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Emerging Pathways of Green Financing and its Role in Inducing Sustainable Development in Pakistan

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Abstract

This study explores the evolving landscape of green financing and its significance in driving sustainable development in Pakistan. It adopts a comprehensive approach, drawing insights from secondary data sources such as annual reports of the State Bank of Pakistan (SBP), the finance ministry website, annual budgets of Pakistan, and other relevant literature. The pivotal role of green financing in mitigating environmental challenges is highlighted, enhancing business resilience and promoting ecological preservation. Moreover, the timeline of green financing developments, policy initiatives, and allocating budget resources for environmentally friendly projects is examined. The study underscores the potential of green financing in achieving climate targets, reducing greenhouse gas emissions, and supporting various sectors such as renewable energy, waste management, and sustainable industries. Ultimately, the focus remains on the critical role of green financing in Pakistan's sustainable development journey.

***Keywords*:** budget allocation, climate targets, green financing, environmental risk management, policy initiatives, renewable energy, sustainable development, waste management

Introduction

Green financing has emerged as a promising instrument to align financial flows with sustainable development objectives (Tavares et al., 2024). Globally, countries are adopting innovative strategies to harmonize economic growth with ecological preservation and societal advancement (Sachs et al., 2019). This trend is evident in both developed and developing economies, where the adoption of green financing is increasingly viewed as essential for addressing environmental challenges and achieving sustainable development goals or SDGs (Azhgaliyeva & Liddle, 2020). Green finance advocates the integration of financial resources and business operations

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with environmentally friendly practices (Qing et al., 2024). It encompasses various stakeholders including local communities, individual consumers, businesses, producers, investors, and financial institutions (Berrou et al., 2019).

The contours of green finance vary depending on the participants involved, often propelled by financial incentives, a commitment to planetary preservation, or a combination thereof (Kyere-Boateng & Marek, 2021). However, countries such as Pakistan face significant challenges in implementing green finance due to the lack of a formally established nationwide policy (Lund & Mathiesen, 2009). Despite these challenges, there is a growing recognition of the need for such policies to support sustainable development (Lee, 2020).

Green financing deviates from conventional investment within the framework of Environmental Risk Management (ERM). Instead, it embraces a sustainable rationale for financial activities. Within the realm of green banking, green financing becomes a conduit for transitioning towards efficient, low-carbon industries representing green enterprises and eco-friendly economics (Wang & Zhi, 2016). The concept of a green economy represents an alternative developmental vision, one that enhances the quality of life while adhering to the principles of sustainable development. Such an approach champions a triple-bottom-line approach, prioritizing economic, environmental, and social well-being (Rehman et al., 2021). Pakistan's journey towards sustainable development is fraught with challenges but also presents significant opportunities. The adoption of green finance is crucial in addressing these challenges and leveraging these opportunities (Sekhon & Kathuria, 2019). This study explores the emerging pathways of green financing in Pakistan and its role in promoting sustainable development, drawing on global practices and lessons from developing economies (Khan et al., 2023; Lee, 2020).

Industrialized nations excel in managing the environmental impacts associated with industrial development due to well-established and strictly followed procedures (Volz, 2018). While, it remains true that the overarching global environmental crisis stems from excessive material and energy consumption in developed countries, it is further exacerbated by inadequate regulations in developing nations. As international trade networks link up with developing economies, they contribute significantly to worldwide environmental challenges (Mumtaz & Smith, 2019).

The scale of environmental concerns is notably more pronounced in developing countries, primarily attributed to non-compliance with business regulations. These regulations encompass several key areas including (a) improper disposal of industrial waste; (b) reliance on obsolete machinery; (c) inadequate maintenance of industrial facilities; and (d) a lack of oversight and accountability by governing bodies.

In the sphere of sustainable development, the twin goals of environmental preservation and economic growth occupy central positions. Worldwide, efforts have been concentrated on devising financial instruments that nurture environmentally-conscious initiatives, ensuring adherence to designated environmental benchmarks and prudent resource utilization (Kaifeng & Chuanzhe, 2011).

