research hypotheses. This chapter on research methodology includes elements such as research design, sources of data, population, sample, and methods and tools for data analysis. The key components of the research methodology in the context of this study are outlined below.

3.1 Research Design

This study employs a qualitative research design to explore the practices, impacts, challenges, and opportunities of green finance in Nepalese banks. Qualitative research is particularly suited to this study because it allows for an in-depth understanding of complex phenomena within their real-life contexts. It provides rich, detailed insights into the experiences, perceptions, and behaviors of individuals involved in green finance, which quantitative methods may not fully capture.

Qualitative research is often exploratory and inductive, aiming to generate new theories and understandings rather than testing existing hypotheses. This aligns well with the objectives of this study, which seeks to explore relatively uncharted territory in Nepal's financial sector. By using qualitative methods, the research can delve into the nuances of green finance practices, uncovering the motivations, challenges, and opportunities perceived by stakeholders (Yin, 2018).

3.2 Population and Sample, and Sampling Design

The population for this study comprises all CEO and officers of banks operating in Nepal, particularly those engaged in green finance practices. It also includes policymakers, experts in sustainable finance, and representatives from NGOs and international organizations working on green finance projects within Nepal. The research focuses on banks operating in Nepal, with a particular emphasis on those located in urban areas where green finance practices are more prevalent. Urban areas, such as Kathmandu, Lalitpur, and Pokhara, are home to the headquarters and major branches of most commercial banks in Nepal. These urban centers are also hubs for economic activities and host a significant concentration of green finance initiatives (Nepal Rastra Bank, 2020).

Focusing on urban areas allows the study to capture a diverse range of green finance practices and initiatives. It also facilitates access to key stakeholders, including bank representatives, policymakers, and experts in sustainable finance. Additionally, urban areas are more likely to have the infrastructure and resources necessary for implementing and monitoring green finance projects, making them ideal settings for this research. A purposive sampling technique was used to select interview participants who have extensive knowledge and experience in green finance. Total 9 participants were selected from seven A and B grade banks of Nepal. Purposive sampling, also known as judgmental sampling, involves selecting participants based on specific criteria relevant to the research objectives. This method ensures that the study includes individuals who can provide valuable insights into green finance practices and their impacts.

The selected participants were:

1. Manager, Laxmi Sunrise Bank
2. Officer, Laxmi Sunrise Bank
3. Manager, Siddhartha Bank
4. Officer, Siddhartha Bank
5. Province Head, Nabil Bank
6. Officer, Nabil Bank
7. Officer, Muktinath Bikash Bank
8. Officer, Nepal Bank Limited
9. Officer, Global IME Bank

The sample for this study was selected using a purposive sampling technique to ensure participants had the expertise and experience necessary to provide meaningful insights into green finance practices. This targeted selection captured diverse perspectives from managers, officers, and policymakers actively involved in green finance, ensuring a comprehensive understanding of its practices and impacts in Nepal.

The sampling criteria for this study include the following:

- Bank representatives responsible for green finance initiatives or sustainability programs.

- Policy makers involved in developing and implementing regulations related to green finance.
- Experts and consultants with significant experience in sustainable finance and environmental economics.
- Representatives from non-governmental organizations (NGOs) and international organizations working on green finance projects in Nepal.

By selecting participants based on these criteria, the study aims to gather diverse perspectives and experiences, providing a well-rounded understanding of green finance in Nepal.

3.3 Nature and Sources of Data

The research primarily relies on primary data collected through structured interviews with key stakeholders in Nepal's banking sector, focusing on those with extensive knowledge of green finance practices. Interviews were conducted with province heads, branch managers, and senior officers from seven A and B grade banks located in urban centers like Kathmandu, Lalitpur, and Pokhara, where green finance activities are more prevalent. A purposive sampling method was used to select 9 participants, ensuring insights from those directly involved in implementing and managing green finance initiatives. This firsthand data collection was complemented by secondary sources such as reports from Nepal Rastra Bank (2020) and relevant academic literature to provide contextual support. By using qualitative data from industry experts, the study aimed to explore the complexities, challenges, and opportunities in green finance, offering a deeper understanding of stakeholder perspectives and the regulatory environment in Nepal.

3.4 Data Collection Methods

Data was collected through structured interviews with bank representatives, policymakers, and other stakeholders involved in green finance. Structured interviews were chosen for their flexibility, allowing the researcher to probe deeper into specific areas of interest while also following a predefined set of questions. This method ensured that all relevant topics were covered while giving respondents the freedom to express their views and experiences in their own words.

The interview questions were designed to elicit detailed information about the practices, impacts, challenges, and opportunities of green finance in Nepalese banks. Topics included the types of green finance products and services offered, the role of regulatory frameworks, investor preferences, technological innovations, and stakeholder collaborations. The interviews also explored the perceived barriers to and drivers of green finance adoption, providing a comprehensive understanding of the factors influencing green finance in Nepal.

In addition to primary data from interviews, secondary data was gathered from bank reports, policy documents, and academic literature. These sources provide contextual information and support the analysis of interview data. Secondary data includes annual reports and sustainability reports from banks, policy guidelines from the Nepal Rastra Bank, and relevant research articles on green finance and sustainable development (Adhikari, 2021; Nepal Rastra Bank, 2020).

3.5 Method of Analysis

Qualitative data analysis was conducted using thematic analysis using NVivo 14 to identify key themes and patterns in the data (Shrestha et al., 2024). For analyzing people's behavior through social psychology research, social interaction was generally taken into account (Mehrad, 2023). Later, however, the same social characteristics were also seen to be important when analyzing subjects like economics, organization, and behavioral finance (Almansour, Elkrghli, & Almansour, 2023). Thematic analysis is a widely used method for analyzing qualitative data, involving the systematic coding and categorization of data to identify recurring themes and concepts. This method allows the researcher to make sense of large amounts of data and draw meaningful insights from participants' narratives. NVivo enabled the systematic coding of interview transcripts, allowing the researcher to categorize data into themes related to green finance, such as regulatory, challenges, opportunities, and stakeholder perspectives. By utilizing NVivo, the study efficiently organized large amounts of unstructured data, identified patterns, and developed themes that provided deeper insights into the research questions. This tool streamlined the process of coding, theme development, and data visualization, ensuring a thorough and nuanced understanding of green finance practices in Nepal while enhancing the overall reliability and depth of the analysis.

The data analysis process involves several steps:

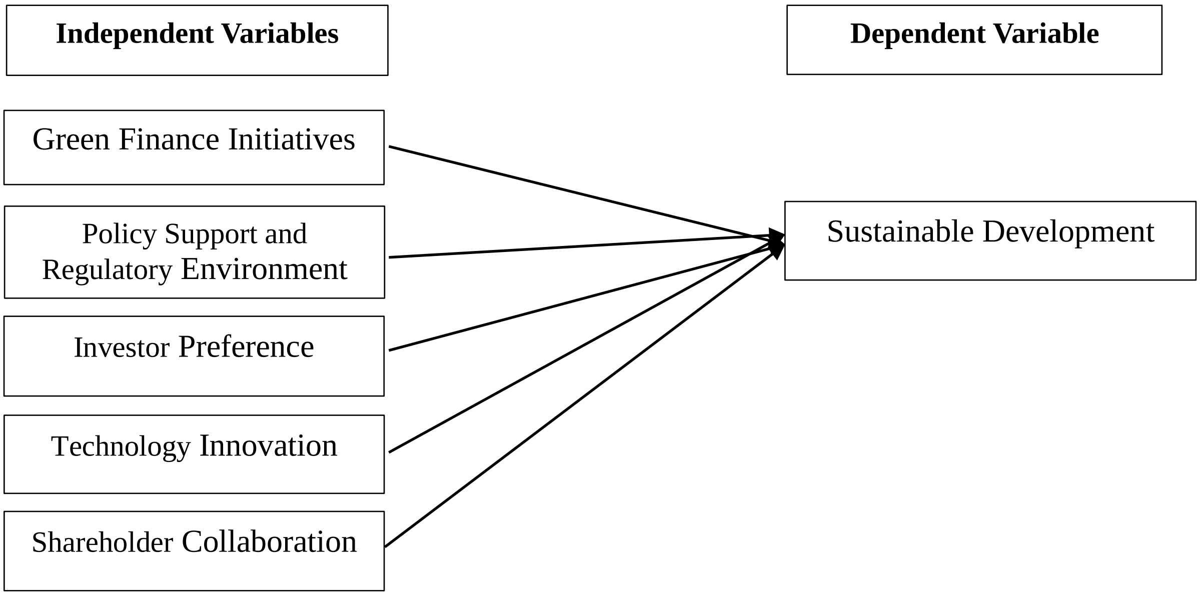
1. Familiarization: The researcher transcribed the interview recordings and read through the transcripts multiple times to become thoroughly familiar with the data.
2. Coding: The researcher generated initial codes by systematically highlighting significant statements and segments of text related to the research questions. These codes represent meaningful units of information.
3. Theme Development: The researcher grouped related codes into broader themes that capture the main ideas and patterns in the data. This process involves identifying relationships between codes and organizing them into coherent categories.
4. Reviewing Themes: The researcher reviewed and refined the themes, ensuring they accurately represent the data and are distinct from one another. This step may involve merging, splitting, or discarding themes as necessary.
5. Defining and Naming Themes: The researcher defined and named each theme, providing clear descriptions of what each theme represents and how it relates to the research questions.
6. Reporting: The researcher writes up the findings, using quotes from the interviews to illustrate each theme and support the analysis.

Thematic analysis is particularly suitable for this study because it allows for the identification of both explicit and implicit meanings in the data, providing a rich and nuanced understanding of green finance practices and their impacts (Braun & Clarke, 2006).

3.6 Research Framework and Definition of Variables

The Research framework for this study focuses on examining the relationship between various factors influencing green finance and sustainable development outcomes in Nepalese banks. The framework is structured around five independent variables: Green Finance Initiatives, Policy Support and Regulatory Environment, Investor Preference, Technology Innovation, and Stakeholder Collaboration. The dependent variable is the Sustainable Development.

Figure 1: Research Framework



Source: Lee, (2020)

3.6.1 Definition of Variables

Green Finance Initiatives

Green finance initiatives refer to the financial activities, projects, and investments specifically aimed at promoting environmentally sustainable economic growth. These include investments in renewable energy, green infrastructure, and environmentally friendly technologies (Mishra & Aithal, 2022).

Green finance initiatives are crucial because they directly contribute to reducing greenhouse gas emissions and promoting the use of clean energy. By channeling financial resources into projects that mitigate environmental impact, these initiatives help to transition economies towards sustainable practices. For example, investments in solar power plants and eco-friendly building projects not only reduce carbon footprints but also drive innovation and job creation in the green sector.

Policy Support and Regulatory Framework

Policy support and regulatory framework encompass the government policies, regulations, and incentives designed to promote and facilitate the adoption of green finance practices. These include tax incentives, subsidies, carbon pricing mechanisms, and regulatory guidelines (Chen & Liu, 2019) .

A robust policy and regulatory framework is essential for creating an enabling environment for green finance. It lowers barriers to entry, reduces risks for investors, and ensures that green finance practices align with broader environmental and economic goals. Effective policies can drive significant capital toward sustainable projects by providing clear guidelines and financial incentives, making green investments more attractive.

Investor Preferences

Investor preferences refer to the trends and behaviors of investors who favor investments in green and sustainable projects. This includes the growing demand for financial products that meet environmental, social, and governance (ESG) criteria, such as green bonds and sustainable funds (Heinkel et al., 2001).

Understanding investor preferences is critical for the growth of green finance. As more investors prioritize sustainability in their investment decisions, the availability of capital for green projects increases. This shift not only supports the funding of environmentally friendly initiatives but also encourages companies to adopt sustainable practices to attract investment.

Technological Innovation

Technological innovation in the context of green finance refers to the development and application of new technologies that enhance the efficiency and effectiveness of sustainable projects. This includes advancements in renewable energy technologies, energy-efficient systems, and waste management solutions (Zhang et al.,2022). Technological innovation is a driving force behind the success of green finance initiatives. By improving the performance and reducing the costs of sustainable technologies, innovation makes green projects more viable and attractive. Innovations in technology can lead to significant environmental benefits, such as reduced emissions and better resource management, thereby supporting the broader goals of sustainable development and climate resilience.

Stakeholder Collaboration

Stakeholder collaboration refers to the coordinated efforts among a company's investors to influence corporate strategies, particularly in areas like sustainability and green finance. Unlike stakeholder collaboration, which involves various external groups, shareholder collaboration focuses on aligning investor interests to support long-term value creation. In the realm of green finance, shareholders can collaborate to push for sustainable business practices, ensuring that corporate governance prioritizes environmental, social, and governance (ESG) goals. By working together, shareholders can drive companies to adopt transparent, responsible practices that align with environmental sustainability, ultimately supporting the success of green finance initiatives and fostering long-term business resilience.

CHAPTER-IV
RESULTS AND DISCUSSION

This chapter consists of interviews with provincial heads, branch managers, and senior officers from seven A grade banks in Nepal. Data was analyzed through sentiment analysis to understand stakeholders' attitudes towards green finance practices and regulations in Nepal.

4.1 Interview

4.1.1 Manager, Laxmi Sunrise Bank (Sustainability & Environmental Impact)

Question 1: Could you please provide some information about yourself and your experience? How many years have you been working in this sector?

Answer: I’ve been working in this particular sustainable development sector for about a year, while I’ve been in the banking sector for eight years. My current main responsibility is focused on developing policies and guidelines. Recently, we’ve updated our Empowerment and Social Responsibility (ERS) policy, which is our third policy. The central bank issued an Environmental and Social Risk Management (ESRM) guideline in 2017. After that, in 2019, our bank developed its own environmental policy, and in 2022, there was a second update. Most recently, in 2024, we made another update. This time, the policy isn't just credit-focused; it now covers the entire operation—how we can integrate environmental and social aspects into lending, business, and operations. We've created a policy that encompasses all of this. Additionally, a detailed guidance document is in the final stage of approval to support the policy. Our current focus is on how to incorporate sustainable practices into banking, promote social responsibility, and strengthen governance. We are working on these areas by collaborating with various organizations and consultants, aiming to enhance these practices within the Nepali banking system.

Question 2: What are your key responsibilities in your current role?

Answer: Currently, I oversee sustainable practices, such as creating sustainable products and improving governance structures. For example, we have an Environment and Social Leadership Council, a committee that looks at how to prioritize sustainable initiatives in credit operations, such as agricultural loans, renewable energy loans, and electric vehicle loans. In Nepal, mutual investment largely focuses on the hydropower sector. External investors are also interested in this sector, so we need to create an environment where they feel confident about investing here, despite the environmental, social, and governance (ESG) risks. To mitigate these risks, we assess issues like how much biodiversity is affected, the impact on water resources, the overall environmental impact, and the social displacement of communities near hydropower projects. The bank, as a major investor, must carefully manage these risks. This involves using a due diligence checklist to ensure everything is in order. We also conduct site visits to confirm that operations are being carried out correctly. In addition to hydropower, we apply similar processes to our agricultural loans, ensuring sustainable practices in that sector as well.

Internally, we also focus on reducing emissions from our operations, such as managing electricity consumption and ensuring our air conditioning systems are used efficiently. We have already started transitioning to electric vehicles, with around five electric vehicles in operation. Moving forward, all new vehicle purchases will be electric. We've also installed electric vehicle charging stations and are encouraging employees to use electric vehicles by offering incentives.

Question 3: Have you received any specific training or certification in green finance?

Answer: We've received various trainings, including from IFC, IFRS, Frankfurt School, and Barcelona School. We also conduct internal capacity-building training for our staff. For example, we have nominated key departments to participate in a program we call the "Year of Champions." We have designated environmental and social champions from these departments who are trained and then expected to pass on their knowledge, much like a "train the trainer" approach. We change the champions from different departments each year, so that, over time, all departments are familiar with environmental and social policies. This helps the entire organization adopt these practices more effectively.

Question 4: Are there any particular sectors or types of projects you focus on within green finance? If yes, please specify.

Answer: In Nepal, the primary green finance projects are related to renewable energy, particularly hydropower. Solar projects do exist, but none are on the same scale as hydropower. Our main focus is on renewable energy, particularly hydropower, as well as financing electric vehicles. Recently, we've seen a drastic increase in electric vehicle financing, with about 40 to 50% of thermal vehicles being replaced by electric ones.

Question 5: What are your thoughts on green products like green bond?

Answer: We've already signed the green bond, but it hasn't been fully implemented yet. The signing is done, but we are still in the process of identifying specific projects to finance through it.

Question 6: What types of green finance products or services does your bank currently offer?

Answer: Apart from loans, we also offer a product called "Green Savings." For every new account opened, we plant a tree. In addition, we conduct CSR tree plantation programs, but this product is directly tied to our green savings accounts.

Question 7: Can you share a successful case studies where green finance has significantly contributed to sustainable development?

Answer: The main green finance success stories are in the hydropower sector. Even small hydropower projects, producing just 4-5 MW, can benefit around 500-600 individuals by providing electricity and creating both permanent and temporary employment. Other green projects, such as agricultural projects, also provide benefits, but hydropower is the most impactful in terms of sustainability.

Question 8: Is the Green Home Loan a new product?

Answer: Yes, it was recently launched, but we haven't promoted it extensively yet. There are ten easy criteria, and if a home meet five of them, the owner can apply for the loan at a lower interest rate. These criteria include having an electric vehicle charging station, insulation, a kitchen garden, trees planted outside the home, and the use of LED lights. It's a very easy way for customers to qualify for the loan.

Question 9: Is Global IME Bank the first bank to offer a green home loan?

Answer: Yes, Global IME Bank is the first bank to launch this product.

Question 10: How do current policies regulations in Nepal support or hinder green finance in Nepal?

Answer: The government has issued policies, but it has taken some time to ensure that all banks comply with them. Although the government introduced the policy in 2017, it only became mandatory in 2020. Now, there is international pressure, particularly from European countries, and international funding is increasing. As a result, the government is enforcing mandatory reporting to the central bank. Banks must report on how much they have invested in priority sectors like agriculture, MSMEs, and renewable energy, and they face penalties if they don't meet certain targets. The government has set specific goals for 2081 and 2082 [Nepali years] that we must achieve. While this creates challenges, especially in terms of scaling up quickly, the policy is mandatory.

Question 11: What policy changes do you believe are necessary to promote the growth of green finance in Nepal?

Answer: The necessary policies are already made but the only problem is in the implementation of such policy. The government is not able to monitor and control the classification of sustainable sectors and non-sustainable sectors. It is because of the lack of manpower, awareness and trainings and the government should focus on capacity buildings to meet the international standards.

Question 12: Have you noticed a change in investor preferences towards green finance products in recent years?

Answer: When it comes to clients, we still see that there's a lack of awareness. Documentation often becomes lengthy, whether it’s due diligence, a corrective action plan, or compliance with regulations. Previously, many clients didn’t even renew their licenses or follow compliance, whether regarding water, air pollution, or noise. Nowadays, the central bank has emphasized being environmentally conscious, but it takes time for each individual to become conscious enough for a successful project. Banks, however, engage with customers more than any other entity, so even awareness within the banks is growing. Many banks are becoming aware, and investors and lenders are now considering various factors when granting loans. Within the next two or three years, this awareness will become widespread. Currently, awareness is being created gradually. Clients are beginning to realize that they need to do certain things, not only for compliance but also to mitigate risks associated with environmental harm. This awareness is gradually being adopted by customers as well.

Question 13: What factors do you think influence investors to choose green finance options?

Answer: The main factor is awareness creation among the investors. Similarly, providing low interest rates loans for EVs, solar panels, and promoting subsidized loans also influence investors to choose green finance options.

Question 14: How do investors' preferences for green finance products impact the sustainable development of the companies your bank finances?

Answer: The impact is definitely positive. There’s no reason to believe it would have a negative effect. In the first year or two, companies might require more manpower to carry out tasks or consult with external consultancies but ultimately, prioritizing sustainability benefits them. For example, companies like Ncell and Coca-Cola are now providing sustainability reports, showing how they’ve improved from the previous fiscal year. This focus on internal improvement, rather than simply showing off to others, is key. At our bank, for instance, we issue newsletters to showcase how we are making changes, such as reducing our environmental footprint or improving gender equality and diversity within the organization.

It’s also evident that when new proposals are presented, companies are more conscious. They highlight how many female employees they have, how they address gender issues, the types of environmentally friendly products they use, such as electric vehicles, and their governance practices. They know that when applying for a loan from a bank like Lakshmi Sunrise, sustainability is a priority. We look for companies that have these conscious practices.

Question 15: How do technology and innovation play a major role in promoting green finance? What digital tools does your bank use?

Answer: Our bank emphasizes reducing paper use. We encourage all departments to go paperless, and instead of printing 20-25 pages of credit appraisals for each client, we’ve moved everything to digital formats through servers. This includes using internal servers for online document review, and we promote video banking. We've also shifted from sending physical memos to using digital approvals.

For waste management, we’ve partnered with organizations like DOKO to recycle paper. At our Maharajgunj branch, we even have a recycling machine that turns unnecessary papers into usable materials. We also believe in reusing resources, and we strive to minimize paper usage by recycling whatever is available.

Question 16: What are the challenges or barriers you have faced related to integrating technology with green finance?