In the year 2015, a concerted effort to combat climate change gained momentum. This effort wasn't confined solely to the establishment of the world's inaugural global climate agreement; rather, the United Nations introduced the agenda 2030 for sustainable development. The execution of commitments outlined in the Paris Agreement entails a significant reduction in global warming, striving to limit it to 2 degrees Celsius, and ideally, to 1.5 degrees Celsius. This ambitious endeavor entails a profound decarbonization of economic systems, a transformation often referred to as "Green Finance," signaling fundamental shifts in the financial landscape (Horowitz, 2016). Green finance represents a positive shift toward stability by funding initiatives across the global economy. This encompasses financing individual green investments as well as public policies that champion green initiatives. The underlying objectives are twofold, namely to diminish risk assumptions by aligning investments with environmental benefits and to enhance the environmental advantages. These twofold functions constitute the essence of green finance, addressing external environmental mentalities (Lee, 2020).

The factors driving the progression of green financing are diverse, involving contributions from banks, institutional investors, international financial organizations, central banks, and financial regulators. A multitude of these stakeholders have enacted various policy and regulatory strategies spanning different types of assets. These measures serve multifaceted purposes including the mitigation of potential losses for financial institutions. Strategies such as pre-lending requirements, interest rate subsidies, and refinancing which is facilitated through central banks

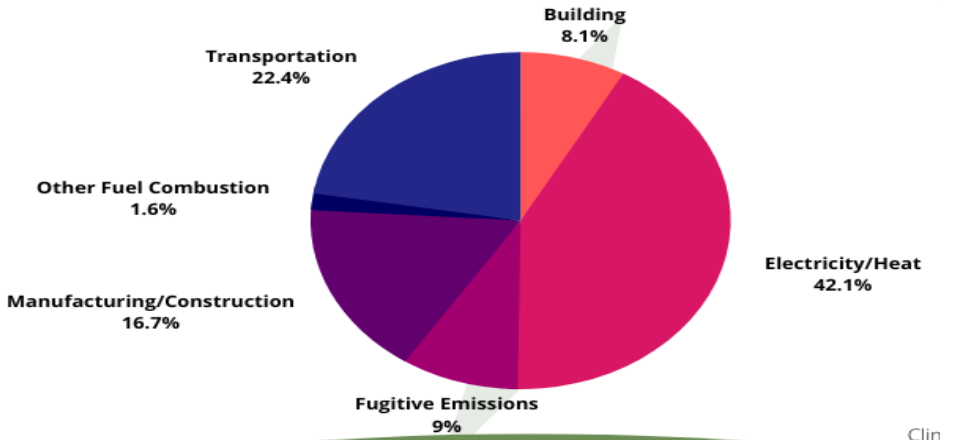
underscore the concerted push for green finance integration (Rehman et al., 2021).

Transitioning to green and renewable energy technologies and enhancing energy efficiency is imperative to address the climate crisis, given that the energy sector is responsible for more than 70% of worldwide greenhouse gas (GHG) emissions.

In light of the ongoing disruptive impacts of climate change, which continue to negatively affect economies and businesses, an expanding array of nations is embracing this transition and outlining ambitious objectives and trajectories to align with it. Nonetheless, the effectiveness of various measures adopted for this purpose hinges significantly on the accessibility of financial means, a significant hurdle particularly for developing countries like Pakistan (Ritchie et al., 2024).

Figure 1

Global GHG Emissions by Sector (Ruiz, 2024)



Aims and Objectives

The primary aim of this research is to investigate how green financing can catalyze sustainable development in Pakistan. The objective is to explore the concept of green financing and its applicability in Pakistan's context. For this purpose, the current landscape of green financing initiatives, policies, and mechanisms in the country is analyzed. This research holds significant implications for Pakistan's development trajectory. By unraveling the potential of green financing, policymakers, financial institutions, and stakeholders can collectively formulate strategies

to redirect financial resources toward projects that contribute to environmental protection, social equity, and economic advancement. The findings of this study are not only relevant within the Pakistani context but also within the broader framework of global sustainable finance initiatives.