Answer: One challenge is the transition from traditional banking practices to digital ones, which can be difficult. Software systems sometimes need adjustments, and our software migration after the merger was also challenging. We previously used the Walter software, but now we’ve switched to a different one. Initially, it was tough, but now things have become smoother.

Question 17: How do technological innovations in green finance at your bank contribute to clients’ sustainable development?

Answer: We’ve developed templates that cover everything necessary, allowing us to track and promote sustainability effectively.

Question 18: How does your bank collaborate with other stakeholders (e.g., government agencies, NGOs, private sector) to promote green finance?

Answer: We've signed agreements with DOKO for paper and waste management. We've also collaborated with international organizations like PCAF, DFIs for research and reporting on greenhouse gas emissions. We work with national and international companies on similar projects.

Question 19: Can you highlight any particular partnerships or collaboration that have been effective in advancing green finance initiatives?

Answer: One major example is our collaboration with PCAF. After we disclosed our greenhouse gas emissions, it made a significant impact. It showed that Laxmi Sunrise Bank is also committed to green finance, and this has been recognized by many in the industry. Collaborating with DFIs (Development Finance Institutions) also helps as they have long questionnaires that collect data on our practices, about rural loans, gender diversity, grievance handling, customer satisfaction etc.

Question 20: How many banks in Nepal have joined PCAF and DFIs?

Answer: So far, 6-7 banks, including Siddhartha Bank, Global IME, Nabil Bank, NIC, and Sanima, have joined. Our bank joined in December 2021, while Nabil joined in January, and NMB joined much earlier.

Question 21: What are the key challenges and opportunities in implementing green finance initiatives at your bank?

Answer: I believe there are more opportunities than challenges. For example, in Nepal's context, contributing to Nationally Determined Contributions (NDC) provides a clear list of what we can achieve. As a country, we aim for net-zero emissions by 2045-50, and the banking sector will play a crucial role in reaching this target.

4.1.2 Officer, Laxmi Sunrise Bank (Sustainability & Environmental Impact)

Question 1: Could you please provide some information about yourself and your experience? How many years have you been working in this sector?

Answer: My name is Deepankar Basnet, and I've been in this banking industry for two and a half years. This is my first job, and we've been working on sustainable practices for the past two and a half years. The first thing we did was focus on partnership for carbon accounting Financials, which includes calculating Scope 1, Scope 2, and Scope 3 emissions. Over the last fiscal year, we completed our internal calculations for Scope 1 and Scope 2, and we've also begun working on Scope 3. There are 15 to 17 different categories within Scope 3, and we've started calculating four or five categories, such as air travel and business travel. Regarding the investment category (Category 15), we are working on calculating how the bank’s investments impact carbon emissions. We became a member of PCAF (Partnership for Carbon Accounting Financials), which is an international initiative. Initially, NMB Bank was the first Nepali bank to join, followed by Nabil Bank, and we became the third Nepali bank to join PCAF. Our bank is also the third to disclose PCAF reports externally. Along with our external financial reporting, we plan to issue a newsletter starting this fiscal year, where we will disclose details about our fuel consumption and calculations related to Scope 1, Scope 2, and Scope 3 emissions. We are currently preparing for that.

Question 2: What are your key responsibilities in your current role?

Answer: We are trying to create a smooth communication about sustainability from senior management to ground level regarding policy creation and adaptation. We are now accountable for sustainable reporting and we are able to gradually increase the awareness about sustainability among the bank staffs and related stakeholders.

Question 3: Have you received any specific training or certification in green finance?

Answer: We’ve received various trainings, including from IRC, IFRS, Frankfurt School, and Barcelona School. We also conduct internal capacity-building training for our staff. For example, we have nominated key departments to participate in a program we call the "Year of Champions." We have designated environmental and social champions from these departments who are trained and then expected to pass on their knowledge, much like a "train the trainer" approach. We change the champions from different departments each year, so that, over time, all departments are familiar with environmental and social policies. This helps the entire organization adopt these practices more effectively.

Question 4: Are there any particular sectors or types of projects you focus on within green finance? If yes, please specify.

Answer: In Nepal, the primary green finance projects are related to renewable energy, particularly hydropower. Solar projects do exist, but none are on the same scale as hydropower. Our main focus is on renewable energy, particularly hydropower, as well as financing electric vehicles. MSMEs are also our major focus but are not able to meet the targets. Recently, we’ve seen a drastic increase in electric vehicle financing, with about 40 to 50% of thermal vehicles being replaced by electric ones. Our bank has also launched a new product called "Green Home Loans," which offers a lower interest rate if the home meets five out of ten specific green criteria. Also, we are trying to bring every year new products and create a separate “Green Segment”. This is our target.

Question 5: What are your thoughts on green products like green bond?

Answer: We've already signed the green bond, but it hasn't been fully implemented yet. The signing is done, but we are still in the process of identifying specific projects to finance through it.

Question 6: What types of green finance products or services does your bank currently offer?

Answer: Apart from loans, we also offer a product called "Green Savings." For every new account opened, we plant a tree. In addition, we conduct CSR tree plantation programs, but this product is directly tied to our green savings accounts.

Question 7: Can you share a successful case studies where green finance has significantly contributed to sustainable development

Answer: The main green finance success stories are in the hydropower sector. Even small hydropower projects, producing just 4-5 MW, can benefit around 500-600 individuals by providing electricity and creating both permanent and temporary employment. Other green projects, such as agricultural projects, also provide benefits, but hydropower is the most impactful in terms of sustainability.

Question 8: Is the Green Home Loan a new product?

Answer: Yes, it was recently launched, but we haven't promoted it extensively yet. There are ten easy criteria, and if a home meet five of them, the owner can apply for the loan at a lower interest rate. These criteria include having an electric vehicle charging station, insulation, a kitchen garden, trees planted outside the home, and the use of LED lights. It's a very easy way for customers to qualify for the loan.

Question 9: Is Global IME Bank the first bank to offer a green home loan?

Answer: Yes, Global IME Bank is the first bank to launch this product.

Question 10: How do current policies regulations in Nepal support or hinder green finance in Nepal?

Answer: The government has initiated policies like ESRM, and similar to ESRM another policy "Green Taxonomy" is also issued by Central Bank but it takes some time to make it mandatory to all banks. Also Nepal is in high risk zone, among top 10 countries which can be affected by climate change. Government is prioritizing this sector and reporting are also carried out these days.

Question 11: What policy changes do you believe are necessary to promote the growth of green finance in Nepal?

Answer: In addition to what Madam said, Green Taxonomy has classified into Green, Amber and Red but it is not possible to completely stop giving loans to red activities.

Similarly, there is no proper standards to measure the how much safe in terms of environment to set up the hydropower project in a particular area. Government and Central Bank should work on the policies related to segregation of Green and non- green activities.

Question 12: Have you noticed a change in investor preferences towards green finance products in recent years?

Answer: When it comes to clients, we still see that there's a lack of awareness. Documentation often becomes lengthy, whether it’s due diligence, a corrective action plan, or compliance with regulations. Previously, many clients didn’t even renew their licenses or follow compliance, whether regarding water, air pollution, or noise. Nowadays, the central bank has emphasized being environmentally conscious, but it takes time for each individual to become conscious enough for a successful project. Banks, however, engage with customers more than any other entity, so even awareness within the banks is growing. Many banks are becoming aware, and investors and lenders are now considering various factors when granting loans. Within the next two or three years, this awareness will become widespread. Currently, awareness is being created gradually. Clients are beginning to realize that they need to do certain things, not only for compliance but also to mitigate risks associated with environmental harm. This awareness is gradually being adopted by customers as well.

Question 13: Customers generally focus on profit maximization, so why would they care about sustainability?

Answer: Gradually, as in the case of low-risk clients, they haven’t fully embraced sustainability yet. But for medium and high-risk clients, they have to understand that if they fall into a risk category, they need to implement changes. Medium-risk clients often deal with multiple banks, so if they don’t adapt, they will face issues when seeking business loans from financial institutions. These clients aim to bring their businesses into the low-risk category, and they are more aware of green practices than low-risk clients. The latter, being in a safer zone, don’t feel the need to worry as much.

Question 14: What factors do you think influence investors to choose green finance options?

Answer: The main factor is awareness creation among the investors. Similarly, providing low interest rates loans for EVs, solar panels, and promoting subsidized loans also influence investors to choose green finance options.

Question 15: How do investors' preferences for green finance products impact the sustainable development of the companies your bank finances?

Answer: The impact is definitely positive. There’s no reason to believe it would have a negative effect. In the first year or two, companies might require more manpower to carry out tasks or consult with external consultancies, but ultimately, prioritizing sustainability benefits them. For example, companies like Ncell and Coca-Cola are now providing sustainability reports, showing how they’ve improved from the previous fiscal year. This focus on internal improvement, rather than simply showing off to others, is key. At our bank, for instance, we issue newsletters to showcase how we are making changes, such as reducing our environmental footprint or improving gender equality and diversity within the organization.

It’s also evident that when new proposals are presented, companies are more conscious. They highlight how many female employees they have, how they address gender issues, the types of environmentally friendly products they use, such as electric vehicles, and their governance practices. They know that when applying for a loan from a bank like Lakshmi Sunrise, sustainability is a priority. We look for companies that have these conscious practices.

Question 16: How do technology and innovation play a major role in promoting green finance? What digital tools does your bank use?

Answer: Our bank emphasizes reducing paper use. We encourage all departments to go paperless, and instead of printing 20-25 pages of credit appraisals for each client, we’ve moved everything to digital formats. This includes using internal servers for online document review, and we promote video banking. We've also shifted from sending physical memos to using digital approvals.

For waste management, we’ve partnered with organizations like DOKO to recycle paper. At our Maharajgunj branch, we even have a recycling machine that turns unnecessary papers into usable materials. We also believe in reusing resources, and we strive to minimize paper usage by recycling whatever is available.

Question 17: What are the challenges or barriers you have faced related to integrating technology with green finance?

Answer: One challenge is the transition from traditional banking practices to digital ones, which can be difficult. Software systems sometimes need adjustments, and our software migration after the merger was also challenging. We previously used the Walter software, but now we’ve switched to a different one. Initially, it was tough, but now things have become smoother.

Question 18: How do technological innovations in green finance at your bank contribute to clients’ sustainable development?

Answer: We’ve developed templates that cover everything necessary, allowing us to track and promote sustainability effectively.

Question 19: How does your bank collaborate with other stakeholders (e.g., government agencies, NGOs, private sector) to promote green finance?

Answer: We’ve signed agreements with DOKO for waste management. We've also collaborated with international organizations like PCAF for research and reporting on greenhouse gas emissions. We work with national and international companies on similar projects.

Question 20: Can you highlight any particular partnerships or collaboration that have been effective in advancing green finance initiatives?

Answer: One major example is our collaboration with PCAF. After we disclosed our greenhouse gas emissions, it made a significant impact. It showed that Lakshmi Sunrise Bank is committed to green finance, and this has been recognized by many in the industry.

Question 21: How many banks in Nepal have joined PCAF and DFIs?

Answer: So far, 6-7 banks, including Siddhartha Bank, Global IME, Nabil Bank, NIC, and Sanima, have joined. Our bank joined in December 2021, while Nabil joined in January, and NMB joined much earlier.

Question 22: What are the key challenges and opportunities in implementing green finance at your bank?

Answer: I believe there are more opportunities than challenges. For example, in Nepal’s context, contributing to Nationally Determined Contributions (NDC) provides a clear list of what we can achieve. Nepal being a high-risk zone, international companies are also trying to reach out to us for promoting green finance. As a country, we aim for net-zero emissions by 2045-50, and the banking sector will play a crucial role in reaching this target. Certain loss might be seen at the beginning few years of investment but after 3-4 years they will eventually understand that it is done for all good. More simplified policies from government and Central banks will help in promoting green finance initiatives among all the banks and financial institutions.

4.1.3 Manager, Siddhartha Bank (Credit Risk & ENS)

Question 1: How many years have you been working in banking sector?

Answer: Talking about myself, I have been in the banking sector for 17 plus years, and at Siddhartha Bank for more than 12 years. We deal with E&S, which stands for Environmental and Social Risk, and this falls under "Credit Risk." Later, it was categorized under ESG (Environmental, Social, and Governance). In this department, it is implemented as ESG. Initiation must come from somewhere. The central bank also initially implemented it under "Credit Risk." It hasn’t yet been implemented across overall banking. However, we have applied it across the entire banking sector, covering everything from environmental to social aspects. In some cases, we work as a helping hand, and in others, we deny or approve matters before proceeding. These are mainly issues related to credit and tradition.

Question 2: What are your key responsibilities in your current role?

Answer: We have a policy called the ESRM (Environmental and Social Risk Management) policy from the central bank. I was involved in drafting that policy. It was developed by the central bank around 2019, and in 2018, the central bank provided guidelines. The bank’s policy was developed around 2019. Initially, we focused on insight value, and it wasn’t mandatory. The ESRM policy wasn’t mandatory at first, so we initially worked based on the requirements within the Kathmandu Valley. We faced challenges because the central bank, even back then, stated that it was mandatory. Banks had to voluntarily implement it, but in doing so, we needed extra documents for the policy implementation, and we encountered difficulties because some documents weren't accepted. When policies aren’t uniformly applied, it created drawbacks, although there are both advantages and disadvantages to moving early. This made it difficult for us to solicit certain businesses because the Nepalese market is very challenging. However, as we trained our employees and kept moving forward, we gradually gained an advantage. By 2022, the central bank made amendments and declared that it was mandatory for everyone. Since it became mandatory, we’ve been training and preparing employees, which has given us a comparative upper hand compared to peer groups, although we weren't significantly ahead, but we had an advantage. Since we had already been doing this for a while, it became a plus point for us. Now, in terms of ESRM, our team is ranked among the top five. Although we aren't at an international level, we are making progress, and this has been recognized during seminars where we are often invited for our good work. This has given the bank visibility. Currently, our responsibility is to apply the policy, make amendments as needed, and train the staff. Green finance is a part of sustainable development, and while green finance focuses on loans, sustainable development encompasses everything from society to governance. Green finance doesn’t go as deep into societal aspects, although there is some overlap. For example, in hydropower, the ESRM policy requires us to assess various factors like biodiversity, indigenous communities, and how they are affected by hydropower projects. Therefore, we must consider all these factors.

Question 3: Has Government made certain percentage of financing to promote Green Finance mandatory now?

Answer: The government hasn’t made it mandatory yet. Globally, funds are being provided for green finance. At Siddhartha Bank, we were one of the first to access these funds, and Prabhu Bank has also started focusing on electric vehicles (EVs). Due to government policies, EV financing has become easier. However, other aspects like smart agriculture or climate finance remain challenging, as Nepal lacks infrastructure for deep irrigation or energy efficiency. Regarding energy efficiency, we must ensure that any replacement product is at least 20% more efficient than the previous one, but Nepal currently lacks the technical tools to measure energy consumption.

Question 4: Have you received any specific training or certification related to green finance?

Answer: Not specifically for green finance. We’ve got training related to ESRM.

Question 5: Who provides this training?

Answer: The training was provided by the National banking Institute (NBI), and many other training institutes. I got one training about 3-4 years ago. Central bank of Nepal, along with various seminars and workshops, time to time trainings by organizations like IFC are also conducted. Gradually, awareness of sustainable development is increasing, but training in this area is still limited. It’s challenging to get trainers from abroad as their context often differs from Nepal's, especially regarding hydropower, which is significant in Nepal but not in other countries. For example, when I attended a training in India, hydropower wasn’t considered a priority, as their energy sources are different.

Question 6: Are there any particular sectors or types of projects you focus on within green finance? If yes, please specify.

Answer: Hydropower is one of our key projects, but IFC doesn’t categorize hydropower under climate finance due to sustainability issues and its impact on biodiversity. However, in Nepal's context, hydropower is considered renewable energy and is classified as green finance.

Question 7: Has your bank launched any specific projects or schemes concerned towards green finance?

Answer: Currently, we focus on hydropower and electric vehicles. While we have explored green building projects, there is no certification body in Nepal to certify such projects as truly green.

Question 8: What types of green finance products or services does your bank currently offer?

Answer: Primarily, we offer loans for EVs with fixed terms at lower interest rates compared to internal combustion vehicles. However, the current offering is limited, but the interest rate for women is even lower.

Question 9: Have you considered issuing green bonds or green loans?

Answer: It's under consideration, but the study hasn't been conducted thoroughly yet. Green bond issuance in Nepal is not yet common as there are no monitoring bodies or guidelines. However, we are exploring the idea.

Question 10: So, your most successful projects have been hydropower and EVs where green finance has significantly contributed to sustainable development?

Answer: Yes, we have approved loans for green homes, but the challenge is ensuring that these homes meet the green criteria. We are still waiting for certification bodies to verify this, but we hope to see progress in the near future.

Question 11: How do green finance initiatives at your bank contribute to the sustainable development of your clients?

Answer: Even other companies like airlines are also giving priority to EVs these days. The concept of green finance has aroused globally. What we have contributed back to the nature apart from CSR is the matter of concern for many businesses. They are trying to minimize the emission of carbon by making small changes. If we continuously show concern about the matters like waste disposal management of our client's companies and warn them to take corrective action plans, then it will certainly improve the system and contribute to the sustainable development.

Question 12: How do current policies and regulations in Nepal support or hinder green finance initiatives?

Answer: The Environment and Social Risk Management (ESRM) policy, the Environmental Protection Act, and a draft of Green Taxonomy have been introduced by

Nepal government and central bank to promote sustainable development. However, these policies are not fully implemented yet. The government, through the Nepal Rastra Bank (NRB), has issued drafts, seeking feedback from the banking sector and other stakeholders, but the process is complicated. There is also a gap in technical expertise and manpower within government bodies to enforce these policies. For example, pollution control measures were included in past policies but were later removed due to the unavailability of experts who could set appropriate standards for implementation.

In addition, there is a lack of regular follow-up by government offices. For instance, many industries and businesses have operated for years without receiving necessary checks or certifications. This lack of oversight is primarily due to the shortage of qualified engineers, technicians, and environmental experts in government institutions. Although some businesses genuinely want to comply with green finance and environmental regulations, they face challenges because of insufficient government capacity. Thus, while policies exist, their effective implementation remains a significant challenge due to limited resources and expertise.

Question 13: What kind of policy changes do you believe are necessary to promote the growth of green finance in Nepal?

Answer: Promotion of green finance should be done gradually. Enhancing green finance policies in Nepal requires a gradual and systematic approach. Rapid changes in policy can often lead to confusion and inefficiency, especially in a country like Nepal, where the necessary manpower and expertise are still developing. One of the first steps should be to prepare and train the necessary human resources, as the implementation of green finance policies demands technical expertise. Without proper training, new policies might not achieve the desired outcomes, as there would be a gap between policy formulation and practical execution.

For example, the government should first focus on providing training to financial institutions, regulatory bodies, and related sectors on the specifics of green finance. Once the manpower is adequately trained and knowledgeable, policies can be gradually introduced and implemented. This phased approach ensures that the institutions and clients are well-prepared to follow the new guidelines. Moreover, regular follow-ups and monitoring mechanisms should be established to ensure that policies are effectively enforced. Without continuous supervision and support, even the best-designed policies may fail to create a meaningful impact. Thus, the government should focus on capacity building, technical training, and incremental policy changes to ensure the smooth promotion of green finance.

Question 14: Has Nepal Rastra Bank made sustainability reports mandatory for financial institutions?

Answer: As of now, the Nepal Rastra Bank (NRB) has not made sustainability reports mandatory. However, the bank has introduced policies such as the Environment and Social Risk Management (ESRM) policy, which guides financial institutions to categorize their loans based on Environmental and Social Risks Ratings (ESRR). Banks are required to maintain an Environmental and Social Due Diligence (ESDD) checklist, which helps classify projects into high, medium, and low-risk categories. For instance, if a client takes a significant loan and the project falls into a high-risk category, senior management must approve it, following stricter protocols to mitigate risks. This process is designed to integrate environmental and social considerations into lending decisions, but it does not require the publication of formal sustainability reports like in other international financial markets.

That said, some banks in Nepal, such as Siddhartha Bank, NMB Bank, and Nabil Bank, Laxmi Sunrise Bank have voluntarily begun publishing their own sustainability-related disclosures. These disclosures include information on how they manage environmental risks, implement Corporate Social Responsibility (CSR) activities, and contribute to sustainable development goals (SDGs). For example, Siddhartha Bank has worked with the Partnership for Carbon Accounting Financials (PCAF) to calculate and disclose its greenhouse gas emissions. This kind of voluntary reporting is a positive step, but the central bank has yet to mandate such practices across the entire banking sector.

Question 15: How do current policies and regulatory framework in Nepal influence the sustainable development outcomes of green finance initiatives at your bank?

Answer: After the policy became mandatory, we had to increase manpower and focus on more training sessions. In fact, we were able to position ourselves ahead of our peer banks when it came to ESRM implementation. We’re not at the very top, but we’re certainly among the top five banks that have actively taken the lead in this area. This proactive stance has been advantageous for us. In addition, as a result of our efforts, we’ve been invited to seminars and workshops, which further reinforces our commitment to sustainable practices. Siddhartha Bank has done well in terms of implementing these policies, and our responsibility is to continue developing and amending policies as necessary, especially when it comes to green financing and credit.

Question 16: Have you noticed a change in investor preferences towards green finance products in recent years?

Answer: Green finance is gaining interest, especially in sectors like electric vehicles (EVs). Most banks are now financing EVs, as there is international awareness and demand. For instance, airlines are transitioning to sustainable practices, and although domestic airlines like Yeti may not align directly with all sustainable goals, they are still making efforts. New airlines are also joining this trend. Government policies are already in place; however, changes in ministers and political priorities can impact the implementation and progress.

Question 17: Is it challenging for manufacturing companies to adopt green finance practices? What challenges do manufacturing companies face when adopting green finance, and how can these be addressed?

Answer: Manufacturing companies in Nepal face several challenges when trying to adopt green finance practices. One of the most significant challenges is the outdated nature of their equipment and technologies. Many manufacturing companies still operate with machinery that is decades old, such as 20-year-old tippers, trucks, and buses. Transitioning to newer, greener technologies can be costly and logistically challenging for these companies. For example, the government has introduced policies that require outdated vehicles to be scrapped, but enforcement has been inconsistent. In some cases, local petrol tanker operators have resisted these changes, making it difficult to implement the necessary upgrades.

Another challenge is the lack of financial incentives and government support for transitioning to greener operations. While policies exist, the time frame for implementation is often too short for companies to make the necessary adjustments. For instance, companies are sometimes given only a year to comply with new regulations, which may not be sufficient time for them to secure the funding and resources needed to upgrade their machinery and adopt more sustainable practices.

To address these challenges, the government needs to provide longer transition periods, financial incentives, and support in the form of grants or low-interest loans to help companies make the shift. Additionally, there needs to be a stronger push for local certification and rating agencies that can help companies assess their environmental impact and provide guidance on improving their sustainability practices. With these measures in place, manufacturing companies will be better positioned to adopt green finance and contribute to Nepal's sustainable development goals.

Question 18: What factors do you think influence investors to choose green finance options?

Answer: The government needs to provide appropriate institutions to certify green projects and products. For instance, energy efficiency ratings for products could encourage manufacturers. However, this market is still small. Manufacturers need to shift gradually, as some are already starting to do so by setting up sister concerns focused on green practices. The government needs to develop manpower and provide appropriate policies to support this transition.

Question 19: How do investor preferences for green finance product affect the sustainable development of the companies your bank finances?

Answer: As said earlier, in case of manufacturing companies, we can clearly understand that if provided longer transition periods, financial incentives, grants or low interest loans, investors prefer green finance product. The initial investment cost might be high but within the long-term benefits of adopting sustainable practices are becoming increasingly evident.

Question 20: What new technologies or digital tools have you adopted to enhance the efficiency and effectiveness of green finance products?

Answer: Siddhartha Bank has embraced digital technologies to enhance its operational efficiency and support green finance initiatives. One of the most significant changes is the shift from paper-based processes to digital platforms. In the past, credit proposals and approvals involved extensive paperwork. For example, if a branch initiated a loan proposal, multiple copies of the document had to be printed and sent to different departments, including the provincial office and the head office. This not only consumed a large amount of paper but also delayed the approval process. Now, with the adoption of digital tools, all these processes are handled electronically, significantly reducing the bank's paper consumption and improving efficiency.

The Nepal Rastra Bank's "Digital First" initiative aligns with this shift, encouraging banks to prioritize digital services. As a result, Siddhartha Bank has made digital transactions and approvals the norm. This has not only reduced operational costs but also minimized the bank's environmental footprint, supporting its green finance goals. Moreover, the bank's digital transformation has made it easier for clients to access financial services without the need for physical paperwork, further promoting the use of green finance.

Question 21: Can you discuss any challenges or barriers related to integrating technology with green finance?

Answer: Despite these advances, the integration of new technologies has not been without its challenges. One of the primary challenges has been the cost of implementing new systems and the need for extensive training for staff. Additionally, there was initial resistance from both staff and clients, who were accustomed to traditional methods. However, over time, as employees received training and became more comfortable with the new systems, the bank has seen improvements in both efficiency and sustainability.

Question 22: How does technological innovation in green finance at your bank drive sustainable development of your clients?

Answer: Technology renovation has significantly improved efficiency in processing and approvals. For example, digital processing has reduced the time and cost associated with paper-based approvals, enhancing overall operational efficiency.

Question 23: Does using technology reduce costs?

Answer: Yes, digital processing reduces paper costs and leads to overall cost savings in the long term.

Question 24: How does your bank collaborate with other stakeholders (e.g., government agencies, NGOs, private sector) to promote green finance?

Answer: Yes, we have collaborated with institutions like IFC and other development financial institutions (DFIs) to promote green finance. These collaborations help us with ratings and ensuring compliance with green finance standards.

Question 25: What does DFI stand for?

Answer: DFI stands for Development Financial Institution, which provides funds to developing countries. IFC is one such institution.

Question 26: Can you describe any partnerships or collaborations that have been particularly effective in advancing green finance initiatives and how does it enhance sustainable developments impact of green finance initiatives?

Answer: Yes, collaborations with institutions like IFC help improve effectiveness. These institutions provide rigorous assessments and ratings, which enhance the credibility and implementation of green finance practices.

Question 27: What are the key challenges and opportunities in implementing green finance initiatives at your bank?

Answer: Challenges include meeting criteria and lack of green certification institutions in Nepal. Whereas, opportunities include creating new industries and financing options, which can benefit both banks and customers once challenges are overcome.

4.1.4 Officer, Siddhartha Bank (Credit Risk & ENS)

Question 1: For how many years have you been working in the banking sector? How many years you've been working in this particular department?

Answer: I have been in the banking sector for over 12 years. Interestingly, I've spent all of these 12 years at Siddharth Bank. In this particular Environmental & Social Risk (E&S) Division, we both have been working for 1.5 years.

In terms of E&S, which stands for Environmental and Social Risk, our focus has been on risk prediction. Initially, we operated under the broad umbrella of ESG (Environmental, Social, and Governance), which later became more focused. This department specifically deals with the ESG framework. The policies concerning emissions and environmental impacts came from Nepal Rastra Bank's directives. While they initially started with specific predictions, they later incorporated ESG. Although it wasn't mandatory at the beginning, over time, as banking practices evolved, we adopted policies to ensure minimal environmental and social impact across the bank's operations.

We also act as a guiding hand in many aspects, offering advice, prohibiting certain activities, and approving others, especially when it comes to credit-related matters and banking traditions. We have been actively involved in ensuring that the policies related to credit align with ESG standards.

Question 2: What are your key responsibilities in your current role?

Answer: My main responsibility is ensuring the implementation of the ESRM (Environmental and Social Risk Management) policy, which is a requirement by Nepal Rastra Bank. The guidelines for the policy were introduced in 2018, and by 2019, we had developed the bank's own ESRM policy. At first, our focus was on providing insights and recommendations rather than enforcing strict regulations. It wasn't mandatory at the beginning, so we started by working on a case-by-case basis, mostly within Kathmandu Valley. However, as the policy developed and became mandatory in 2022, we faced certain challenges, especially when it came to documentation. Many times, the required documents were not accepted by others, and questions arose about why certain practices were being followed when there wasn't a standardized policy.

Despite these challenges, there were also advantages, such as increased business solicitation in certain sectors. We had to compete in the market while ensuring compliance with the policies. So, we began providing training to all employees, particularly those in credit-related departments, to ensure that everyone understood the policies.

Question 3: Has Government made certain percentage of financing to promote Green Finance mandatory now?

Answer: It’s not mandatory as of now. The government has not made it compulsory, although globally, many countries have introduced regulations for green finance. Siddharth Bank was one of the first banks to receive funding through a Global RC initiative, which required that we allocate a portion of our resources toward climate finance. Prabhu Bank and a few others have also followed this path, focusing on specific projects like smart agriculture and energy efficiency.

Question 4: Have you received any specific training or certification related to green finance?

Answer: We haven't received direct training on green finance itself, but we’ve got extensive training related to the ESRM policy. Nepal Rastra Bank has been a key provider of these trainings, along with various workshops and seminars hosted by other institutions like IFC. We’ve even had international trainers from countries like Denmark come in to share their knowledge, though it’s challenging to apply all their expertise in the Nepali context due to differences in infrastructure and development.

Question 5: Are there any particular sectors or types of projects you focus on within green finance? If yes, please specify.

Answer: Hydropower has been a significant focus for us, though there are challenges. For instance, international financial institutions do not always classify hydropower as green finance due to sustainability concerns such as the impact on biodiversity. However, in Nepal, hydropower is a major source of renewable energy, and we classify it as a green project. Beyond that, we’ve also supported electric vehicle (EV) financing and are working toward offering green building loans, although there’s still work to be done in this area.

Question 6: What types of green finance products or services does your bank currently offer?

Answer: Our main offering in terms of green finance is loans for electric vehicles (EVs). We offer these loans at a lower interest rate compared to traditional internal combustion engine vehicles. Additionally, we offer even lower interest rates for women. However, as of now, the availability of these loans is somewhat limited.

Question 7: Has your bank considered issuing green bonds or green loans?

Answer: We have considered it, but there’s still a lot of work to be done in this area. Issuing a green bond requires meeting several specific parameters and guidelines, and right now, those structures aren't fully developed in Nepal. While it's something we're thinking about, there hasn't been significant progress on it yet.

Question 8: Can you share any successful case studies where green finance has significantly contributed to sustainable development?

Answer: Yes, we've had success with hydropower projects and EV financing. We've also explored the concept of green homes, but there's still more to be done before we can confidently claim that we're leading in this space. The standards for green buildings are still evolving, and we need to ensure that projects meet the necessary certification criteria.

Question 9: How do green finance initiatives at your bank contribute to the sustainable development of your clients?

Answer: The concept of green finance has aroused globally. Many companies are trying to minimize the emission of carbon by making small changes like use of EVS and solar. Similarly, we are trying to create awareness among people about green finances by introducing green schemes like low interest rates on EVs, green buildings etc. They are concerned about the waste reduction and management to address the environment and social risk. This will promote sustainable development of not only clients but of banking sector as well.

Question 10: How do current policies and regulations in Nepal support or hinder green finance initiatives?

Answer: Green finance policies in Nepal are still in the developmental stage. While there is no specific policy solely dedicated to green finance, the Environment and Social Risk Management (ESRM) policy, the Environmental Protection Act, and a draft of Green Taxonomy have been introduced to guide financial institutions in promoting sustainable development. However, these policies are not fully implemented yet. The government, through the Nepal Rastra Bank (NRB), has issued drafts, seeking feedback from the banking sector and other stakeholders, but the process is complicated. One challenge is the lack of clear parameters for classifying projects under green finance.

Question 11: What kind of policy changes do you believe are necessary to promote the growth of green finance in Nepal?

Answer: Policies should be introduced slowly, with appropriate training and preparation for manpower. Training should precede the implementation of policies. Once trained manpower is available, policies can be launched gradually. The government should focus on capacity building, technical training, and incremental policy changes to ensure the promotion of green finance.

Question 12: How do current policies and regulatory framework in Nepal influence the sustainable development outcomes of green finance initiatives at your bank?

Answer: After the policy became mandatory, we had to increase manpower and focus on more training sessions. In fact, we were able to position ourselves ahead of our peer banks when it came to ESRM implementation. We’re not at the very top, but we’re certainly among the top five banks that have actively taken the lead in this area. This proactive stance has been advantageous for us. In addition, as a result of our efforts, we’ve been invited to seminars and workshops, which further reinforces our commitment to sustainable practices. Siddhartha Bank has done well in terms of implementing these policies, and our responsibility is to continue developing and amending policies as necessary, especially when it comes to green financing and credit.

Question 13: Are there any changes in investor preferences towards green finance products, and how does Siddhartha Bank cater to this demand?

Answer: Investors in Nepal are gradually becoming more aware of green finance services, thanks to increased efforts by banks like Siddhartha Bank. Green finance, as mentioned earlier, encompasses lending and investment practices that support environmentally sustainable projects. For instance, Siddhartha Bank has been working with sectors like airlines and the automobile industry to promote sustainability. The bank offers green loans to companies that are aligned with Sustainable Development Goals (SDGs), particularly those that aim to reduce their carbon footprint or adopt eco-friendly technologies. For example, the bank has been collaborating with Yeti Airlines, a domestic airline, which has been working to meet SDG targets by integrating environmental sustainability into its operations.

Other airlines and industries are also beginning to follow suit, recognizing the long-term benefits of sustainable practices. Despite this, there remains a significant gap in government stability and policy consistency, which has led to some challenges in fully realizing green finance's potential. Policy shifts often occur when new ministers come into office, causing delays or disruptions in the implementation of long-term sustainability goals. However, the growing interest in green finance among sectors like aviation, manufacturing, and energy indicates that investors are becoming more inclined to incorporate sustainability into their business models. The challenge now lies in providing consistent policy support and further raising awareness among industries that have yet to adopt these practices.

Question 14: How do investor preferences for green finance product affect the sustainable development of the companies your bank finances?

Answer: Green finance is one part of the broader scope of sustainable development. Sustainable development itself includes governance, environmental health, and social well-being. Green finance supports sustainable development by directing investments toward projects that reduce carbon emissions and promote clean energy. One of our key areas of focus has been climate finance, which falls under the green finance umbrella. In Nepal, this can be challenging, as the policies and infrastructure for green and climate finance are still developing. For example, hydropower projects are scrutinized under the ESRM policy because they impact local biodiversity, indigenous communities, and water resources. A hydropower project can affect kilometers of land and biodiversity, from vegetation to animals and human settlements.

In terms of green finance, we also work with international lenders who have their own requirements. They often mandate that a certain percentage of loans be allocated toward climate finance. This is part of the challenge, as we have to ensure compliance with both local and international standards.

Question 15: What factors do you think influence investors to choose green finance options?

Answer: It’s true that sustainable development can be expensive, and many investors are focused on profit maximization. However, policies such as Nepal’s Environment Protection Act, which was introduced in 2054 B.S., have helped push industries toward more sustainable practices. If industries don’t comply with these policies, they risk legal action, and some have already faced consequences. While the initial costs may be high, the long-term benefits of adopting sustainable practices, especially in terms of reputation and compliance, are becoming increasingly evident.

Question 16: What new technologies or digital tools have you adopted to enhance the efficiency and effectiveness of green finance products?

Answer: The bank has adopted digital tools for operations and credit processing. Previously, approvals required multiple paper copies and manual processing, but now everything is done digitally, reducing paper use and improving efficiency. The central bank's vision of "Digital First" aligns with these practices, making services more efficient.

Question 17: Can you discuss any challenges or barriers related to integrating technology with green finance?

Answer: The main challenges were costs and adaptability. Training and overcoming resistance to new practices took time. However, as more banks adopted digital tools, the process became smoother.

Question 18: How does technological innovation in green finance at your bank drive sustainable development of your clients?

Answer: Technology renovation has significantly improved efficiency in processing and approvals. For example, digital processing has reduced the time and cost associated with paper-based approvals, enhancing overall operational efficiency.

Question 19: How does your bank collaborate with other stakeholders (e.g., government agencies, NGOs, private sector) to promote green finance?

Answer: Yes, we have collaborated with institutions like IFC and other development financial institutions (DFIs) to promote green finance. These collaborations help us with ratings and ensuring compliance with green finance standards.

Question 20: Can you describe any partnerships or collaborations that have been particularly effective in advancing green finance initiatives and how does it enhance sustainable developments impact of green finance initiatives?

Answer: Yes, collaborations with institutions like IFC help improve effectiveness. These institutions provide rigorous assessments and ratings, which enhance the credibility and implementation of green finance practices.

Question 21: What are the key challenges and opportunities in implementing green finance initiatives at your bank?

Answer: Challenges include meeting criteria and lack of green certification institutions in Nepal. Whereas, opportunities include creating new industries and financing options, which can benefit both banks and customers once challenges are overcome.

4.1.5 Officer, Nabil Bank (Sustainable Banking and Development)

Question 1: Could you please provide some information about yourself and your experience? How many years have you been working in this sector?

Answer: I've been working in the banking sector with a focus on sustainable banking and green finance since 2021. During this time, I’ve seen the evolution of green finance, particularly since 2018 when Nepal introduced the ESRM Guidelines for financial institutions.

Question 2: Could you briefly describe your key responsibilities?

Answer: Currently, I'm responsible for overseeing the implementation of Environmental and Social Risk Management (ESRM) guidelines in our bank's loan operations. I also work closely with teams responsible for sustainable banking products, such as green housing loans and electric vehicle (EV) financing. My first exposure to sustainable banking was in 2018 when the Nepal Rastra Bank mandated the implementation of the ESRM guidelines for financial institutions. This initiative aimed to ensure that large projects funded by banks complied with environmental and social risk standards, particularly regarding carbon emissions.

Question 3: Have you received any specific training or certification in green finance?

Answer: I have received training on environmental risk management, and our bank has conducted several workshops on integrating sustainable development into banking practices. We've also worked with external consultants for project evaluations. I have also received specific certifications related to green finance, including training on the Green Taxonomy, which guides banks on what qualifies as green or sustainable finance.

Question 4: Are there any particular sectors or types of projects you focus on within green finance? If yes, please specify.

Answer: We focus on various sectors within green finance, including financing for renewable energy projects, and low-carbon industries. We have started to conduct entrepreneurial programmes in both urban and rural areas and train them. Hydropower projects and energy-efficient housing have been prominent. Apart from that, we've been working on improving financing in the agriculture sector and mobilising our branches to invest in SMEs and MSMEs.

Question 5: What types of green finance products or services does your bank currently offer?

Answer: In terms of energy efficiency, our bank is financing sustainable housing technologies like solar panel installations. These technologies not only save costs but also contribute to energy conservation. As energy-efficient bulbs and materials become common in housing projects, financial institutions are working with sectors that promote energy conservation. We also have continued to support solar and hydro projects to promote clean energy. We also finance business enterprises working on sustainability. We also aim to provide financing to the entrepreneurs if they come up with viable business plans.

Question 6: Can you share any successful case studies where green finance has significantly contributed to sustainable development?

Answer: One successful case study is our involvement in financing energy-efficient housing projects, where we provided loans for solar panel installations. This significantly reduced energy costs and carbon emissions for clients.

Question 7: How do green finance initiatives at your bank contribute to the overall sustainable development of your clients?

Answer: Green finance initiatives, such as providing loans for electric vehicles and sustainable housing, directly contribute to our clients' sustainability goals. These projects help reduce their carbon footprint and align with Nepal's net-zero emission targets. Globally, green finance has become a necessity. Although challenges like fraud remain, banks are addressing them through mitigation strategies. Adaptation is another critical area, with financial institutions developing adaptation plans and strategies. With increased opportunities and focus, the future of banking is looking positive, with more individuals contributing to sustainability efforts. The banking industry is making gradual progress towards sustainability, with banks increasingly incorporating international standards and frameworks into their operations.

Question 8: How do current policies and regulations in Nepal support or hinder green finance initiatives?

Answer: When the Sustainable Development Goals (SDGs) were adopted in 2015, Nepal embraced them. Along with the SDGs, the country implemented two key initiatives: the Environmental and Social Risk Management (ESRM) Guidelines for financial institutions, and the Nationally Determined Contributions (NDCs). In 2018, the Nepal Rastra Bank (NRB) mandated that all banks must follow these ESRM guidelines when issuing loans. The guidelines primarily address issues related to climate change. Since financial institutions finance large projects, these projects often result in carbon emissions, and the ESRM guidelines direct banks to either avoid investing in such high-risk areas or only invest after fulfilling several key parameters. NDCs, on the other hand, cover various energy sectors, such as forestry and electric vehicles, with specific targets, and aim to help the country reach net-zero emissions by 2045. Nepal's ESRM guidelines, the NDCs, and the Green Taxonomy have created a supportive environment for green finance initiatives. However, stricter enforcement and incentives for low-carbon industries are needed to enhance impact.

Question 9: What policy changes do you believe are necessary to promote the growth of green finance in Nepal?

Answer: To further promote green finance, the government could offer additional tax incentives for green projects and create more stringent environmental regulations that encourage private sector investment in sustainable industries.

Question 10: How do current policies and regulatory frameworks in Nepal influence the sustainable development outcomes of green finance initiatives at your bank?

Answer: Since 2018, financial institutions have been adhering to the ESRM Guidelines, which have helped foster sustainable banking practices. Unlike the past, where banks solely invested in profit-driven areas, today's banks are more responsible, integrating social and environmental considerations into their operations. The NRB has also mandated that commercial banks extend their services to remote areas, ensuring financial access to marginalized communities. Many banks voluntarily operate in these regions. This expansion has allowed banks to design special products, such as loans for women entrepreneurship and farmer energy projects, which are launched in rural areas. Banks also conduct literacy programs, door-to-door campaigns, and household awareness sessions to promote financial services in these areas.

Before 2021, the NRB was offering subsidies, which prompted banks to introduce subsidized loan products. However, some challenges arose, such as borrowers using loans for unintended purposes. Despite these challenges, banks continued to extend their services, and in more remote areas, concepts like Branchless Banking (BLB) were introduced. The BLB initiative was part of a post-earthquake project, which involved assigning local agents with tablets to offer financial services directly at people's doorsteps. These agents were trained to offer limited financial services like withdrawals, deposits, and loans. The concept proved to be successful, covering several aspects of financial services in rural regions.

Question 11: Have you noticed a change in investor preferences towards green finance products in recent years?