Literature Review

Green finance plays a pivotal role in realizing the concept of green growth, which embodies a harmonious and vital element of attaining sustainable economic expansion (Mumtaz & Smith, 2019). Another scholar contends that the driving force behind the 'green' movement is to steer economic progress towards avenues that foster eco-friendly opportunities for growth (Martinez-Fernandez et al., 2012). The fundamental objective of green growth is to enhance a nation's capacity to produce goods in a manner that transcends environmental pollution, leverages green technologies and knowledge, and amplifies the utilization of energy and resources (Islam et al., 2014).

Green financing has garnered significant attention as a vital tool for sustainable development. Numerous studies have examined the role of green finance in mitigating environmental issues, while promoting economic growth. Berrou et al. (2019) provided a comprehensive overview of green finance mechanisms and their effectiveness in achieving energy security and sustainable development. Their work emphasized the importance of integrating financial practices with environmental objectives. Similarly, Wang and Zhi (2016) discussed the dual aspects of market mechanisms and policy interventions in promoting green finance, highlighting how these elements can drive environmental protection.

Mumtaz and Smith (2019) explored the concept of green financing within the context of green banking, stressing its potential to transform conventional industries into low-carbon, eco-friendly sectors. The study underlines the significance of green finance in fostering a green economy that prioritizes economic, environmental, and social well-being. (Bukhari et al., 2020) focused on the implementation of green banking in Pakistan, identifying both the challenges and opportunities faced by financial institutions in adopting sustainable practices.

Malik et al. (2018) discussed the barriers and opportunities of green finance in Pakistan, providing a detailed analysis of the current landscape and the necessary policy interventions required to promote green finance.

Bhutta et al. (2022) examined the potential of green bonds, presenting them as a promising instrument to attract sustainable investment and to address climate change.

Sarfraz et al. (2018) explored the correlation between strategies used for managing environmental risks and decisions regarding project financing. They particularly delved into the influence of corporate social responsibility as a moderating factor. Additionally, they assessed how corporate social responsibility interacts with environmental risk management strategies, credit risk assessment, stakeholder risk assessment, and bank origin. They also discussed the stakeholder theory and the importance of understanding the profiles of respondents in decision-making activities. The preliminary analysis included a reliability test to ensure consistent results.

Green financing, characterized by investments that have positive environmental impacts while promoting economic growth, has gained significant attention globally as a means to achieve sustainable development goals (Kumar et al., 2024). In the context of Pakistan, where environmental challenges and developmental needs coexist, the role of green financing in advancing sustainable development has emerged as a crucial area of research and policy. This literature review aims to explore the evolving landscape of green financing in Pakistan and its role in driving sustainable development.

Pakistan's commitment to sustainable development is reflected in its efforts to promote green financing. The State Bank of Pakistan (SBP) has been a pivotal player in this regard, championing initiatives that align financial activities with environmental objectives. As a pioneer member of the Sustainable Banking and Finance Network, SBP has facilitated the exchange of global insights on sustainable finance. The introduction of a renewable energy financing scheme in 2016 by SBP has bolstered the development of over 1,500 projects with a cumulative capacity of 1,400 MW (State Bank of Pakistan, 2015).

The above literature review highlights the growing significance of green financing in Pakistan's journey toward sustainable development. The efforts of key institutions such as SBP, SECP, and PSX, along with the introduction of initiatives including renewable energy financing and ESG integration, underscore Pakistan's commitment towards aligning financial activities with environmental objectives. As the nation continues to address

environmental challenges while pursuing economic growth, green financing stands as a promising avenue to achieve the dual goals of sustainability and development.

In recent decades, technological progress has given rise to a range of environmental challenges. The notion of green finance has emerged in response to such challenges, advocating for collaborative efforts between the public and private sectors to connect technological progress, creativity, and the promotion of eco-friendly economic endeavors. This approach seeks to uncover new avenues for economic expansion. Indeed, nations around the world have prioritized the establishment of green finance strategies. The current/following literature review encompasses a range of research papers, journals, and articles pertinent to the Pakistani context.

The below table provides a concise overview of key studies in the field. It categorizes these studies based on their focus area, methodology, and main findings. This visual representation aids to understand the existing body of research on the role of green financing in sustainable development in Pakistan, offering insights into a range of perspectives and approaches taken by different scholars.