Answer: We have been developing housing-efficient loans and loans promoting greenhouse-friendly initiatives. As we market and promote these products in various regions, we have observed that some investors are beginning to use these services. However, behavioral change takes time. When people find a service beneficial, they share their experiences, leading to gradual adoption. Sustainable finance is a slow process, but it has already entered the market, and people are taking loans and benefiting from the services. This indicates that the trend is being followed and is gaining momentum.

Question 12: What factors do you think influence investors to choose green finance options?

Answer: Investors are increasingly choosing green finance options due to factors such as government incentives, low interest loans for sustainable projects, growing consumer demand for sustainable products, and a heightened focus on corporate social responsibility.

Question 13: How do investor preferences for green finance products affect the sustainable development of the companies your bank finances?

Answer: Banks are financing sustainable housing technologies like solar panel installations. These technologies not only save costs but also contribute to energy conservation. As energy-efficient bulbs and materials become common in housing projects, financial institutions are working with sectors that promote energy conservation. The brick industry is also evolving, with some industries adopting emission-free manufacturing processes. While these efforts require awareness and collaboration, banks are offering low-interest loans and subsidies to green industries, promoting a gradual shift from traditional to sustainable banking practices.

Question 14: What new technologies or digital tools have you adopted to enhance the efficiency and effectiveness of green finance products?

Answer: We have adopted several digital tools, such as carbon accounting systems and mobile banking solutions, to enhance the efficiency of green finance products. For example, through the Partnership for Carbon Accounting Financials (PCAF), we measure emissions across various sectors we finance. Banks are also contributing to digitization efforts, promoting paperless banking. With services like ATMs and mobile banking, customers can complete transactions without visiting a bank, reducing their carbon footprint.

Question 15: Can you discuss any challenges or barriers related to integrating technology with green finance?

Answer: One challenge in integrating technology with green finance is the cost and complexity of adopting new systems, especially in rural areas where digital infrastructure is less developed. Lack of skilled manpower to ensure data accuracy for carbon reporting is another major challenge which requires substantial investment.

Question 16: How does technological innovation in green finance at your bank drive sustainable development of your clients?

Answer: Technological innovations in green finance, such as digital loan platforms for electric vehicles and renewable energy projects, help drive the sustainable development of our clients by simplifying access to finance and enhancing project transparency. This digitization has allowed both banks and customers to make significant progress in mitigating emissions.

Question 17: How does your bank collaborate with other stakeholders (e.g., government agencies, NGOs, private sector) to promote green finance?

Answer: We collaborate with multiple stakeholders, including government agencies, NGOs, and the private sector, to promote green finance. In recent years, sustainable banking and financing practices have been increasingly adopted, with Nepalese banks aligning themselves with international best practices. One example is the Partnership for Carbon Accounting Financials (PCAF). Under PCAF, banks finance various sectors and track the carbon emissions generated by those sectors. The PCAF framework provides a standardized format for measuring emissions, covering business loans, small and medium enterprises (SMEs), hydro projects, and vehicles. While some standards are not applicable to Nepal, banks disclose emissions in relevant areas, making themselves responsible and liable.

Question 18: How does collaboration with stakeholders (e.g., government agencies, NGOs, private sector) at your bank enhance the sustainable development impact of green finance initiatives?

Answer: Under PCAF, banks finance various sectors and track the carbon emissions generated by those sectors. The PCAF framework provides a standardized format for measuring emissions, covering business loans, small and medium enterprises (SMEs), hydro projects, and vehicles. While some standards are not applicable to Nepal, banks disclose emissions in relevant areas, making themselves responsible and liable. This accountability has led banks to amend their policies and introduce products such as sustainable housing loans, green housing loans, and policies promoting electric vehicles (EVs). Some banks have also moved toward gender-friendly policies. With PCAF's international framework, financial institutions are increasingly focused on these areas. Moreover, the waste circular economy is gaining attraction, with banks partnering with private organizations that collect and recycle data. Confidential waste paper is recycled through agreements with private sectors, directly or indirectly saving trees by reducing paper waste.

Question 19: What are the major challenges and opportunities in implementing green finance initiatives at your bank?

Answer: The shift toward green products is accompanied by both opportunities and challenges. Many banks are gradually introducing green finance products. The NRB has created an enabling environment through the introduction of the Green Taxonomy, a new concept in Nepal's banking industry. The taxonomy helps banks determine what qualifies as sustainable or green finance, addressing challenges in defining these terms. The Green Taxonomy is based on four principles: mitigation, adaptation, pollution control, and natural resource conservation. It uses a traffic light system—Red, Amber, and Green—to classify investments. Red represents high-risk areas, Amber indicates a transitional phase, and Green signifies transformational points. The ESRM Guidelines advise banks to avoid red areas. The NRB has also provided an exclusion list, which outlines sectors where investments should not be made. Investments in hydropower projects and cement industries, for example, are made with caution, ensuring that Environmental Impact Assessments (EIAs) are conducted, and external consultants' views are considered. These steps mitigate risks to a great extent, and banks are working extensively on risk mitigation in new projects. However, the lack of standardized definitions and metrics can create confusion.

On the other hand, Opportunities are growing as investor demand for sustainable products increases, and with more international frameworks like PCAF being adopted. Although challenges like fraud remain, banks are addressing them through mitigation strategies. Adaptation is another critical area, with financial institutions developing adaptation plans and strategies. Capacity building is essential for implementing these plans, and banks are creating new departments and offering job opportunities in this field. Students like you who are writing thesis on green finance, are showing interest for the betterment of this sector. With increased opportunities and focus, the future of sustainable banking is looking positive, with more individuals contributing to sustainability efforts. The banking industry is making gradual progress towards sustainability, with banks increasingly incorporating international standards and frameworks into their operations.

4.1.6 Officer, Muktinath Bikash Bank (Green Finance Lead)

Question 1: Please tell us little about yourself.

Answer: My name is Pravin Kumar Kafle. I am a Chartered Accountant. I completed my MBS from Shankerdev Campus and did my BCom from IGNOU in India. I am currently the Green Finance Lead at Muktinath Bikash bank, and I also teach finance to MBA students at KUSOM.

Question 2: How many years have you been in the banking sector?

Answer: It's been around two years in this bank. Before that, my experience was quite diverse. I was at Megha Capital. Prior to that, I ran my own business, and before that, I served as a Finance Manager in a company named, We Finance. Before all that, I had a three-year articleship experience in India.

Question 3: What are your key responsibilities in current role?

Answer: My responsibility is to handle all the green-related issues in the bank, from green funding to making credit appraisal, adopting ESRM policies and green policies, creating green product papers. We already have product papers, and based on those, we diversify loans. My duties include maintaining the green portfolio and being involved in credit appraisal, ESRM matters, and non-funded matters related to off-balance sheet items.

Question 4: Have you received any specific training or certifications in green finance?

Answer: I have many certifications related to green finance. Most of the certifications are from external institutions, such as Climate Adaptation in Biodiversity from JuST Institute, which primarily focuses on climate change, adaptive capacity, nature-based solutions, and ecosystem-based adaptation using various tools. During the course, we took three or four people from our office. Other certifications include ones from ADEK School, ASEC School, and institutions in the Netherlands on green finance, climate change, and sustainability. I also conduct workshops related to green taxonomy and have worked with various organizations to conduct these.

Question 5: Are there any particular sector or types of projects you focus on within green finance?

Answer: Yes, to enhance green finance, our bank is currently focusing on hydro and electric vehicles. Previously, we were focused on solar panels, but we don't have a significant portfolio in solar. Our portfolio is now more focused on hydropower and electric vehicles.

Question 6: What was the problem with solar installation?

Answer: No, there were no difficulties with solar as such but we have partnered with consultants for hydropower. Since we are a development bank, we have some limitations compared to commercial banks. Due to these limitations, financing solar or any other project requires us to follow the banking act, which prevents us from financing based on collateral. We faced challenges because our bank couldn't offer collateral-based financing for solar projects.

Question 7: What types of green finance products or services does your bank currently offer?

Answer: Our primary focus in green finance is electric vehicles. We also have a portfolio in hydropower and climate-smart agriculture. We have product papers for climate-smart agriculture, and we're financing clean energy agricultural inputs. While we have an existing portfolio in solar, we are not currently expanding in that area.

Question 8: Can you share the successful case studies where green finance has significantly contributed to sustainable development?

Answer: For now, EVs and Hydropower projects are the successful ones in terms of promoting green finance.

Question 9: How do green finance initiatives at your bank contribute to the sustainable development of your clients?

Answer: It helps. The green finance model is about contributing to the environment, which is as important as contributing to society through CSR. Green finance is about addressing environmental concerns while ensuring business sustainability. When we provide green financing, we comply with ESG and ESRM guidelines, excluding certain sectors like arms and drugs. We perform IEE, EIA for critical sectors to assess climate impact, and we ensure strict compliance before engaging in any transaction. This helps businesses operate without causing environmental degradation. Not only we focus on green aspects but also on other social aspects like labor, child labor, ESG before making any lending to the company. We perform ESDD checklist to ensure that company is addressing environmental concerns as well.

Question 10: How do current policies and regulations in Nepal support or hinder green finance initiatives?

Answer: In case of Nepal, it is regulatory driven that means if regulatory bodies enforce the rules, then only companies will invest in green finance activities otherwise there are very few PEVC sector and commercial banks. Commercial Banks are also compelled to do so now because they receive international fund to invest in green sectors. Whereas in case of Central bank, the ESRM guidelines were introduced in 2018, and in 2022, climate risks were added. We also follow Industrial Enterprise Act, 2076 and Environment Protection Act,2076 regulations that mandate EIA and IEA assessments before any project appraisal. Other than that, there is no such policies and guidelines particularly designed for promoting green finance and sustainable development in Nepal. Recently Nepal Rastra Bank has introduced the draft of the Green Taxonomy but is not full-fledged. Additionally, they have set targets for banks to invest a certain percentage in priority sectors like clean energy.

Question 11: Do you foresee any issues with the Green Taxonomy introduced by Nepal Rastra Bank? And what policy changes do you believe are necessary to promote the growth of green finance in Nepal?

Answer: Yes, we might face challenges as you said, it will be difficult to classify the green and non-green sectors. The objective of green taxonomy that is environmental objective might not be fulfilled if the classification is not strictly implemented. On the other hand, if it is strictly classified it will be very difficult to meet the parameters of green finance which will prevent from getting international fund as well. So, it should be well balanced to meet the objective of green finance.

If there is no any incentive or mandatory from Nepal Rastra Bank, it is not necessary that all banks and financial institutions will promote green finance voluntarily. However, we have to look positively as of now because central bank's direction is towards sustainable investment.

Question 12: What policy changes do you believe are necessary to promote the growth of green finance in Nepal?

Answer: Well, it depends on who brings the policies. If it is brought by Nepal Rastra Bank, then it is done through monetary policy and it has already given directions for green finance in 2023/24. In latest monetary policy, it has also mentioned about "green tax". However, the territory of Nepal Rastra Bank is limited in the matter of policy making. But Ministry of Finance is able to bring policies regarding green subsidized loans, and for that Nepal Rastra bank can provide incentives and direct to promote green loans. For example, commercial banks have added certain percentage of premium in base rates for other normal loans, say for example, base rate plus 4%. Similarly, it can be applied for green loans as well.

Question: 13. How do current policies and regulatory frameworks in Nepal influence the sustainable development outcomes of green finance initiatives at your bank?

Answer: There are other major regulatory bodies, other than Ministry of Finance and Nepal Rastra Bank responsible for green finance like, Ministry of foreign Affairs (MOFA), Ministry of Energy, etc. In case of Nepal, Ministry of Energy has greater role. We are way ahead in terms of policy and frameworks. For eg, to adopt NDC, we have programmes like National Adaptive Plan and target of achieving net zero carbon emission by 2045. Nepal government has started to set targets for various sectors as well. However, in case of clean sector there is lack of voluntary carbon market, carbon trading etc. Government can address this issue by developing policies and frameworks.

Question 14: What is the awareness among people about green finance products like green loan and green bonds?

Answer: People are not much aware about these types of products, however, banks and financial institutions in Nepal are gradually shifting their focus towards it. Even our neighboring countries like China are also in situation of observing how to do in green sector. Talking about Nepal, some organizations like NIFRA have launched Clean Energy Bond. Similarly, Global IME Bank is assisting funding of Green Climate fund. It is developing positively from private sector. However, the negligence from concerned regulatory bodies makes market development slow.

Question 15: Have you noticed a change in investor preferences towards green finance products in recent years?

Answer: I have not felt that level of changes in case of Nepal because investors prefer traditional way of investing. It may be because we are not able to not make them understand. But in case of other countries, it is making difference. For eg, if the supply chain of Walmart is not complied to ESG, then they will not purchase the goods, even consumer. Similarly, in India there is platforms like Social Stock Exchange to mobilize green fund and to invest sustainable fund in the sustainable fund itself. But it is not possible in Nepal in current scenario as investors are not much aware.

Question 16: What factors do you think influence investors to choose green finance options?

Answer: First factor, almost in all cases not only this, is incentives. In case of green, why investors prefer EVs or hydro is because of incentives. EVs are comparatively cheaper in price due to its low taxing than traditional vehicles. Similarly, banks are providing low interest loans for the promotion of EVs. People driving EVs come from the background who are concerned with the environmental cause as well.

No investors would invest in any business thinking it will less hamper the environment but if we become able to make them understand they will get the usual return along with protecting the environment then they will invest.

Question 17: How do investor preferences for green finance products affect the sustainable development of the companies your bank finances?

Answer: It will definitely support the sustainable development if the investors or clients we finance use EVs, solar and hydro. Nepal has a target of achieving zero carbon emission by 2045 but the need is moreover adaptation rather than mitigation. The project we finance has less impact on environment because it emits less harmful gases. The other thing being how the clients we finance are promoting sustainable development is if they are less hampering the environment through their business activities and helping to create a balanced ecosystem.

Question 18: What new technologies or digital tools have you adopted to enhance the efficiency and effectiveness of green finance products?

Answer: We have not already adopted any tools as such. But to address the climate change and to perform climate impact assessment, we are planning of implementing indicators like EVA indicator, CCAFS mode tools. It is not used by anyone in Nepal. We recently learned to use those tools through trainings. These indicators help to know the client's adaptive capacity.

Question 19: Can you discuss any challenges or barriers related to integrating technology with green finance?

Answer: First of all, there is no awareness about technology on green finance among the staff of the banks. If we are able to motivate and provide trainings related to use of tools to the staffs by participating in international seminars and workshops then we can effectively utilize it.

Question 20: How does technological innovation in green finance at your bank drive the sustainable development of your clients?

Answer: Not only sustainable development, technology influence other aspects as well. For eg, technology can be used to replace the use of mechanical agricultural input that used diesel, petrol to the electric ones.

Question 21: How does your bank collaborate with other stakeholders (e.g., government agencies, NGOs, private sector) to promote green finance?

Answer: We have done so many collaborations to promote green finance. We took a project called, CEDRA. We received technical assistance, climate related trainings, capacity building from DCFD. We have another associate also Muktinath Krishi Company, that is strictly involved in directing the finance towards green sector by investing in machineries, smart agriculture tools. We are doing projects by collaborating with them. We also took SMB project. Hence, we are continuously collaborating with various projects in various phases to promote green finance.

Question 22: Can you describe any partnerships or collaborations that have been particularly effective in advancing green finance initiatives?

Answer: The collaboration with projects like CEDRA, SMB helped in capacity building. They assisted to draft lending procedure steps to us. They provided technical assistance to prepare ESG frameworks, as per the standards of IFC and World Bank. So majorly they are helping banks and financial institutions by providing technological assistance. Our bank has not taken any money from multilateral banks but some other commercial banks of Nepal like Global IME has received money from World Bank. But we are looking forward for collaboration with them soon.

Question 23: How does collaboration with stakeholders (e.g., government agencies, NGOs, private sector) at your bank enhance the sustainable development impact of green finance initiatives?

Answer: Collaborations with such stakeholders assist in creating sustainable environment and to promote sustainable incentives. If a bank follows the system, then other bank also observe and copy the same which eventually promote business environment.

Question 24: What are the key challenges and opportunities in implementing green finance initiatives at your bank?

Answer: While implementing green finance initiatives, the first challenge is lack of awareness and not being able to make stakeholder understand. Another is in terms of understanding whether it is actually climate change or not. Scientists have not concluded whether it is due to anthropological reasons or any other reasons.

Another challenge is resource constraints. IFC has made assessment that Nepal needs $46.1 billion in the sector of green financing or climate financing but we don't have such huge resources.

Similarly, there exists technological constraints. Not much advancement in technology is seen especially in case of Nepal. These are the major constraints. Other than that, regulatory lagging is also there.

Although challenges do exist, there is plenty of opportunities in implementing green finance initiatives. We as a human associate with cause to perform any activities. The cause that we are associated to lately is development. But the countries that are already developed want cause that is above development. We have to develop not only at personal level but also the environment that we live in. The major problem of world currently is sustainability and climate change. If we don't act till 2045-50 then climate change will severely affect us. If it rises even by 1.5 ℃ or 2℃ above its pre-industrial level, we will not be able to survive here. So, it is a need that we must go to net zero emission zone. And it is not just a rumor but a fact based on various researches. The good news is that it was caused due to us human activities and we ourselves can prevent it with collective efforts hence creating so many opportunities in green finance.

4.1.7 Province Head, Nabil Bank (Branch Management and Overseeing)

Question 1. How many years have you been working in the banking sector?

Answer: I have been working in the banking sector for over 20 years. Over the years, my focus has been on branch management, overseeing the operations of multiple branches, and ensuring that the bank's targets are met while providing essential support for business growth.

Question 2. Could you briefly describe your key responsibilities in your current role?

Answer: Currently, I manage 22 branches of Nabil Bank in Lumbini Province, overseeing the work of around 150 staff. My responsibilities include managing loans, deposits, and the overall business operations of these branches. I ensure that each branch meets its targets, supports business development, and addresses any issues that arise. Additionally, I play a significant role in promoting sustainable banking practices, especially in green finance.

Question 3. Have you received any specific training or certification in green finance?

Answer: Yes, I have received extensive training related to green finance, although not all of it is certified. Currently, I am in the process of completing an Environmental, Social, and Governance (ESG) certification. I have participated in several training programs, including an online session organized by the International Finance Corporation (IFC) and various in-house programs on sustainable banking.

Question 4. Are there any particular sectors or types of projects you focus on within green finance? If yes, please specify.

Answer: Yes, our focus areas in green finance include sectors like hydropower, solar energy, agriculture, and electric vehicles (EVs). We have supported hydropower projects, solar energy initiatives, and EV loans, all of which contribute to environmental sustainability. We also finance sustainable farming practices through our agricultural loans.

Question 5. What types of green finance products or services does your bank currently offer?

Answer: Our bank offers a variety of green finance products, including loans for hydropower, solar energy projects, EV loans for both commercial and private vehicles, and agricultural loans supporting sustainable farming. These products are designed to promote environmental sustainability and contribute to the long-term development of the country.

Question 6. Can you share any successful case studies where green finance has significantly contributed to sustainable development?

Answer: One successful case is a hydropower project we financed, which started small but has since grown into a major contributor to Nepal's energy sector. Additionally, our financing for electric vehicles and agricultural projects has significantly reduced carbon emissions, promoted renewable energy, and supported the livelihoods of rural communities.

Question 7. How do green finance initiatives at your bank contribute to the sustainable development of your clients?

Answer: Our green finance initiatives provide clients with financial products that meet their business needs while promoting environmentally friendly practices. For instance, agricultural loans support sustainable farming, EV loans help clients shift to cleaner vehicles, and our investments in renewable energy projects enable clients to contribute to sustainable development on a larger scale.

Question 8. How do current policies and regulations in Nepal support or hinder green finance initiatives?

Answer: The current policies in Nepal, particularly those set by the Nepal Rastra Bank, are generally supportive of green finance. The central bank mandates that 10% of the lending portfolio must go to hydropower and 15% to agriculture and small businesses, which are sectors closely related to green finance. However, there are challenges in ensuring that funds are used for their intended purposes.

Question 9. What policy changes do you believe are necessary to promote the growth of green finance in Nepal?

Answer: Stricter monitoring and accountability mechanisms are needed to ensure that green finance funds are used appropriately. Additionally, offering further incentives like lower interest rates for projects with clear sustainability benefits could encourage more businesses to opt for green finance. Policy alignment with international sustainability standards would also boost the growth of green finance in Nepal.

Question 10. How do current policies and regulatory frameworks in Nepal influence the sustainable development outcomes of green finance initiatives at your bank?

Answer: Current policies, such as favorable interest rates for green finance and regulatory mandates on portfolio allocation, positively influence the sustainable development outcomes of our green finance initiatives. These frameworks ensure that we prioritize sectors like hydropower and agriculture, which have long-term sustainability impacts.

Question 11. Have you noticed a change in investor preferences towards green finance products in recent years?

Answer: Yes, there has been a noticeable shift in investor preferences towards green finance products, particularly as the global focus on sustainability has increased. Investors are more inclined to choose financial products that contribute to environmental and social sustainability.

Question 12. What factors do you think influence investors to choose green finance options?