While these studies offer valuable insights into the mechanisms and benefits of green finance, several gaps remain. Firstly, there is a lack of empirical research specifically focused on the effectiveness of green finance policies in Pakistan. Most of the existing studies provide a general overview or focus on theoretical aspects without delving into the practical implications and outcomes of these policies in the Pakistani context. Moreover, the interplay between different stakeholders—such as government bodies, financial institutions, and local communities—has not been thoroughly examined, leaving a critical gap in comprehending how collaborative efforts can enhance the effectiveness of green finance.

Additionally, there is limited research available regarding the impact of green finance on specific sectors within Pakistan, such as energy, agriculture, and manufacturing. Understanding sector-specific challenges and opportunities can provide a more nuanced view of how green finance can be tailored to meet the unique needs of different industries. Furthermore, the role of technological innovation in facilitating green finance and promoting sustainable development in Pakistan has not been adequately examined.

Table 1

Overview of Key Studies in Pakistan

Author	Title of Paper	Theory Used	Main Findings	Contribution
Rehman et al. (2021)	"Adoption of green banking practices and environmental performance in Pakistan: a demonstration of structural equation modeling"	Socially responsible investing theory	Identified green banking practices in Pakistan's banks	Highlighted the importance of green banking practices
Shandong (2022)	"The Role of Financial Sector Development and Green Finance in promoting sustainable Performance: Evidence from renewable energy projects in Pakistan"	This Article does not mention any specific theory in the study. However, the study used structural equation modeling to analyze the theoretical framework of the study	This Study Highlights green finance's role in Pakistan's SDGs. highlighting stakeholder involvement and institutional support. highlighting post-graduates significant contributions and renewable energy projects' prominence.	The study highlights green finance dimensions and financial sector development's impact on sustainable renewable energy projects in Pakistan.
Ullah et al. (2022)	"Multidimensional perspective of green financial innovation between green intellectual capital on sustainable business: the case of Pakistan"	Institutional Theory. resource-based theory, and capital theory.	Green finance positively impacts environmental sustainability in Pakistan And explores research on credit misallocation, environmental sustainability, intellectual capital, and organizational performance.	Established the connection between green finance and environmental sustainability
Kumar et al. (2022)	" Fostering Green Finance for Sustainable Development: A Focus on Textile and Leather Small Medium Enterprises in Pakistan"	Gap analysis and literature review	The study identified the current status and challenges of facilitating green financing for SMEs in the textile and leather sectors in Pakistan.	The study provides policy recommendations to help solve climate change and other environmental challenges and build a better future for everyone.

Author	Title of Paper	Theory Used	Main Findings	Contribution
Javid and Sherif (2016)	"Environmental Kuznets curve and financial development in Pakistan"	Sustainable Development Theory	Analyzed environmental Kuznets curve and financing trends in Pakistan	Provided insights into the financing landscape of environmental sustainability in Pakistan
Qureshi and Hussain (2022)	"Challenges and issues of green banking in Islamic and traditional banks of Pakistan"	Jeucken's green banking model	Compared green banking initiatives in Islamic and conventional banks	Explored differences and similarities in green banking practices between Islamic and conventional banks

This paper aims to fill these gaps by providing a comprehensive analysis of the role of green finance in sustainable development in Pakistan. It critically evaluates the existing policies and initiatives, assessing their effectiveness and identifying areas for improvement. By focusing on empirical data and real-world examples, this study offers practical insights into the challenges and opportunities associated with green finance in Pakistan. Moreover, it explores the interactions between various stakeholders, highlighting the importance of collaborative efforts in promoting green finance. Further, it examines sector-specific impacts, providing a detailed analysis of how green finance can drive sustainable practices in key industries, such as energy, agriculture, and manufacturing. Finally, the paper investigates the role of technological innovation in enhancing the effectiveness of green finance, offering recommendations for leveraging technology to support sustainable development goals. To address these gaps, it provides actionable insights and policy recommendations, aiming to support the adoption and implementation of green finance practices that drive sustainable development and economic growth.

Research Question

The current study strives to answer the following research question:

How can the adoption of green financing foster sustainable development in Pakistan?

Research Approach

The study adopts a descriptive and analytical approach, relying on secondary data sources. This methodology enables a comprehensive

understanding of green financing practices and their impact on sustainable development in Pakistan.

Data Collection

Secondary information has been sourced from the following:

- Annual reports of the State Bank of Pakistan (SBP)
- The Finance Ministry of Pakistan website
- Relevant academic and industry literature

Variables and Data

The primary variables of the study include

- The amount of green financing disbursed
- Types of projects financed (renewable energy, energy efficiency, waste management, sustainable industries)
- Policy measures implemented
- Investment potential in various green sectors

Data is organized into categories such as policy initiatives, financial disbursements, and sectoral investments.

Data Analysis

The collected data is analyzed using descriptive statistics, graphical representations (graphs, pie charts), and trend analysis. This helps in illustrating the evolution of green financing initiatives, the sectors benefiting from these investments, and the overall impact on sustainable development.

After the collection of data from secondary sources, the findings were explained by graphs/pie charts. In 2015, SBP took a significant step toward promoting green financing and sustainable development within the country. Following the global trend and recognizing the importance of addressing environmental challenges, it introduced green banking policies and guidelines. These policies aimed to align the banking sector with climate resilient practices and mitigate climate change risks. Building on this momentum, the central bank issued comprehensive green banking guidelines in 2016, urging both banks and non-banking financial institutions

to allocate a portion of their financing portfolios to environmentally friendly initiatives.

Since January 2016, all banks and non-banking financial institutions have been mandated to dedicate a minimum of 5% of their direct balance distribution to high-impact green finance projects. This is aimed at directing financial resources towards sectors such as renewable energy, energy efficiency, waste management, sustainable industries, and other environmentally conscious endeavors. Furthermore, in line with global best practices, the guidelines also encourage the establishment of a 'Climate Risk Fund' to support climate-resilient initiatives (Mumtaz & Smith, 2019). These policy measures reflect Pakistan's commitment to sustainable development and its recognition of the role that financial institutions play in fostering a positive environmental change. The introduction of green banking policies underscores Pakistan's efforts to balance economic growth with ecological preservation, thereby contributing to a more environmentally sustainable future (Sustainable Development Policy Institute [SDPI], 2023).

Green Finance Policy Landscape in Pakistan: Current Outlook

As of now, Pakistan has formally established nationwide policy concerning green finance. The responsibility to allocate funds for environmentally friendly projects at the national level rests with the Planning Commission (PC), administered through the Public Sector Development Program (PSDP). Nevertheless, recent times have witnessed an increased involvement of various other public sector entities that have displayed a strong interest, consequently introducing an array of guidelines, regulations, and initiatives. These endeavors are pivotal in laying the groundwork for the advancement of green finance implementation within Pakistan (Sustainable Development Policy Institute [SDPI], 2023).

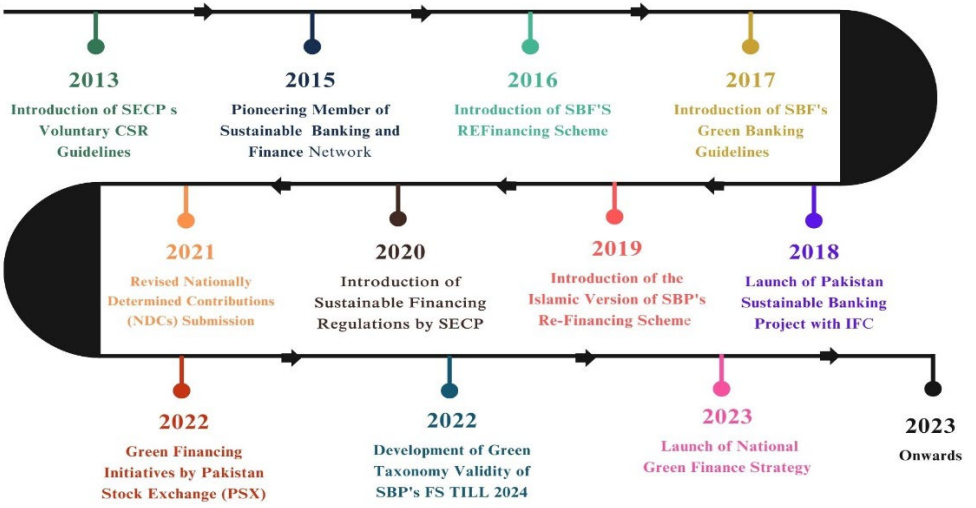
A chronological representation outlining significant milestones in green financing development in Pakistan is given below in Figure 2.