Answer: Investors are primarily influenced by factors such as the growing demand for sustainable products, government incentives, and the increasing awareness of environmental and social responsibility. Many investors are looking to align their financial activities with sustainability goals to contribute to long-term environmental protection.

Question 13. How do investor preferences for green finance products affect the sustainable development of the companies your bank finances?

Answer: Investor preferences for green finance products encourage companies to adopt sustainable practices. By choosing green finance options, investors not only support environmentally friendly projects but also help companies reduce their carbon footprint and contribute to national and global sustainability goals.

Question 14. What new technologies or digital tools have you adopted to enhance the efficiency and effectiveness of green finance products?

Answer: While we have not yet fully integrated new technologies, we are exploring digital tools to enhance our green finance efforts. These include digital platforms for tracking and managing loan applications and real-time monitoring of funded projects to ensure their alignment with sustainability goals.

Question 15. Can you discuss any challenges or barriers related to integrating technology with green finance?

Answer: One major challenge is the lack of robust digital infrastructure, especially in rural areas where many green finance projects are located. Additionally, there are barriers related to the high cost of implementing advanced technologies and ensuring that they are effectively integrated into existing systems.

Question 16. How does technological innovation in green finance at your bank drive the sustainable development of your clients?

Answer: Technological innovations, such as digital monitoring tools and online loan processing, help streamline green finance operations and make it easier for clients to access funds. These innovations also ensure better tracking of the environmental impact of funded projects, thereby driving sustainable development.

Question 17. How does your bank collaborate with other stakeholders (e.g., government agencies, NGOs, private sector) to promote green finance?

Answer: We actively collaborate with stakeholders, including government agencies, international financial institutions, and NGOs, to promote green finance. These collaborations help us align with national sustainability goals, leverage additional resources, and expand the reach of our green finance initiatives.

Question 18. Can you describe any partnerships or collaborations that have been particularly effective in advancing green finance initiatives?

Answer: One particularly effective collaboration has been with the International Finance Corporation (IFC), which has provided valuable training and resources to support our green finance efforts. Partnerships with NGOs working on renewable energy projects have also helped us promote sustainable development in rural areas.

Question 19. How does collaboration with stakeholders (e.g., government agencies, NGOs, private sector) at your bank enhance the sustainable development impact of green finance initiatives?

Answer: Collaboration with stakeholders enhances the sustainable development impact of our green finance initiatives by providing additional expertise, resources, and policy support. These partnerships help us ensure that our green finance projects are well-targeted and effectively contribute to sustainability goals.

Question 20. What are the key challenges and opportunities in implementing green finance initiatives at your bank?

Answer: The key challenges include ensuring proper use of green finance funds, integrating new technologies, and overcoming regulatory gaps. However, there are also significant opportunities, such as expanding our portfolio in renewable energy and agriculture, leveraging government incentives, and positioning our bank as a leader in sustainable finance.

4.1.8 Officer, Nepal Bank Limited (Loan Recovery Department)

Question 1: Give some information about yourself. How many years have you been working in the ban king sector?

Answer: I have been working in the banking sector for over 13 years. Currently I am working in Loan Recovery Department.

Question 2: Could you briefly describe your key responsibilities in your current role?

Answer: My responsibilities include recovery and speed recovery of loans.

Question 3: Do you have any specific certification or training in green finance?

Answer: We have training, but I do not have any certifications.

Question 4: What type of training are you referring to?

Answer: We have one-day training sessions and other different types of trainings.

Question 5: Are there any particular sectors or types of projects you focus on within green finance? If yes, please specify.

Answer: We are exploring solar projects but are more focused on hydropower. We are also planning to finance electric vehicles (EVs) and charging stations. Though the product for EV financing is not fully developed, the construction of charging stations is underway.

Question 6: What types of green finance products or services does your bank currently offer?

Answer: We provide financing for EVs and alternative energy projects like solar panels.

Question 7: Can you share any successful case studies where green finance has significantly contributed to sustainable development?

Answer: In terms of sustainable development, our hydropower projects have been the most successful. We have been involved in hydropower for a long time, and it has significantly contributed to sustainable development. We also focus on solar panels and LED lighting.

Question 8: How has green finance initiatives at your bank contributed to the sustainable development of your clients?

Answer: Our green finance projects help minimize the effects of climate change and contribute to sustainable development.

Question 9: How do current policies and regulations in Nepal support or hinder green finance initiatives?

Answer: The government has introduced a green taxonomy, and we are studying it. It includes tax benefits, and we are financing green projects like solar and wind energy at lower rates than other products. However, implementation has been challenging.

Question 10: What policy changes do you believe are necessary to promote the growth of green finance in Nepal?

Answer: To promote green finance, entry for investors should be made easier. Green finance products should have lower interest rates. The government has a big role in making large investments, while banks like ours can focus on smaller investments. Government cooperation would encourage more people to participate, leading to job creation, technological advancements, and economic progress.

Question 11: Are there any issues with the government's green taxonomy?

Answer: Yes, implementation has been difficult. Many policies are not being implemented effectively.

Question 12: How do current policies and regulatory frameworks in Nepal influence the sustainable development outcomes of green finance initiatives at your bank?

Answer: The government has set percentage targets for sectors like hydropower and agriculture, but there is no specific target for green finance. However, certain sectors under green finance, like hydropower, are receiving investment.

Question 13: Have you noticed a change in investor preferences towards green finance products in recent years?

Answer: Yes, there is gradual increase in awareness among investors towards green finance products. Banks and financial institutions are playing major role to attract more investors towards green finance by providing various incentives and facilities.

Question 14: What factors do you think influence investors to choose green finance options?

Answer: To attract investors, we offer loans at preferential rates. Factors like tax minimization and lower interest rates are key factors in influencing investor preferences to choose green finance options.

Question 15: How do investor preferences for green finance products affect the sustainable development of the companies your bank finances?

Answer: Green finance helps companies grow sustainably by promoting environment friendly projects, but the response from investors primarily depends on profitability.

Question 16: What new technologies or digital tools have your bank adopted to enhance the efficiency and effectiveness of green finance products?

Answer: We have adopted technologies like Clean Development Mechanism (CDM) at our banks as a tool to enhance green finance.

Question 17: What challenges or barriers have you faced when integrating technologies with green finance?

Answer: We haven't faced significant challenges as such in promoting the technologies, as we actively promote green finance initiatives.

Question 18: How does your bank collaborate with other stakeholders (e.g., government agencies, NGOs, private sector) to promote green finance?

Answer: No, we haven’t collaborated with any organizations in green finance so far.

Question 19: Have your bank taken loans from international organizations like IFC to promote green finance?

Answer: No, we have not taken any loans from international organizations.

Question 20: Are there any future plans to collaborate with international organizations to promote green finance?

Answer: Yes, we are trying to collaborate with the World Bank or its partners in the future.

Question 21: What are the key challenges and opportunities in implementing green finance initiatives at your bank?

Answer: The key challenge is the lack of investors. Most investors focus on profit maximization and are not particularly concerned about the environment or sustainability. But due to the global need of sustainable development, stakeholders are becoming gradually aware about the green finance products and are promoting them.

Question 22: Does Nepal Bank have a separate department for sustainable banking?

Answer: No, we don’t have a separate department for sustainable banking as of now.

4.1.9 Officer, Global IME Bank (Environment and Risk)

Question 1: Tell us a little bit about yourself. How many years have you been working in the banking sector?

Answer: It's been two years since I started working at Global IME Bank. Before this, I was working in the hydropower sector, and now I am involved in disaster management work. In this new sector, I wanted to develop new skills, and have been successful to certain extent in doing so. My first role was as a sole officer, working alone initially. Recently, we have expanded, and now we have two teams. One is the ESRM Watch team, and the other is the Green and Sustainable Handling Unit. There are three people in one team and two in the other. These are separate units with distinct reporting lines. The core business team focuses on business operations, while we focus on core risk management. Both units are integrated, helping each other. The Green and Sustainable Handling Unit is new, having been established less than two months ago.

Question 2: Sustainable Banking and Sustainable Development related departments are recently updated in Nepalese commercial Banks. What was your first exposure to sustainable banking and sustainable development?

Answer: It wasn't my first exposure. Sustainable banking has just recently gained momentum here, and I was responsible for establishing it at Global IME Bank. We are building QRs and frameworks and have made significant progress. Initially, Environmental and Social Risk Management (ESRM) was done informally, but now it's more structured and integrated. Their role is to focus on core green businesses like electric vehicle (EVs), solar, product paper and social and environmental risk management. I oversee environment and social risks and ensure compliance with various guidelines and policies.

Question 3: What are your current key responsibilities?

Answer: My main responsibility revolves around the ESRM guidelines issued by the central bank. Our policies and guidelines are more advanced than those of the Nepal Rastra Bank because we deal with loan investments from Development Finance Institutions (DFIs) and international investments from institutions like BII, IFC, and CFAME. These investments come with requirements focused on social, environmental, and green sustainability, and we need to meet these standards. My role involves reviewing and assessing loans over 10 crores, ensuring compliance with environmental and social risk standards. I also develop and amend checklists and review projects to ensure they meet international standards, like the IFC performance, Environmental Impact Assessments (EIA), Initial Environment Examination (IEE) review for projects exceeding 5 million. The major role is, from the policy amendment, to verify the Environmental and Social Due Diligence (ESDD) filled by RMs and BMs from all over the Nepal. Additionally, I provide regular training to Relationship Managers (RMs) and Branch Managers (BMs) to help them perform due diligence and risk assessments.

Question 4: Do you have any specific training or certification related to green finance?

Answer: Yes, I've undergone extensive training, though not all of it is certified. We are currently undergoing ESG certification trainings, with NMB leading the effort. We have participated in numerous training sessions, including online training by IFC for 400 people. Besides that, we’ve conducted several in-house training programs. However, some of our certifications are still pending.

Question 5: Are there any particular sectors or types of projects you focus on within green finance? If yes, please specify.

Answer: Yes, currently we are focused in making good number of investments which promote green finance. Some of the projects include Green Home Loan projects, which was initiated by our bank and has been well received by customers. Similarly, our bank is promoting use of EVs by collaborating with Nepal Government, particularly with subsidies for EV financing. Other sectors include investment in solar and hydropower projects.

Question 6: Can you share any successful case studies where green finance has significantly contributed to sustainable development?

Answer: The Green Home Loan has been very successful, with a significant number of customers benefiting from it. The government is also promoting EVs, where up to 80% is financed by banks and only 20% can be made down payment. On the other, it is 50-50 in the case of non-EVs. This has also significantly contributed to its success. The interest is also lower as compared to non-EVs. Additionally, we’ve introduced loans for women entrepreneurs where up to 15 lakhs subsidized loan has to be provided as per Nepal Rastra Bank and similarly promoting SMEs in the green finance sector. Our focus is on promoting these products and making them more accessible to our clients.

Question 7: How do green finance initiatives at your bank contribute to the overall sustainable development of your clients?

Answer: From the client's perspective, there is often a knowledge gap when it comes to understanding green finance, environmental risks, and waste management. Many SMEs, in particular, are not aware of the importance of managing greenhouse gas emissions or waste disposal. We aim to bridge this gap through awareness programs and by offering products like the Green Home Loan and EV financing. We encourage clients to adopt sustainable practices, and by providing subsidized loans, we contribute to their sustainable development.

Question 8: How do current policies and regulations in Nepal support or hinder green finance initiatives?

Answer: The ESRM Guidelines issued by Nepal Rastra Bank in 2018, amended in 2020, and the final draft issued in 2022 is the main policy to regulate and promote green finance for now and is trying to support sustainable development through the Nepalese Banks.

Similarly, the government is enforcing mandatory annual reporting to the central bank. Banks must report on how much they have invested in agriculture, hydropower, MSMEs, and renewable energy. Recently Nepal Bank developed a "Green Taxonomy" to promote sustainable finance but it is not completely accepted as there are difficulties in the classification of green and environmentally sustainable businesses and non-green businesses.

Question 9: What policy changes do you believe are necessary to promote the growth of green finance in Nepal?

Answer: To promote green finance in Nepal, Nepal Rastra Bank should make mandatory rules to invest a certain percentage in green finance-related activities. It should make provisions to provide loans at nominal interest rates to promote EVs, solar panels, and hydropower projects. Policies and Guidelines should be simplified and introduced gradually, with appropriate training and preparation for manpower.

Question 10: How do current policies and regulatory frameworks in Nepal influence the sustainable development outcomes of green finance initiatives at your bank?

Answer: Sustainable development includes various goals and objectives; among them, climate action is also one of them. Nepal has announced a net zero carbon emissions target by 2045 and to support these various policies and frameworks regarding lowering carbon emissions, promoting renewable energy and energy efficient resources is issued for different organizations including banks and financial institutions. But it is very complicated. Due to the policies and guidelines issued by governments and Central Banks, many commercial banks have now initiated sustainable banking awareness and separate departments have been developed for promoting green finance and green finance initiatives. Awareness is being created gradually. Investors are beginning to realize that they need to do certain things, not only for compliance but also to mitigate risks associated with the environment.

Question 11: Have you noticed a change in investor preferences towards green finance products in recent years?

Answer: Of course, there has been a gradual positive change among the clients towards green finance products in recent years as the awareness and demand are increasing globally. Many youths like us are now concerned about our environment and the risks associated with it. It's just not about receiving from nature but also giving back to it. Customers prefer EVs rather than fuel vehicles. So many new hydropower projects have been established in recent years in Nepal. Similarly, our Green Home Loan projects are well appreciated by many customers. It will increase gradually and take time, especially in the case of Nepal.

Question 12: What factors do you think influence investors to choose green finance options?

Answer: As I said earlier, factors like the low interest rate on EVs, SMEs, subsidized loans, green loans, and carbon trading facilities, significantly influence investors to choose green finance. As we all know customers always want maximum returns on their investment and are least concerned about the environmental risks but if provided with certain facilities, they will be attracted towards green finance options. Another factor could be simplified documentation and minimum criteria to get loans for green homes, EVs, and solar.

Question 13: How do investor preferences for green finance products affect the sustainable development of the companies your bank finances?

Answer: The ultimate goal of promoting all these green finance initiatives is to achieve sustainable development of the companies as well as banks and financial institutions. Green Finance is a new concept and so many investors doubt the return from the investment made through green finances. In the case of Nepal, it is complicated to adopt these initiatives due to a lack of proper tools, plans, and policies. Although the results are yet to be seen, we are sure that these initiatives will bring positive changes in the long run.

Question 14: What new technologies or digital tools have you adopted to enhance the efficiency and effectiveness of green finance products?

Answer: Our banks have various digital tools for operations and loan processing. We are more focused on going paperless by shifting towards digital formats. Applications and servers have been installed to prepare the checklist and review the ESDD reports submitted by RMs and BMs from all over Nepal. DFIs also provide technical assistance to promote green finance and sustainable development.

Question 15: Can you discuss any challenges or barriers related to integrating technology with green finance?

Answer: Challenges include the knowledge barrier between customers and banks about the use of digital tools to carry out daily operations. People find the traditional way of form filling easier than doing it online. Similarly, adopting new technology includes high costs and difficulties in recruiting highly skilled manpower to operate the technologies installed.

Question 16: How does technological innovation in green finance at your bank drive the sustainable development of your clients?

Answer: Technology has a great role in banking sectors in the present day. It assists in driving the overall sustainable development of not only clients but of the whole banking sector as well. Investors are now more concerned about the associated environmental and Social Risks while performing business activities. Similarly, waste management and waste reduction strategies to control environmental pollution are being adopted by businesses through various new technologies and devices. Although green finance is a new concept in the case of Nepal, slowly it is gaining popularity among the people and are positive towards it.

Question 17: How does your bank collaborate with other stakeholders (e.g., government agencies, NGOs, private sector) to promote green finance?

Answer: Our partnerships with DFIs, such as IFC, play a crucial role. We are required to allocate a certain percentage of our portfolio to climate finance and SMEs. These partnerships provide us with technical assistance and guidance, and we collaborate with other banks and institutions to ensure we meet the required standards.

Question 18: Can you describe any partnerships or collaborations that have been particularly effective in advancing green finance initiatives?

Answer: Partnerships and collaborations with various international organizations like DFIs, and IFCs have tremendously supported in advancing the green finance initiatives. Similarly, our bank is a member of PCAF and is actively collaborating to develop and implement greenhouse gas (GHG) accounting. In Nepal, several banks especially "A" class commercial banks are coordinating and coming together to support green finance practices.

Question 19: How does collaboration with stakeholders (e.g., government agencies, NGOs, private sector) at your bank enhance the sustainable development impact of green finance initiatives?

Answer: Banks and financial institutions can get huge amounts of grants and subsidized loans from DFIs and IFC to invest in the green sector as a means of promoting green finance. It creates a compulsion among us to invest in sustainable development as well. Similarly, the institutions like Alternative Energy Promotion Centre (AEPC) established by the Nepal government to popularize the use of renewable energy technologies in the country also ultimately support green finance.

Question 20: What are the major challenges and opportunities in implementing green finance initiatives at your bank?

Answer: One of the main challenges is auditing and ensuring compliance with the ESRM guidelines, which have been in place for five years but are still in the early stages. It is limited to few A Class Commercial Banks only. Not all banks and financial institutions are serious about the policies and guidelines related to green finance. There is a need for better auditing mechanisms and technical support from the central bank. Another challenge is the knowledge gap between customers and the bank regarding green finance. However, these challenges also present growth opportunities, as we continue to develop new policies, guidelines, and products. If we can improve our capacity-building efforts, both within the bank and among our clients, the potential for growth in green finance is significant.

4.2 Sentiment Analysis

Sentiment analysis, also known as opinion mining, is a Natural Language Processing (NLP) technique used to determine the emotional tone behind a body of text. It helps in identifying whether the sentiment expressed in a piece of content is positive, negative, or neutral. This technique is often applied to customer feedback, social media posts, reviews, and other textual data to understand people's attitudes and emotions toward a product, service, or topic (Liu, 2012). Sentiment analysis is increasingly utilized in various fields such as marketing, politics, and social sciences to gauge public opinion and reactions (Pang & Lee, 2008).

In qualitative research, sentiment analysis plays a crucial role by offering a systematic method to interpret and quantify textual data. Traditionally, qualitative data is often subjective and relies on human interpretation, which can introduce bias (Braun & Clarke, 2013). Sentiment analysis aids in mitigating this by providing an objective assessment of emotions and opinions embedded in the text. This is particularly useful when analyzing large datasets like interviews, open-ended survey responses, or social media discussions, where manual coding can be time-consuming and inconsistent (Cambria et al., 2017). Furthermore, sentiment analysis enhances qualitative studies by offering insights into emotional trends and patterns over time, enabling researchers to observe shifts in public sentiment or mood (Thelwall, 2017). This is invaluable for studies in social sciences, governance, and consumer behavior, where understanding human emotions is central to drawing meaningful conclusions.

Sustainability, green finance, and renewable energy initiatives offer a wide range of opportunities for growth and innovation. As businesses and financial institutions increasingly prioritize sustainability, new avenues emerge for aligning economic activities with environmental and social goals. These opportunities are particularly critical in the context of global efforts to mitigate climate change, reduce carbon emissions, and promote sustainable development. Understanding the potential benefits and opportunities in this field allows stakeholders to capitalize on these trends and drive meaningful progress toward sustainability.

Table 1:

Sentiment Analysis

Files	A (Very negative)	B (Moderately negative)	C (Moderately positive)	D (Very positive)
GL	7	9	17	7
LS1	3	5	14	5
LS2	5	6	12	9
MKT1	6	4	17	2
NB1	0	5	17	1
NB2	0	2	14	2
NBL	0	3	8	1
SD1	3	17	24	7
SD2	0	10	10	3

The results indicate a general trend toward moderately positive views on the practice of Green Finance across various files. In most cases, the majority of respondents expressed moderately positive opinions, suggesting that Green Finance is viewed as beneficial, though not overwhelmingly so. For example, files like GL, LS1, and MKT1 show a larger portion of responses falling into the moderately positive category, although there is a noticeable presence of moderately negative opinions as well, particularly in files like SD1, where negative sentiments are more pronounced. Very positive or very negative opinions are less common, with only a small number of respondents in each category expressing extreme views, as seen in files like NB1, NB2, and NBL. This suggests that while Green Finance is generally received with optimism, a certain level of skepticism or caution persists among some groups. The data reflects a balance between acceptance and hesitation, with more respondents leaning toward the benefits of Green Finance but acknowledging some challenges or uncertainties.