SBP has proactively endorsed green financing and sustainability initiatives in recent times. Back in 2015, it became an inaugural member of the Sustainable Banking and Finance Network, aiming to foster the exchange of insights regarding global financial endeavors linked with sustainable development. Notably, the bank initiated a financing scheme for renewable energy in 2016, bolstering more than 1,500 projects with a

cumulative capacity of 1,400 MW. Additionally, in 2017, it unveiled its Green Banking Guidelines (GBG) with the objective of incorporating ESG risks into lending activities.

Figure 2

Timeline of Green Financing Developments in Pakistan



The Securities and Exchange Commission of Pakistan (SECP) has introduced voluntary guidelines for both green bonds and corporate social responsibility (CSR) undertakings, with the intention of propelling sustainable projects and cultivating responsible business practices. Furthermore, the Pakistan Stock Exchange (PSX) has joined forces with the sustainable stock exchanges (SSE) initiative, thereby amplifying corporate transparency and performance pertaining to environmental, social, and corporate governance facets.

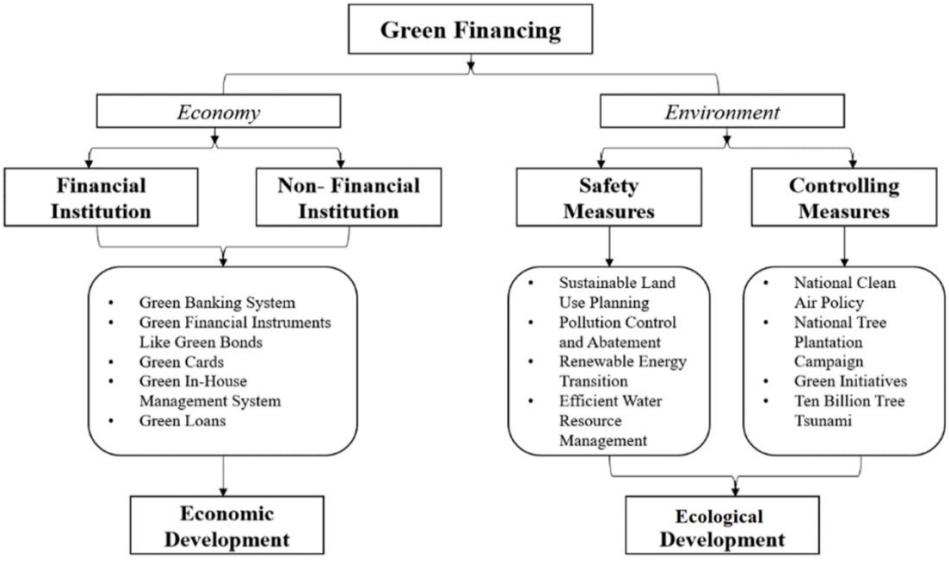
This study contributes to the existing literature by providing an empirical analysis of green finance policies in Pakistan. It also offers a detailed examination of sector-specific impacts and opportunities for green financing and highlights the role of technological innovation in facilitating green finance. Moreover, it presents a comprehensive model for the effective implementation of green finance practices in Pakistan. By addressing these areas, the study fills significant gaps in the current understanding of green finance and its role in sustainable development in Pakistan.

Methodology

The proposed model for green financing in Pakistan integrates economic and environmental dimensions to promote sustainable development. On the economic side, financial institutions implement green banking systems and other financial instruments such as green bonds and green loans, while non-financial institutions support these efforts through sustainable practices. These initiatives collectively drive economic development by funding eco-friendly projects. On the environmental side, safety measures such as sustainable land use planning, pollution control, and renewable energy transitions are implemented alongside controlling measures including national clean air policies and massive afforestation campaigns. These measures collectively foster ecological development. By synergizing financial resources with environmental sustainability initiatives, this model aims to achieve balanced and comprehensive sustainable development in Pakistan.