4.3 Practice of Green Finance

Green finance covers a wide range of initiatives aimed at promoting sustainability and reducing environmental impact. Key practices include investing in renewable energy to shift towards cleaner energy sources, financing electric vehicles (EVs) to reduce carbon emissions, and supporting sustainable agriculture to ensure eco-friendly food production. Energy efficiency measures are also prioritized to optimize resource usage. Additionally, green savings accounts encourage individuals to invest in environmentally sustainable projects, while low-carbon projects and green housing promote eco-friendly urban development. Support for SMEs and MSMEs ensures that small businesses can adopt sustainable practices, while corporate social responsibility (CSR) initiatives emphasize ethical and sustainable corporate actions. As illustrated in the figure below:

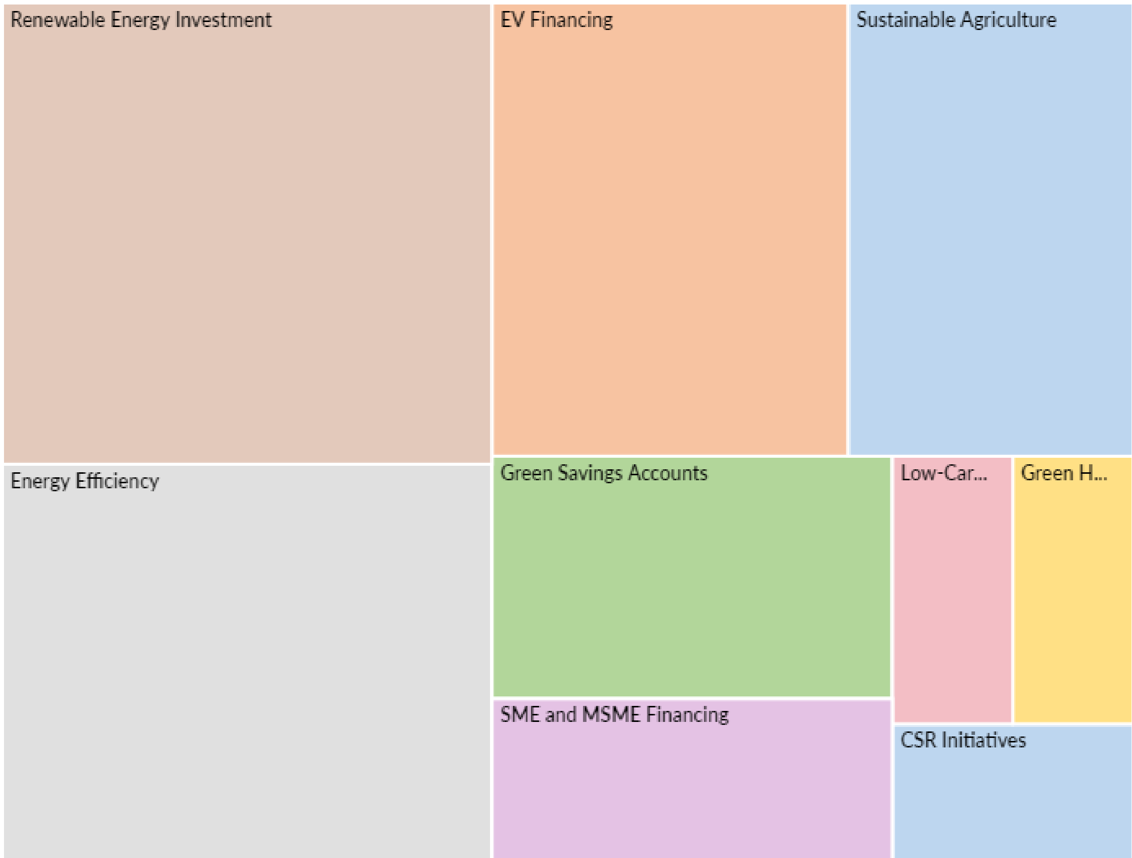


Figure 2: Treemap highlights several key areas within the broader scope of green finance

4.3.1 EV Financing

Electric Vehicle (EV) financing is emerging as a key component in the drive toward sustainable transportation. As concerns about climate change and environmental degradation grow, EV financing is becoming more prominent within the broader category of green finance. This type of financing aims to facilitate the replacement of traditional internal combustion engine vehicles, which rely on fossil fuels, with electric alternatives that are more environmentally friendly. Banks are partnering with government agencies to offer financial products that include subsidies and incentives for EV buyers, making it easier for both individuals and businesses to access EV loans. These loans are not limited to private cars but extend to commercial fleets, such as taxis, buses, and delivery vehicles. By financing both sectors, banks are helping to reduce greenhouse gas emissions from the transportation industry, one of the largest contributors to global pollution. Additionally, banks are investing in the necessary infrastructure to support the EV ecosystem by offering financing for the development of EV charging stations. These stations are critical for the widespread adoption of electric vehicles, as they provide the convenience and accessibility needed for consumers to make the switch from conventional vehicles. In essence, EV financing is a holistic approach that covers both the vehicles themselves and the infrastructure that supports their use, driving the transition toward electric mobility and reducing the overall carbon footprint.

4.3.2 Green Home Loan

The green home loan is a financial product designed to support the construction and renovation of environmentally sustainable housing. As the world shifts toward more sustainable living practices, banks are increasingly offering loans that cater to homes built with green technologies and materials. These loans are typically offered at lower interest rates than conventional home loans, making them an attractive option for consumers who are interested in reducing their environmental impact while saving on energy costs in the long run. The green criteria for these loans often include energy-efficient designs, such as homes with advanced insulation, energy-efficient windows, and solar panel installations. Additionally, sustainable building materials, like recycled wood or eco-friendly insulation, may also qualify homes for lower-rate financing. Banks are not only financing the construction of such homes but also investing in energy-efficient technology that can be incorporated into existing houses, further expanding the reach of green home loans. Solar panel installation loans, for example, allow homeowners to reduce their reliance on non-renewable energy sources, lowering their electricity bills while contributing to the use of clean energy. Overall, the green home loan initiative is part of a broader push by banks and governments to promote sustainable housing and reduce the environmental impact of the construction and housing sectors, which are traditionally energy-intensive industries.

4.3.3 Green Savings Accounts

Green savings accounts offer a unique fusion of financial savings and environmental stewardship. These accounts are structured to provide customers with competitive interest rates while simultaneously contributing to environmental conservation efforts. For every new green savings account opened, banks commit to planting a tree, symbolizing a direct contribution to sustainability. These simple yet effective initiative ties individual financial habits to a positive environmental outcome, making customers feel that they are contributing to a larger cause. These accounts often attract environmentally conscious individuals who want to make a tangible difference while managing their finances. Beyond this direct link to tree planting, banks also engage in broader Corporate Social Responsibility (CSR) activities that complement their green savings initiatives. CSR activities such as large-scale tree plantation drives, environmental awareness programs, and community-based sustainability projects are often funded by the bank's green financial products. By offering these programs, banks position themselves as leaders in the green finance movement, encouraging customers to engage with environmental issues and contribute to conservation efforts. These savings products help to promote green banking practices, allowing financial institutions to integrate sustainability into their core offerings while enhancing their brand's environmental credentials.

4.3.4 Renewable Energy Investment

Hydropower project financing is a significant focus for banks in regions rich in water resources, such as Nepal. These projects are a critical component of green finance, as they provide a renewable and sustainable source of energy that helps reduce reliance on fossil fuels. Hydropower uses the energy from flowing water to generate electricity, and given its low emissions, it is considered one of the cleanest forms of energy production. Banks are increasingly directing investments toward hydropower projects because they offer long-term, sustainable solutions to the growing demand for energy. In countries like Nepal, where rivers are abundant, hydropower is seen as a key resource for economic development, and banks are financing both large-scale hydropower dams and smaller, community-based projects. Although hydropower dominates the renewable energy financing landscape, banks are also showing interest in solar energy projects, albeit on a smaller scale. The financing of solar projects complements hydropower by providing an additional renewable energy source, especially in areas where water resources are limited or where solar energy can be harnessed more effectively. By financing both hydropower and solar energy projects, banks are not only supporting clean energy initiatives but also helping to stabilize energy supply, reduce carbon emissions, and create opportunities for green growth.

4.3.5 Sustainable Agriculture

Climate-smart agriculture financing is an innovative approach that supports sustainable agricultural practices in the face of climate change. This type of financing encourages farmers to adopt methods that are not only productive but also environmentally friendly. Banks play a key role in providing loans for technologies and practices that make agriculture more resilient to climate change. For instance, solar-powered irrigation systems are becoming more popular, as they reduce reliance on diesel-powered pumps and decrease greenhouse gas emissions. Climate-smart agriculture also includes practices such as crop rotation, conservation tillage, and the use of drought-resistant seeds, all of which help improve soil health and reduce the negative environmental impacts of traditional farming methods. By providing specialized loans for these practices, banks are helping farmers transition to more sustainable agricultural models that not only ensure food security but also contribute to environmental sustainability. Furthermore, climate-smart agriculture financing often targets smallholder farmers, helping them access the resources and technologies needed to make their farms more resilient to changing weather patterns. This type of financing is essential for long-term agricultural sustainability and aligns with global efforts to combat climate change while ensuring the viability of the agricultural sector.

4.3.6 SME and MSME Financing

The banking sector's investment in Small and Medium Enterprises (SMEs) and Micro, Small, and Medium Enterprises (MSMEs) is a critical component of green finance. These enterprises are often the backbone of local economies, particularly in rural and underserved urban areas, but they frequently face difficulties in accessing traditional financing. Banks are stepping in to provide targeted financing to SMEs and MSMEs, encouraging them to adopt sustainable business practices and contribute to green growth. These businesses are essential for creating jobs and fostering economic development, and by promoting environmentally friendly practices, they help reduce the overall environmental impact of industrial and commercial activities. Banks are also offering entrepreneurial programs designed to provide training and support for SMEs and MSMEs, helping them develop the skills needed to integrate sustainability into their business models. These programs are particularly important in sectors such as agriculture, manufacturing, and energy, where adopting green technologies can significantly reduce carbon emissions and improve resource efficiency. By mobilizing their branches to focus on MSME support, banks are fostering a more inclusive approach to green finance, ensuring that smaller enterprises have the resources and knowledge they need to thrive in a sustainable economy.

4.3.7 Low-Carbon Industries

Financing for low-carbon industries is becoming a priority for banks as global efforts to reduce carbon emissions intensify. Low-carbon industries focus on minimizing energy consumption, using sustainable technologies, and adopting eco-friendly business models. These industries are essential for achieving sustainability goals, as they produce goods and services with a much smaller carbon footprint compared to traditional industries. Banks are increasingly offering loans and other financial products to support the development of these industries, which include sectors such as renewable energy, energy-efficient manufacturing, and sustainable construction. By providing financing for energy-efficient technologies, such as advanced machinery that reduces energy consumption or eco-friendly production methods, banks are helping businesses lower their operational costs while also contributing to environmental goals. This type of financing is aligned with global sustainability initiatives, such as the Paris Agreement, which aims to limit global warming by reducing carbon emissions. By supporting low-carbon industries, banks are playing a critical role in the transition to a more sustainable and energy-efficient economy, fostering innovation, and promoting the adoption of green technologies across various sectors.

4.3.8 The Broader Scope of Green Finance, Sustainability, and Environmentally Conscious Investment

The treemap highlights several key areas within the broader scope of green finance, sustainability, and environmentally conscious investment, with each category represented by a rectangle whose size corresponds to its relative importance or emphasis. One of the largest sections is Renewable Energy Investment, which reflects a strong commitment to financing projects that promote cleaner energy sources like hydropower, solar, and wind. This emphasis likely stems from global efforts to combat climate change by reducing reliance on fossil fuels and transitioning to more sustainable energy solutions. By focusing heavily on renewable energy, financial institutions are not only contributing to environmental sustainability but also fostering green growth and energy security.

Another significant focus is EV Financing, which highlights the growing importance of supporting electric vehicle (EV) adoption through various financial products such as loans and subsidies. This area also likely includes investments in building the infrastructure needed to support EVs, such as charging stations. As governments and industries push for the replacement of traditional fossil-fuel-powered vehicles with electric alternatives, banks, and financial institutions play a critical role in facilitating this transition through accessible financing.

Sustainable Agriculture is also a prominent area, reflecting the need to finance environmentally friendly farming practices that can mitigate the effects of climate change. Investments in climate-smart agriculture, such as solar-powered irrigation systems or sustainable farming technologies, are becoming increasingly important as the agricultural sector seeks to reduce its environmental impact while ensuring food security. This focus on sustainable agriculture not only benefits the environment but also supports long-term economic and social sustainability.

In addition to these larger themes, the tree map highlights the importance of Energy Efficiency. This category involves financing for technologies and practices that reduce energy consumption across industries and households, contributing to both environmental sustainability and cost savings for consumers and businesses. Green Savings Accounts are another area of interest, offering financial products that allow customers to save while contributing to environmental goals. These accounts are often tied to Corporate Social Responsibility (CSR) initiatives like tree planting programs, where every new account opened results in a tree being planted, directly linking banking activities to positive environmental outcomes.

Smaller but still significant sections include Low-Carbon Industry Projects and Green Home Loans. The former represents investments in industries that are focused on reducing carbon emissions and promoting sustainable technologies, while the latter provides financing for housing projects that meet green criteria, such as energy-efficient construction and renewable energy installations like solar panels. These categories reflect the growing recognition of the need to finance environmentally responsible business models and sustainable living practices.

SME and MSME Financing is another key area, with banks increasingly focusing on supporting small and medium enterprises that engage in sustainable practices. This investment in SMEs and MSMEs helps promote entrepreneurship in green industries, particularly in underserved rural and urban areas, fostering innovation and growth in sectors that are critical to the green economy. Finally, CSR Initiatives form an integral part of many of these green finance programs, with banks actively linking their products to environmental and social causes. By promoting CSR activities such as tree planting and community-based environmental programs, banks are aligning their financial products with sustainability goals, further contributing to a more environmentally conscious business model.

Overall, the treemap illustrates a comprehensive approach to green finance, with a strong focus on renewable energy, sustainable transportation, agriculture, and the promotion of environmentally responsible financial products and practices.

4.4 Challenges

Implementing sustainability and green finance initiatives presents several challenges that organizations must navigate to achieve their goals. These challenges arise from a combination of resource limitations, regulatory issues, and gaps in knowledge and expertise, all of which hinder progress in adopting sustainable practices. Understanding the relative importance of these obstacles is crucial for formulating strategies that effectively address them and foster the successful implementation of green finance.

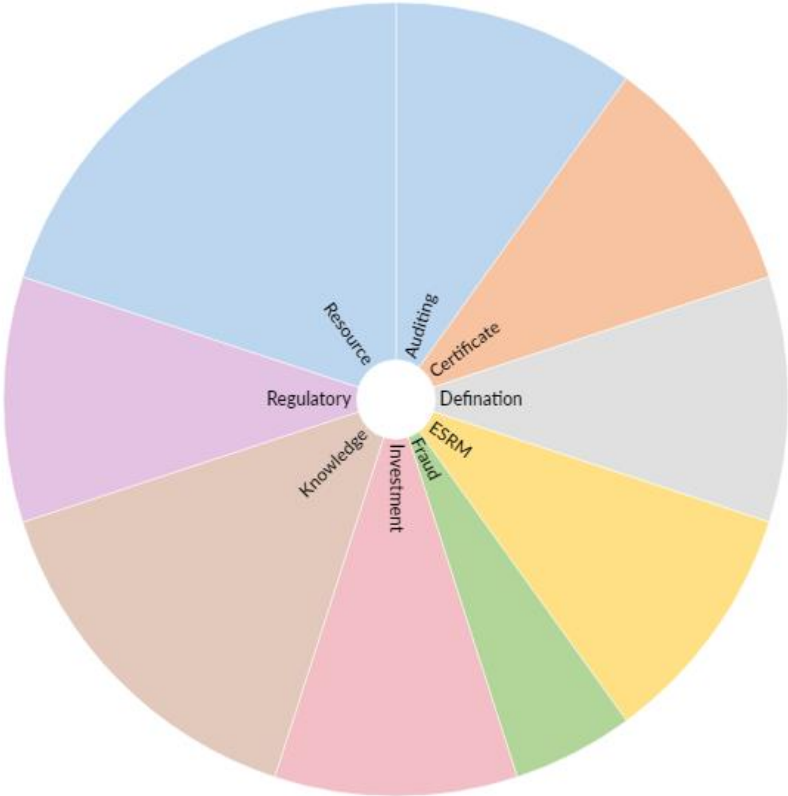


Figure 3: Challenges in implementing green finance practice

The space coverage of different challenges in the pie chart provides insight into their relative significance in implementing sustainability and green finance initiatives.

1. Technological and Resource Constraints

The largest section is dedicated to technological and resource constraints, indicating that the lack of sufficient resources—whether financial, human, or technological—with an estimated $46.1 billion needed for green financing is perceived as the most significant barrier. Without the necessary resources, it becomes increasingly difficult for organizations to scale up green finance projects or adopt sustainability practices. This suggests that securing adequate funding, skilled personnel, and the necessary technology is critical to making progress in these areas.

2. Policy and Regulatory Lagging

Following closely are policy and regulatory lagging, which highlight the complexities of navigating unclear or inconsistent regulations that govern sustainability and green finance. The large space devoted to this issue suggests that a lack of supportive legislation, or difficulties in complying with environmental laws, can create uncertainty for businesses and investors. Regulatory hurdles can slow down the adoption of green practices, making it essential for governments and regulatory bodies to provide clearer frameworks and enforce standards more consistently.

3. Knowledge Gap

Knowledge gap occupy a substantial portion of the pie, indicating that many stakeholders, including businesses, financial institutions, and policymakers, may lack the expertise required to successfully implement green finance initiatives. This challenge could relate to insufficient understanding of sustainability frameworks, the benefits of green investments, or the technical know-how required to integrate environmentally friendly practices into their operations. Bridging this knowledge gap through training, awareness programs, and technical support is vital to overcoming this barrier.

4. Investor Reluctance

Investor reluctance highlights difficulties in attracting and securing financing for green and sustainable projects. Investors prioritize profit maximization over sustainability. While green finance is growing, many investors still perceive these projects as risky or may lack sufficient incentives to invest. The space dedicated to this challenge suggests that more work needs to be done to create attractive financial products, reduce perceived risks, and incentivize investment in sustainable businesses and technologies.

5. Auditing and Compliance Challenges

Auditing and compliance challenges, though smaller than the previous ones, still represent a significant barrier. There is difficulty in auditing and ensuring compliance with Environmental and Social Risk Management (ESRM) guidelines, especially as they are still in the early stages and limited to few banks. Ensuring accurate and consistent auditing of sustainability standards is essential for accountability and transparency. However, it can be complex and resource-intensive, especially for businesses that are new to sustainability reporting. Banks and companies may face difficulties in tracking and measuring their environmental impact, which can affect their ability to meet regulatory requirements and achieve green finance goals.

6. Lack of Green Certification Institutions

Lack of green certification institutions is another challenge that occupies a notable section of the pie. Certifications for sustainability, such as green building certifications or environmental management system standards, can be complicated and time-consuming as there are no proper institutions to measure the standards and to certify. Despite this, certification is important for businesses to meet green finance criteria and demonstrate their commitment to sustainability.

7. Environmental and Social Risk Management (ESRM)

Environmental and Social Risk Management (ESRM) is another challenge that, while smaller in coverage, still presents a barrier. Properly integrating ESRM practices is important for ensuring that sustainability projects do not negatively impact communities or the environment. The fact that this challenge is present shows that more work is needed in creating and implementing robust ESRM frameworks that are widely adopted across industries.

8. Definitions of Key Sustainability Terms

The challenge of reaching a consensus on definitions of key sustainability terms is also present but occupies a smaller portion of the chart. While not as critical as resource or regulatory issues, having clear and universally accepted definitions for terms like "sustainability" or "green finance" is essential for ensuring consistency across industries and regions. This lack of clarity can lead to confusion and inconsistency in reporting and compliance.

9. Fraud Risk

Fraud risk is perceived as the least significant challenge, though still a concern. Instances of fraud, such as greenwashing or misrepresentation of sustainability efforts, can erode trust in green finance and undermine legitimate sustainability initiatives. Although fraud is less of a barrier compared to other challenges, ensuring transparency and preventing fraudulent activities is still crucial to maintaining the integrity of sustainability efforts.

In summary, the most pressing challenges identified in the chart are related to resources, regulatory issues, and knowledge gaps, followed by investment and auditing difficulties. Challenges like certification, ESRM, definitions, and fraud are also important but are perceived to be less significant in the overall implementation of green finance and sustainability initiatives. Addressing these challenges, particularly the most significant ones, will be key to advancing sustainability and achieving long-term environmental goals.

4.5 Opportunities

Sustainability, green finance, and renewable energy initiatives offer a wide range of opportunities for growth and innovation. As businesses and financial institutions increasingly prioritize sustainability, new avenues emerge for aligning economic activities with environmental and social goals. These opportunities are particularly critical in the context of global efforts to mitigate climate change, reduce carbon emissions, and promote sustainable development. Understanding the potential benefits and opportunities in this field allows stakeholders to capitalize on these trends and drive meaningful progress toward sustainability.

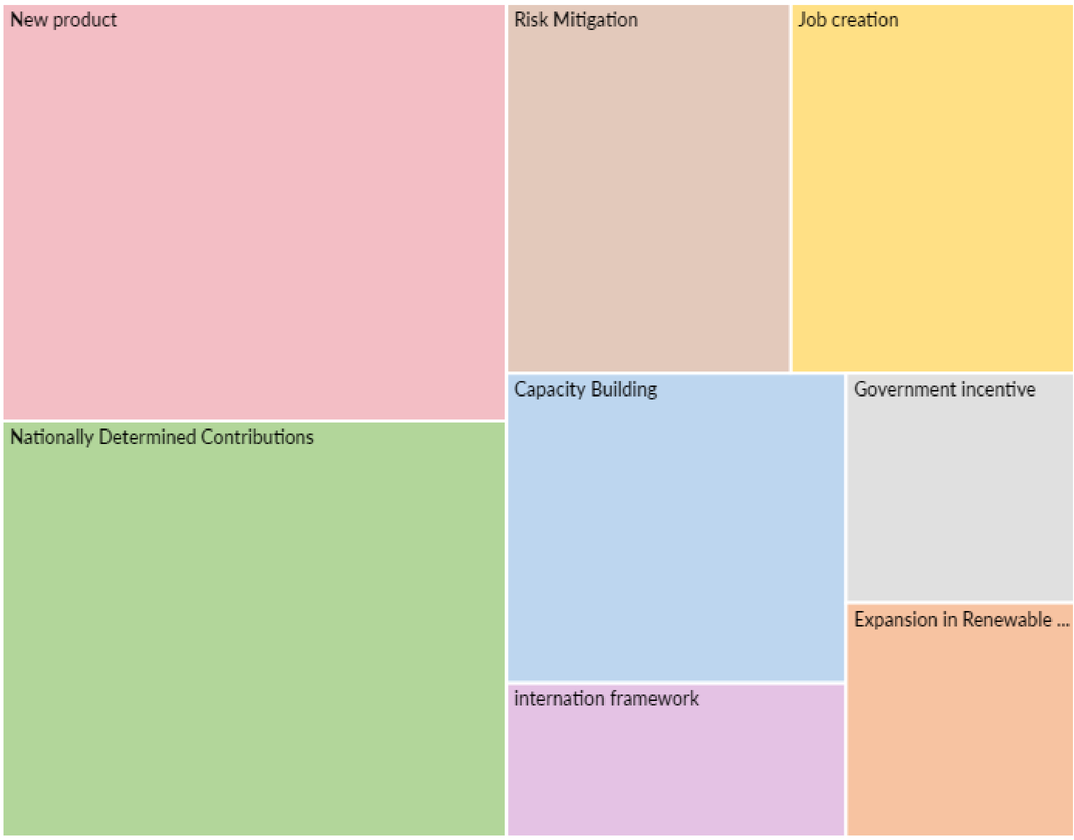


Figure 4 : Opportunities related to sustainability, green finance, and renewable energy

The treemap visualizes several opportunities related to sustainability, green finance, and renewable energy, with the size of each section representing the relative importance or potential of each opportunity.

1. New Products and Growth Potential

The largest section, New Products and Growth Potential, signifies that the development of innovative financial products presents the greatest opportunity within the green finance landscape. This could involve creating new financial instruments, such as green bonds, climate-resilient insurance products, or sustainable loans, enabling businesses and individuals to align their financial activities with environmental goals. The growing demand for environmentally conscious investments is pushing financial institutions to innovate and offer new products that cater to sustainability-minded investors and businesses.

2. Nationally Determined Contributions (NDCs)

Nationally Determined Contributions (NDCs) occupy another significant portion of the treemap, indicating the opportunity for financial institutions and industries to align their activities with national and global climate goals, as outlined in international agreements like the Paris Agreement. Green Finance initiatives align with Nepal's NDC goals, aiming for net-zero carbon emissions by 2045-50, and combat climate change. They present opportunities for businesses and financial institutions to create solutions that support these commitments, such as financial products targeting emissions reductions or investments in clean energy.

3. Risk Mitigation

Risk Mitigation is another key opportunity, reflecting the importance of developing financial mechanisms to manage the risks associated with climate change and green investments. As businesses increasingly face risks from environmental factors like extreme weather events or shifting regulations, financial tools that help mitigate these risks are becoming essential. This could include tools like climate insurance, Environmental Impact Assessments (EIA), or financial derivatives that hedge against carbon pricing or energy market volatility. By offering solutions that manage environmental risks, financial institutions can encourage more businesses to invest in sustainable projects.

4. Job Creation

The opportunity for Job Creation takes up a significant portion of the treemap, emphasizing the potential for green finance and sustainability initiatives to generate new employment opportunities. The shift toward sustainable industries—such as renewable energy, sustainable agriculture, and green technology—will likely create a surge in demand for jobs across these sectors. This is crucial for advancing environmental goals, stimulating economic growth, and improving livelihoods, particularly in sectors affected by the transition away from fossil fuels.

5. Capacity Building

Capacity Building is highlighted as another opportunity, focusing on enhancing the skills, knowledge, and resources necessary for individuals and organizations to succeed in sustainability initiatives. This could involve training financial professionals, government officials, and business leaders on incorporating sustainability into their operations, investment decisions, and long-term strategies. As the sustainability sector grows, there is an increasing need for specialized knowledge and expertise, making capacity building essential for the transition to a green economy.

6. Government Incentives

The segment on Government Incentives points to the important role that policy and regulation play in driving sustainability initiatives. Government incentives such as subsidies, tax breaks, or favorable policies can encourage businesses and individuals to invest in green technologies and practices. These incentives create a more supportive environment for green finance, making it easier for companies to implement sustainable solutions and for financial institutions to offer environmentally focused products. The more governments offer these incentives, the greater the opportunity for growth in the sustainability sector.

7. International Frameworks

International Frameworks represent another opportunity for countries and industries to align with global sustainability standards, such as the Paris Agreement or the Sustainable Development Goals (SDGs). By adhering to these frameworks, nations can access international funding, attract foreign investment, and improve their sustainability ratings, enhancing their global reputation. Aligning with international frameworks also helps businesses expand into global markets and ensures their sustainability efforts are recognized worldwide.

8. Expansion in Renewable Energy and Agriculture

Expansion in Renewable Energy and Agriculture points to the ongoing opportunity for growth in sectors like solar, wind, and hydropower. As countries strive to reduce their carbon footprints and transition to clean energy, the demand for renewable energy infrastructure and technology continues to rise. This creates significant opportunities for financial institutions to fund renewable energy projects and for businesses to expand their offerings in this field. Investment in renewable energy supports global climate goals and provides a path toward sustainable economic development.

The treemap underscores several key opportunities in the green finance and sustainability sectors, with the development of new financial products, alignment with NDCs, and risk mitigation leading the way. Job creation, capacity building, and government incentives also present substantial opportunities for growth and innovation. Finally, international frameworks and the expansion of renewable energy further enhance the potential for long-term sustainable development. These opportunities reflect the growing importance of sustainability in shaping the future of finance and the global economy.

4.6 Result of Hypotheses

4.6.1 Green finance initiative has significant impact on sustainable development

The word cloud analysis clearly shows that "Green finance initiatives have a positive impact on sustainable development" is supported by the alignment of green financial products and services with sustainability goals. From the figure, it is seen that the most repeated words are highlighted which shows there is positive impact of green finance initiatives on sustainable development. Initiatives like loans for electric vehicles, sustainable housing, agricultural loans, and renewable energy projects directly contribute to reducing carbon footprints and supporting the transition to eco-friendly practices. For example, EV loans encourage the adoption of electric vehicles, significantly cutting emissions from transportation. Similarly, green home loans promote energy-efficient housing, reducing energy consumption and greenhouse gas emissions. Renewable energy projects, funded through green finance, help nations reduce their reliance on fossil fuels and move toward clean energy solutions, directly contributing to net-zero emission targets.

HA1: Green finance initiative has a positive impact on sustainable development

Figure 5: Green finance initiatives impact on sustainable development

Source: Output of NVivo

Moreover, green finance plays a crucial role in promoting business sustainability and environmental responsibility. Financial products like subsidized loans, low-interest green schemes, and agricultural loans incentivize businesses and individuals to adopt sustainable practices. These loans provide the capital needed for businesses to invest in energy-efficient technologies, waste management systems, and sustainable farming. Additionally, frameworks such as Environmental and Social Risk Management (ESRM) and Environmental, Social, and Governance (ESG) compliance ensure that sustainability is integrated into core business operations. Through these mechanisms, green finance initiatives enable significant contributions to global sustainability goals, emphasizing their positive impact on sustainable development.

4.6.2 Policy support and regulatory environment has significant impact on sustainable development of bank

The word cloud analysis shows that "Policy support and the regulatory environment have positive impact on the sustainable development of banks" is supported by the involvement of government policies, regulatory frameworks, and compliance measures.

From the figure, the words which are mostly repeated are highlighted which shows there is positive impact of policy and regulatory environment on sustainable development. Regulatory bodies like the Ministry of Finance (MOF) and Nepal Rastra Bank (NRB), along with the Ministry of Energy, provide the necessary guidance through ESRM guidelines, regulatory mandates, and green finance policies. These policies help banks align their operations with sustainability goals by ensuring that they meet environmental, social, and governance (ESG) standards. By establishing clear guidelines and mandates, these regulatory bodies ensure that banks promote sustainable banking practices such as remote area banking, financial inclusion, and investments in green technologies like hydropower.

HA2: Policy support and the regulatory environment has a positive impact on the sustainable development of banks

Figure 6: Policy support and the regulatory environment impact on the sustainable development of banks

Source: Output of NVivo

Moreover, the regulatory environment fosters sustainable development by supporting initiatives like climate action, women's entrepreneurship loans, and environmental risk mitigation. Banks that adhere to these regulatory frameworks are better positioned to contribute to long-term sustainability impacts, particularly in rural and underserved areas where branchless banking and rural area financial services help promote financial inclusion. Additionally, the policies encourage banks to invest in areas that support environmental conservation, such as hydropower and renewable energy projects, further contributing to sustainable development. Through policy support, training, and compliance measures, banks are equipped to play a key role in achieving climate goals and advancing sustainable financial practices, reinforcing the positive link between regulatory frameworks and sustainable development in the banking sector.

4.6.3 Investor preferences have significant impact on sustainable development

The word cloud analysis shows that "Investor preferences have a positive impact on sustainable development" is supported by the growing demand for green finance products that align with both environmental goals and return on investment (ROI). Investors are increasingly looking for financial products that offer long-term benefits while also contributing to sustainability efforts. This includes investments in areas such as renewable energy (solar, hydro, EVs), emission-free manufacturing, and sustainable housing technologies. The interest in low-interest loans and financial incentives further highlights the appeal of green investments that provide profitability along with environmental benefits. Investor preferences for products that mitigate investment risks and focus on environmental health, energy conservation, and biodiversity are driving financial institutions to offer sustainable finance options that support long-term growth while fostering a healthier planet.

HA3: Investor preferences have a positive impact on sustainable development

Figure 7 : Investor preferences impact on sustainable development

Source: Output of NVivo

Moreover, these preferences directly contribute to the advancement of sustainable development goals, including climate action, energy conservation, and social well-being. As investors prioritize projects that are aligned with national and global sustainability goals, they encourage financial markets to support initiatives that promote clean energy, reduce harmful emissions, and foster environmental and social governance improvements. This focus also supports governance and diversity improvements, ensuring that sustainability is not only about environmental impact but also about promoting fair, inclusive, and socially responsible practices. As investor preferences increasingly favor green finance, they play a crucial role in accelerating progress toward a sustainable future.

4.6.4 Technology innovation has a significant impact on sustainable development

The word cloud analysis shows that "Technology innovation in banking has a positive impact on sustainable development" is supported by the growing integration of digital platforms and innovations in the financial sector. The shift toward paperless banking, digital loan platforms, and online document review contributes to reducing the environmental impact of banking operations by minimizing paper use and improving operational efficiency. The use of digital monitoring tools and online loan processing streamlines banking procedures, making them faster and more accessible to customers, while also cutting down on the need for physical resources. By incorporating these technologies, banks can reduce their carbon footprint, lower costs, and provide more sustainable services.

HA4: Technology Innovation has a positive impact on Sustainable Development

Figure 8 : Technology innovation in banking has a impact on sustainable development

Source: Output of NVivo

Moreover, the application of technological innovations in finance contributes directly to sustainable development through strategies such as waste reduction and project transparency. Digital tools allow banks to track the environmental impact of their projects more effectively, ensuring that sustainability goals are being met. This transparency not only builds trust but also allows for better social risk management and tracking of environmental impacts, which are critical components of sustainable development. Through enhanced project monitoring, banks can ensure that their investments are aligned with sustainability objectives, fostering long-term growth while supporting environmental and social governance. These advancements in banking technology enable financial institutions to play a pivotal role in advancing sustainability across the industry.

4.6.5 Stakeholder collaboration has significant impact on sustainable development

The word cloud analysis shows that "Stakeholder collaboration has impact on sustainable development" is supported by the increasing role of stakeholder engagement and corporate governance in advancing sustainability goals. From the figure, it is seen that there is not much repeated words which shows there is negligible impact of stakeholders collaboration on sustainable development. Stakeholders today are less concerned with environmental, social, and governance (ESG) issues, pushing companies to adopt responsible business practices. Collaboration with external institutions, along with transparent and accountable decision-making, enhances a company's ability to focus on sustainable finance and carbon emissions reduction. Stakeholders often influence strategic decisions that direct companies toward renewable energy investments and other sustainability initiatives. By promoting Corporate Social Responsibility (CSR) and fostering financial partnerships, stakeholders contribute to the development of green projects, which support long-term environmental and social goals.

HA5: Stakeholder collaboration has a negligible impact on sustainable development

Figure 9 : Stakeholder collaboration impact on sustainable development

Source: Output of NVivo

Additionally, stakeholder partnerships and joint ventures play a crucial role in driving sustainable development. By working with investors, stakeholders, and external institutions, businesses can pool resources and share knowledge to advance renewable energy projects, climate resilience, and carbon emissions reduction strategies.

Stakeholders advocating for responsible investing are also helping to promote environmental and social governance (ESG) as a central part of corporate strategy, ensuring that companies operate not just for profit but for the benefit of society and the environment. This collaborative approach between stakeholders and companies leads to more sustainable business models that are aligned with global sustainability goals.

4.6.6 Green Finance Practices and Sentiment Analysis

The sentiment analysis conducted in this research indicates a generally positive attitude toward the practice of green finance across various sectors. Respondents mostly expressed moderately positive opinions, suggesting that green finance is viewed as beneficial, though not overwhelmingly so. There is a balanced sentiment, with a certain level of skepticism persisting among some groups. While green finance initiatives like loans for electric vehicles (EVs), green home loans, and hydropower financing are gaining traction, challenges such as resource constraints and regulatory uncertainties continue to pose barriers to widespread adoption. The sentiment analysis also shows that very positive or very negative opinions are less common, reflecting a cautious optimism among stakeholders.

4.6.7 Electric Vehicle (EV) Financing for Commercial and Private Vehicles

EV financing is emerging as a key component of green finance, especially in efforts to promote sustainable transportation. Banks are partnering with government agencies to offer subsidies and loans for both private and commercial electric vehicles, which help reduce carbon emissions in the transportation sector. In addition to financing the vehicles themselves, banks are also investing in the infrastructure necessary to support the transition to electric mobility, such as EV charging stations. This holistic approach is crucial for reducing greenhouse gas emissions from one of the largest contributors to global pollution—the transportation industry. EV financing not only encourages the replacement of traditional internal combustion engine vehicles but also supports the broader goal of reducing the overall carbon footprint of the sector.

4.6.8 Green Home Loans for Sustainable Housing

Green home loans are designed to support the construction and renovation of environmentally sustainable homes. These loans typically come with lower interest rates than conventional home loans, providing a financial incentive for consumers to adopt green technologies and materials. Homes that meet specific green criteria—such as advanced insulation, energy-efficient windows, and solar panel installations—are eligible for these loans. This initiative not only helps homeowners reduce their energy consumption and utility bills but also contributes to broader efforts to reduce the environmental impact of the housing sector. By financing energy-efficient technologies, banks play a critical role in promoting sustainable housing, which aligns with global sustainability goals.

4.6.9 Hydropower Project Financing

Hydropower financing is a significant focus for banks in regions with abundant water resources, such as Nepal. These projects are central to green finance initiatives because they provide a renewable and sustainable source of energy that helps reduce reliance on fossil fuels. Hydropower projects are particularly important in Nepal, where the natural geography allows for large-scale and small-scale hydropower developments. Banks are increasingly directing investments toward these projects, contributing to long-term sustainable energy solutions. While hydropower dominates the renewable energy landscape in Nepal, solar energy projects are also receiving attention as complementary sources of clean energy.

4.6.10 Climate-Smart Agriculture Financing

Climate-smart agriculture financing is another area where banks are contributing to sustainable development. This type of financing supports farmers in adopting environmentally friendly agricultural practices that are resilient to climate change. Banks are offering loans for technologies such as solar-powered irrigation systems, which reduce reliance on diesel-powered pumps and lower greenhouse gas emissions. Additionally, practices like crop rotation, conservation tillage, and the use of drought-resistant seeds are being promoted through specialized agricultural loans. By financing these sustainable farming methods, banks are helping to improve agricultural productivity, ensure food security, and contribute to the environmental sustainability of the agricultural sector.

4.6.11 Investment in Micro, Small, and Medium Enterprises (MSMEs)

Banks are extending green finance initiatives to Micro, Small, and Medium Enterprises (MSMEs), which are often critical drivers of local economic growth. MSMEs face difficulties accessing traditional financing, especially in rural and underserved urban areas. Banks are providing targeted financing to these enterprises, encouraging them to adopt sustainable business practices. By promoting green technologies and eco-friendly business models, banks are helping MSMEs contribute to green growth while fostering job creation and innovation. This investment in small businesses is essential for inclusive economic development, particularly in regions where larger industries may not have a significant presence.

4.6.12 Financing for Low-Carbon Industry Projects

Low-carbon industries, which prioritize energy conservation and sustainable technologies, are becoming a priority for banks as part of their green finance initiatives. These industries produce goods and services with a smaller carbon footprint, contributing to global sustainability goals such as the reduction of greenhouse gas emissions. Banks are supporting low-carbon industries by offering loans and other financial products for energy-efficient technologies and eco-friendly production methods. This type of financing aligns with international sustainability agreements, such as the Paris Agreement, and helps industries transition to more sustainable practices while promoting innovation.

4.6.13 Challenges in Green Finance

Despite the positive trends in green finance, several challenges hinder its widespread adoption. The most significant challenges identified in the research include resource constraints, regulatory complexities, and knowledge gaps. The lack of sufficient resources—whether financial, human, or technological—makes it difficult for organizations to scale up green finance projects. Regulatory challenges are also significant, as inconsistent or unclear environmental regulations can create uncertainty for both businesses and investors. Moreover, knowledge gaps persist among stakeholders, particularly in understanding the technical aspects of sustainable finance and its benefits. Addressing these challenges will be key to advancing green finance and achieving sustainability goals.

4.6.14 Opportunities in Green Finance

Despite the challenges, there are several opportunities for growth in green finance. The development of new financial products, such as green bonds and sustainable loans, represents a significant opportunity for financial institutions to tap into the growing demand for environmentally conscious investments. Nationally Determined Contributions (NDCs), which are commitments made by countries to reduce carbon emissions, provide a framework for financial institutions to align their products and services with sustainability goals. Additionally, green finance has the potential to create jobs, particularly in sectors such as renewable energy, sustainable agriculture, and green technology. Government incentives, capacity-building initiatives, and international frameworks also present opportunities for expanding green finance and promoting sustainable economic growth.

4.6.15 Impact on Sustainable Development

Overall, green finance has a significant positive impact on sustainable development. Initiatives such as EV loans, green home loans, hydropower project financing, and climate-smart agriculture loans contribute directly to reducing carbon footprints and promoting environmentally sustainable practices. These financial products enable businesses and individuals to adopt green technologies and practices, which in turn support national and global sustainability goals. By financing renewable energy, energy-efficient housing, and sustainable agriculture, banks are playing a pivotal role in driving the transition to a low-carbon economy and fostering long-term environmental sustainability.

4.7 Findings

Green finance is becoming increasingly important as nations and industries around the world strive to achieve sustainable development goals and reduce their environmental impact. This study reveals several key findings related to the current state of green finance, its impact on sustainable development, the challenges faced in its implementation, and the opportunities for growth and expansion. The findings suggest that while there is growing optimism and progress in green finance adoption, significant challenges remain in terms of resources, regulatory frameworks, and stakeholder engagement.

4.8 Discussion

The sentiment analysis conducted in this research reveals a cautiously optimistic outlook on green finance adoption across various sectors. Respondents generally expressed moderately positive views, indicating a recognition of the potential benefits of green finance initiatives. However, this optimism is tempered by underlying skepticism. The presence of moderately negative opinions, particularly regarding specific initiatives like hydropower financing, suggests that while stakeholders see the potential of green finance, there remain concerns related to feasibility, profitability, and regulatory clarity.

The finding aligns with broader literature on the challenges of green finance adoption in emerging economies like Nepal. As noted by Rogers (2003) in the Diffusion of Innovations theory, the complexity and trialability of new financial products influence their adoption. In the case of Nepalese banks, the complexity of green finance initiatives, particularly those involving large infrastructure projects like hydropower, may explain the cautious attitudes observed in this study.

EV financing emerged as a key component of green finance, particularly in addressing the environmental impact of transportation. The research highlights that banks, in collaboration with government agencies, are playing a crucial role in promoting the adoption of electric vehicles by offering subsidized loans. This finding reflects the increasing importance of aligning financial products with sustainability goals, as discussed in the Environmental, Social, and Governance (ESG) criteria (Friede et al., 2015).

From a policy perspective, this finding suggests that regulatory support and incentives, such as subsidies for EV loans, are critical in promoting sustainable finance practices. The adoption of EVs is not only an environmental imperative but also a strategic move to reduce the reliance on fossil fuels, which contribute significantly to global greenhouse gas emissions. The Theory of Planned Behavior (TPB) further explains that the perceived behavioral control over green finance practices, such as the availability of subsidies and financial support, increases the likelihood of adoption by both consumers and financial institutions.

Green home loans, designed to incentivize the construction and renovation of environmentally sustainable homes, represent a significant advancement in aligning financial products with sustainability objectives. This research highlights that lower interest rates for energy-efficient homes are attracting consumers to adopt green technologies, such as solar panels and energy-efficient windows.

The triple bottom line (TBL) approach, introduced by Elkington (1997), provides a useful lens through which to interpret this finding. Green home loans not only contribute to environmental sustainability by reducing energy consumption but also generate social and economic benefits. Environmentally sustainable homes reduce energy costs for homeowners, while the construction of such homes creates jobs and stimulates local economies. This balanced consideration of economic, environmental, and social outcomes underscores the holistic impact of green finance on sustainable development.

Hydropower financing is a key focus for green finance in Nepal, given the country's abundant water resources. The research highlights that banks are increasingly investing in hydropower projects, which are seen as a renewable and sustainable source of energy. However, as noted in the sentiment analysis, there remains skepticism about the large-scale adoption of hydropower financing due to regulatory and environmental concerns. This finding is consistent with the diffusion of innovations theory, which suggests that innovations with perceived relative advantages are more likely to be adopted (Rogers, 2003). In the case of hydropower, the relative advantage is clear: it provides a renewable energy source that can significantly reduce carbon emissions. However, the complexity of these projects, coupled with regulatory challenges, may slow their adoption. The role of policy support and regulatory clarity is therefore critical in accelerating hydropower financing and ensuring that it contributes to sustainable development goals.

Climate-smart agriculture financing, which supports environmentally sustainable farming practices, emerged as another important area of green finance. The research shows that banks are offering loans for technologies like solar-powered irrigation systems and drought-resistant seeds, helping farmers adapt to climate change. This finding aligns with the stakeholder theory, which emphasizes the importance of engaging various stakeholders in decision-making processes (Freeman, 1984). By collaborating with farmers, government agencies, and NGOs, financial institutions can better understand the environmental and social impacts of their financial activities and develop products that contribute to sustainable agricultural practices. This collaborative approach ensures that green finance initiatives not only support individual farmers but also promote broader sustainability goals, such as food security and biodiversity conservation.

The research highlights the role of green finance in supporting Micro, Small, and Medium Enterprises (MSMEs), particularly in rural and underserved urban areas. Banks are providing targeted financing to encourage MSMEs to adopt sustainable business practices and invest in green technologies. This finding underscores the importance of inclusivity in green finance initiatives. MSMEs are often the backbone of local economies, and by providing them with access to green finance, banks can promote sustainable growth at the grassroots level. The diffusion of innovations theory suggests that the trialability of green finance products—such as offering small-scale loans to MSMEs—can reduce the perceived risk of adoption and encourage wider uptake. This inclusive approach not only fosters green growth but also promotes social equity, as it enables smaller businesses to participate in the transition to a sustainable economy.

The research also highlights the growing focus on financing low-carbon industries, which prioritize energy conservation and sustainable technologies. Banks are increasingly offering loans to support energy-efficient production methods, aligning their financial products with global sustainability agreements such as the Paris Agreement. This finding reflects the broader shift in investor preferences toward sustainable finance, as highlighted in the ESG criteria (Friede et al., 2015). As investors increasingly prioritize sustainability, financial institutions are under pressure to offer products that align with these values. The research shows that financing low-carbon industries is not only an environmental imperative but also a strategic business decision that aligns with investor demand and regulatory expectations.

Despite the positive trends, the research identifies several challenges to the widespread adoption of green finance, including resource constraints, regulatory complexities, and knowledge gaps. These challenges are consistent with the findings of previous studies, which have highlighted the need for greater policy support and capacity building to enable the growth of green finance in developing economies.

Addressing these challenges will require a multi-faceted approach. Policy makers need to provide clear and consistent regulatory frameworks that incentivize green finance initiatives, while financial institutions must invest in capacity-building initiatives to enhance their understanding of green finance. Additionally, efforts to raise awareness among investors and consumers about the benefits of green finance will be crucial in overcoming knowledge gaps and accelerating adoption.

Despite the challenges, the research highlights several opportunities for growth in green finance, including the development of new financial products such as green bonds and sustainable loans. The research also emphasizes the potential for green finance to create jobs, particularly in sectors like renewable energy, sustainable agriculture, and green technology.

These findings are consistent with the theory of planned behavior, which suggests that positive attitudes toward green finance, coupled with supportive social norms and perceived behavioral control, can drive adoption. By developing innovative financial products and creating an enabling environment for green finance, financial institutions can tap into the growing demand for sustainable investments and contribute to sustainable economic growth.

Overall, the research shows that green finance has a significant positive impact on sustainable development. Initiatives such as EV loans, green home loans, and climate-smart agriculture financing contribute directly to reducing carbon footprints and promoting environmentally sustainable practices. These findings underscore the critical role of financial institutions in driving the transition to a low-carbon economy and fostering long-term environmental sustainability.

In conclusion, while green finance is still in its early stages in Nepal, the findings of this research suggest that it has the potential to play a transformative role in sustainable development. By addressing the challenges identified in this study and seizing the growth opportunities, financial institutions can contribute to a more sustainable and inclusive economy.

CHAPTER V
SUMMARY AND CONCLUSION

5.1 Summary

Green finance, particularly through products such as electric vehicle (EV) loans, green home loans, and hydropower project financing, has demonstrated its ability to directly reduce carbon footprints and contribute to sustainable development goals. These financial initiatives are not only encouraging individuals and businesses to adopt environmentally friendly practices but are also fostering the development of infrastructure necessary for long-term sustainability, such as EV charging stations and renewable energy projects. The study's sentiment analysis reveals a generally positive attitude towards green finance, with most respondents expressing optimism about its potential benefits, although some skepticism persists, particularly in complex areas like large-scale hydropower projects.

EV financing has emerged as a key component of green finance, supporting the transition to sustainable transportation. By offering subsidized loans and partnering with government agencies, banks have played a crucial role in promoting electric vehicle adoption. This contributes significantly to reducing greenhouse gas emissions in the transportation sector, which is one of the largest sources of pollution globally. Similarly, green home loans incentivize the construction and renovation of energy-efficient homes, contributing to the reduction of energy consumption and promoting the adoption of sustainable building practices. These initiatives illustrate how green finance can effectively align with broader environmental goals, such as reducing reliance on fossil fuels and promoting energy efficiency.

Hydropower financing, while central to Nepal’s renewable energy strategy, presents a unique set of challenges. The findings suggest that while banks are willing to invest in hydropower projects due to the country's abundant water resources, regulatory complexities, and environmental concerns remain significant barriers. However, with clear policy support and streamlined regulatory processes, hydropower has the potential to be a critical component of Nepal’s energy future, contributing to both energy security and environmental sustainability.

Climate-smart agriculture financing is another critical area where green finance is making a substantial impact. By providing loans for environmentally sustainable farming practices, such as solar-powered irrigation systems and the use of drought-resistant seeds, banks are helping farmers adapt to the impacts of climate change. This not only supports environmental sustainability but also promotes food security and economic resilience in rural areas, which are highly vulnerable to climate change.

The study also highlights the significant role that green finance plays in supporting Micro, Small, and Medium Enterprises (MSMEs). By extending targeted financing to MSMEs, particularly in underserved areas, banks are fostering inclusive economic growth while encouraging the adoption of sustainable business practices. This approach promotes social equity by enabling smaller businesses to participate in the transition to a sustainable economy, further supporting the goals of sustainable development.

However, the research also points to several persistent challenges in the widespread adoption of green finance. Limited resources, both financial and technological, make it difficult for organizations to scale up green finance projects. Moreover, regulatory challenges, particularly the lack of clear and consistent environmental policies, create uncertainty for businesses and investors. The findings also reveal knowledge gaps among key stakeholders, which hinder their ability to fully understand and implement green finance initiatives. Addressing these challenges is essential for unlocking the full potential of green finance in Nepal.

Despite these challenges, there are numerous opportunities for growth in the green finance sector. The development of new financial products, such as green bonds and sustainable loans, represents a significant opportunity for financial institutions to tap into the growing demand for environmentally conscious investments. Moreover, aligning financial products with national and global sustainability commitments, such as Nepal’s Nationally Determined Contributions (NDCs), provides a clear pathway for future green finance initiatives. The potential for job creation in sectors like renewable energy, sustainable agriculture, and green technology further emphasizes the economic benefits of expanding green finance.

5.2 Conclusion

This study highlights the growing importance of green finance in Nepal as a tool for addressing climate change and achieving sustainable development goals. Key practices such as electric vehicle (EV) financing, green home loans, hydropower project financing, and climate-smart agriculture loans are already contributing to reducing carbon emissions and fostering sustainable practices. Financial institutions are playing a crucial role not only by financing these initiatives but also by investing in supportive infrastructure like EV charging stations and renewable energy projects. Despite its potential, green finance faces significant challenges, including resource constraints, regulatory complexities, and knowledge gaps. These barriers hinder widespread adoption, with unclear regulations and limited stakeholder expertise creating uncertainty and preventing stakeholders from fully capitalizing on the benefits of green finance.

Nevertheless, substantial opportunities exist for the growth and expansion of green finance in Nepal. Developing innovative financial products, such as green bonds and sustainable loans, and aligning with global sustainability frameworks like Nationally Determined Contributions (NDCs) present clear pathways for progress. Green finance also holds the potential to create jobs in renewable energy, agriculture, and green technology sectors, further contributing to economic development. A cautiously optimistic sentiment among stakeholders indicates recognition of its benefits, although skepticism persists due to existing barriers. Addressing these challenges through clear regulatory frameworks, capacity building, and increased awareness will enable financial institutions to drive green finance adoption. By doing so, Nepal can leverage green finance as a transformative force for fostering an inclusive, low-carbon economy and aligning with global efforts to combat climate change.

5.3 Recommendations

The Recommendations are as follows:

1. Strengthen regulatory frameworks by providing clear guidelines and policies that define and support the development of green finance products like green bonds and loans.
2. Introduce government incentives such as tax breaks, subsidies, and lower capital requirements for financial institutions investing in green finance to reduce perceived risks.

3. Enhance capacity building by providing specialized training for banks and financial institutions on assessing environmental risks and designing green finance products.
4. Raise awareness among businesses and investors through targeted campaigns, workshops, and seminars that showcase the long-term benefits of green finance.
5. Develop partnerships with international organizations to bring expertise and best practices in green finance to local financial institutions and government agencies.
6. Promote innovation in financial products by introducing new instruments like climate-linked bonds and impact bonds that tie investment returns to specific environmental outcomes.
7. Expand tailored financial solutions for MSMEs to encourage their adoption of sustainable practices, particularly in rural and underserved areas.
8. Encourage academic research and education in green finance to build expertise and drive innovation in the financial sector.
9. Streamline environmental regulations to reduce delays and uncertainties in green project approvals, especially for renewable energy and sustainable infrastructure projects.
10. Align financial products with global sustainability goals by linking green finance offerings to national and international frameworks such as the Paris Agreement and Nepal’s Nationally Determined Contributions (NDCs).

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APPENDICES

ANNEX 1: QUESTIONNAIRE

Name (Option):

Age (Option):

Gender:

Position:

Name of the bank:

1. How many years have you been working in the banking sector?
2. Could you briefly describe your key responsibilities in your current role?
3. Have you received any specific training or certification in green finance?
4. Are there any particular sectors or types of projects you focus on within green finance? If yes, please specify.

Green Finance Initiatives

1. What types of green finance products or services does your bank currently offer?
2. Can you share any successful case studies where green finance has significantly contributed to sustainable development?
3. How do green finance initiatives at your bank contribute to the sustainable development of your clients?

Policy Support and Regulatory Environment

1. How do current policies and regulations in Nepal support or hinder green finance initiatives?
2. What policy changes do you believe are necessary to promote the growth of green finance in Nepal?
3. How do current policies and regulatory frameworks in Nepal influence the sustainable development outcomes of green finance initiatives at your bank?

Investor Preference

1. Have you noticed a change in investor preferences towards green finance products in recent years?
2. What factors do you think influence investors to choose green finance options?

3. How do investor preferences for green finance products affect the sustainable development of the companies your bank finances?

Technology Innovation

1. What new technologies or digital tools have you adopted to enhance the efficiency and effectiveness of green finance products?
2. Can you discuss any challenges or barriers related to integrating technology with green finance?
3. How does technological innovation in green finance at your bank drive the sustainable development of your clients?

Stakeholder Collaboration

1. How does your bank collaborate with other stakeholders (e.g., government agencies, NGOs, private sector) to promote green finance?
2. Can you describe any partnerships or collaborations that have been particularly effective in advancing green finance initiatives?
3. How does collaboration with stakeholders (e.g., government agencies, NGOs, private sector) at your bank enhance the sustainable development impact of green finance initiatives?

Challenges and Opportunities

1. What are the key challenges and opportunities in implementing green finance initiatives at your bank?

ANNEX 2 : GREEN FINANCE

Results from NVivo regarding Green Finance Initiatives

Word	Length	Count	Weighted Percentage (%)
sustainable	11	8	11.27
development	11	6	8.45
carbon	6	4	5.63
emission	8	4	5.63
loans	5	4	5.63
evs	3	3	4.23
green	5	3	4.23
management	10	3	4.23
waste	5	3	4.23
agricultural	12	2	2.82
electric	8	2	2.82
footprint	9	2	2.82
housing	7	2	2.82
net	3	2	2.82
sustainability	14	2	2.82
vehicles	8	2	2.82
zero	4	2	2.82
buildings	9	1	1.41
change	6	1	1.41
climate	7	1	1.41
disposal	8	1	1.41
eia	3	1	1.41
energy	6	1	1.41
goals	5	1	1.41
home	4	1	1.41
iee	3	1	1.41
loan	4	1	1.41
reduction	9	1	1.41

renewable	9	1	1.41
schemes	7	1	1.41
solar	5	1	1.41
subsidized	10	1	1.41

ANNEX 3 : POLICY

Results from NVivo regarding Policy Support and Regulatory Frameworks

Word	Length	Count	Weighted Percentage (%)
energy	6	4	7.14
ministry	8	4	7.14
areas	5	3	5.36
practices	9	2	3.57
remote	6	2	3.57
services	8	2	3.57
sustainable	11	2	3.57
adaptive	8	1	1.79
affairs	7	1	1.79
agriculture	11	1	1.79
bank	4	1	1.79
banking	7	1	1.79
bodies	6	1	1.79
carbon	6	1	1.79
efficient	9	1	1.79
emission	8	1	1.79
esrm	4	1	1.79
finance	7	1	1.79
financial	9	1	1.79
foreign	7	1	1.79
frameworks	10	1	1.79
governments	11	1	1.79
hydropower	10	1	1.79

launched	8	1	1.79
loan	4	1	1.79
national	8	1	1.79
nepal	5	1	1.79
plan	4	1	1.79
policies	8	1	1.79
products	8	1	1.79
promoting	9	1	1.79
rastra	6	1	1.79
regulatory	10	1	1.79
renewable	9	1	1.79
resources	9	1	1.79
rural	5	1	1.79
seminars	8	1	1.79
sessions	8	1	1.79
social	6	1	1.79
special	7	1	1.79
subsidized	10	1	1.79
sustainability	14	1	1.79
training	8	1	1.79
workshops	9	1	1.79

ANNEX 4 : INVESTOR’S PREFERENCES

Results from NVivo regarding Investor’s Preferences

Word	Length	Count	Weighted Percentage (%)
climate	7	3	8.33
benefits	8	2	5.56
loans	5	2	5.56
products	8	2	5.56
solar	5	2	5.56
biodiversity	12	1	2.78
clean	5	1	2.78
conservation	12	1	2.78
ecosystem	9	1	2.78
emission	8	1	2.78
energy	6	1	2.78
environmental	13	1	2.78
evs	3	1	2.78
free	4	1	2.78
friendly	8	1	2.78
gases	5	1	2.78
goals	5	1	2.78
grants	6	1	2.78
harmful	7	1	2.78
health	6	1	2.78
hydro	5	1	2.78
loan	4	1	2.78
long	4	1	2.78
product	7	1	2.78
profitability	13	1	2.78
return	6	1	2.78
run	3	1	2.78
subsidies	9	1	2.78
sustainability	14	1	2.78
well	4	1	2.78

ANNEX 5 : TECHNOLOGY

Results from NVivo regarding Technology Innovation

Word	Length	Count	Weighted Percentage (%)
digital	7	5	17.86
efficiency	10	2	7.14
innovations	11	2	7.14
online	6	2	7.14
digitization	12	1	3.57
effectively	11	1	3.57
internal	8	1	3.57
management	10	1	3.57
paper	5	1	3.57
paperless	9	1	3.57
progress	8	1	3.57
reducing	8	1	3.57
reduction	9	1	3.57
renovation	10	1	3.57
risk	4	1	3.57
social	6	1	3.57
strategies	10	1	3.57
time	4	1	3.57
transparency	12	1	3.57
video	5	1	3.57
waste	5	1	3.57

ANNEX 6 : STAKEHOLDERS COLLOBRATION

Results from NVivo regarding Stakeholders Collaboration

Word	Length	Count	Weighted Percentage (%)
accountability	14	1	4.35
agreements	10	1	4.35
alternative	11	1	4.35
centre	6	1	4.35
energy	6	1	4.35
friendly	8	1	4.35
gender	6	1	4.35
goals	5	1	4.35
international	13	1	4.35
liable	6	1	4.35
paper	5	1	4.35
partnering	10	1	4.35
partnerships	12	1	4.35
pcaf	4	1	4.35
policy	6	1	4.35
promotion	9	1	4.35
reducing	8	1	4.35
responsible	11	1	4.35
saving	6	1	4.35
support	7	1	4.35
sustainability	14	1	4.35
trees	5	1	4.35
waste	5	1	4.35

ANNEX 7 : CHALLENGE

Results from NVivo regarding Challenges in Implementing Green Finance Initiatives

Codes	Number of coding references	Aggregate number of coding references	Number of items coded	Aggregate number of items coded
Codes\\Auditing	2	2	1	1
Codes\\Certificate	2	2	1	1
Codes\\Defination	2	2	1	1
Codes\\ESRM	2	2	1	1
Codes\\Fraud	1	1	1	1
Codes\\Investment	2	2	1	1
Codes\\Knowledge	3	3	1	1
Codes\\Regulatory	2	2	1	1
Codes\\Resource	4	4	1	1

ANNEX 8 : OPPORTUNITIES

Results from NVivo regarding Opportunities of Green Finance Initiatives for Sustainable Development

Codes	Number of coding references	Aggregate number of coding references	Number of items coded	Aggregate number of items coded
Codes\\Capacity builiding	1	1	1	1
Codes\\Image	1	1	1	1
Codes\\International framework	2	2	1	1
Codes\\Nationally Determined contribution	2	2	1	1
Codes\\Net zero emmissions	3	3	1	1
Codes\\Product	1	1	1	1
Codes\\Sustainable Finance	1	1	1	1

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i ABSTRACT The thesis titled "Assessing the Impact of Green Finance on Sustainable Development Among Nepalese Banks: Challenges and Opportunities" explores how green finance initiatives influence sustainable development in Nepal. Green finance, which supports environmentally sustainable projects, is increasingly recognized as a key driver of sustainable growth globally and in Nepal, where banks are pivotal in promoting these initiatives. This study adopts a qualitative research design, focusing on banks in major urban centers like Kathmandu, Lalitpur, and Pokhara, where green finance practices are most prominent. The research reveals that green finance initiatives, such as electric vehicle (EV) loans, green home loans, and hydropower project financing, have significantly contributed to reducing carbon emissions and promoting energy efficiency. EV loans have particularly supported the adoption of sustainable transportation, while green home loans have encouraged energy-efficient construction. Hydropower financing, although a critical component of Nepal's renewable energy strategy, faces regulatory and environmental challenges. The study also highlights the role of green finance in supporting climate-smart agriculture and promoting financial inclusion by extending loans to Micro, Small, and Medium Enterprises (MSMEs) for sustainable practices. However, several challenges hinder the widespread adoption of green finance in Nepal. These include limited financial and technological resources, regulatory complexities, and a lack of awareness among key stakeholders. Despite these challenges, the study identifies numerous opportunities, such as the development of green bonds and sustainable loans, and the alignment of financial products with national and global sustainability goals. Overall, the findings suggest that green finance has immense potential to drive sustainable development in Nepal. With improved regulatory frameworks, increased stakeholder awareness, and targeted financial products, Nepalese banks can play a significant role in advancing the country's environmental and economic sustainability goals. Keywords: Green finance, sustainable development, Nepalese banks, renewable energy, financial inclusion. ii CHAPTER I INTRODUCTION 1.1 Background of the Study Green finance has emerged as a critical tool for promoting sustainable development within the banking sector. By integrating environmental, social, and governance (ESG) criteria into financial decisions, banks can support projects that contribute to a sustainable future.

Green finance encompasses a variety **of financial** services, **including green** bonds, **green** loans, **and green investment funds**

, all designed to support environmentally sustainable projects (Scholtens, 2009). This approach not only helps mitigate environmental risks but also opens new opportunities for sustainable growth. Green finance aims to mobilize private and public sector investment towards initiatives that have positive environmental impacts. These initiatives can range from