Figure 3

Proposed Model



Results

Current Green Budgeting Landscape in Pakistan

The following statement represents the financial resources allocated to

each entity for environmentally friendly and sustainable initiatives.

> Pakistan is one of the most vulnerable countries in the world to climate change risks. The Global Climate Risk Index 2021 ranks Pakistan as the eight most vulnerable country susceptible to negative effects of climate change. In view of this challenge, effective measures for climate change mitigation and adaptions are key to sustainable development. Finance Division's initiative of green-budget tagging is a step towards identifying budgetary allocations which are 'climate sensitive', thereby allowing policy makers to have better visibility of expenditures directed towards climate change mitigation. International best practices recommend implementing these strategies through the public finance management cycle, an important component of which is the budget formulation itself starting from the very first step of the Budget Call Circular. This approach is essential for tracking and monitoring climate related expenditures. For FY2023-24, a dual approach is being adopted, whereby climate sensitive cost centers in each demand are be identified and tagged in the SAP system while medium-terms goals, objectives and KPIs on climate change are being identified for development budget through the Performance-Based Budgeting (Green Book). It is hoped that this exercise will lend support to the Government's strategy for climate change risks mitigation and adaption" (Government of Pakistan, 2023).

The table below provides a breakdown of budget allocations for various government divisions and authorities in Pakistan under the theme of "Green Budgeting."

Medium Term Performance Based Budget FYs 2023-24 to 2025-26

Rs in 00C

Table 2

Climate and Green Budgeting in Pakistan

D.No	Demand Description	Green Budgeting	D.No	Demand Description	Green Budgeting
1	Aviation Division	23,315	49	Foreign Missions	500
2	Airports Security Force	111,182	51	Human Rights Division	20,976

D.No	Demand Description	Green Budgeting	D.No	Demand Description	Green Budgeting
4	Cabinet Division	19,252	52	National Commission for Human Rights	1,209
5	Emergency Relief and Repatriation	6,285	54	Financial Action Task Force (Fate) Secretariat	731
6	Intelligence Bureau	112,110	55	Information And Broadcasting Division	44,414
8	Pakistan Nuclear Regulatory Authority	29,578	56	Miscellaneous Expenditure of Information and Broadcasting Division	92,599
9	Naya Pakistan Housing Development Authority	5,494	57	Information Technology and Telecommunication Division	64,058
10	Prime Minister's Office (Internal)	5,843	58	Interior Division	105,776
11	Prime Minister's Office (Public)	5,800	59	Other Expenditure of Interior Division	82,613
12	National Disaster Management Authority 8 Erra	2,923	60	Islamabad Capital Territory (Ct)	164,987
13	Board of Investment	3,934	62	National Counter Terrorism Authority	7,620
14	Prime Ministers Inspection Commission	1,210	63	Inter-Provincial Coordination Division	22,537
15	Special Technology Zones Authority	10,179	64	Kashmir Affairs and Gilgit-Baltistan Division	12,430
17	Federal Public Service Commission	11,279	66	Federal Judicial Academy	5,332
19	Cm. Services Academy	15,066	67	Federal Shariat Court	7,733
20	National Security Division	761	68	Council Of Islamic Ideology	2,480
21	Secretariat of Council of Common Interest	1,229	69	National Accountability Bureau	56,471

D.No	Demand Description	Green Budgeting	D.No	Demand Description	Green Budgeting
22	Curate Change and Environmental Coordination Division	7,370	70	District Judiciary. Islamabad Capital Territory	11,763
23	Commerce Division	87,971	72	Narcotics Control Division	46,816
24	Communications Division	1,052	76	Pakistan Agriculture Research Council	92,697
25	Other Expenditure of Communications Division	268,742	77	National Health Services. Regulations And Coordination Division	200,494
26	Pakistan Post Office Department	91,175	78	Overseas Pakistanis and Human Resource Development Division	29,015
26	Pakistan Post Office Department	50	79	Parliamentary Affairs Division	4,892
27	Defence Division	51,379	80	Planning. Development and Special Initiatives Division	65,618
28	Federal Government Educational Institutions in Cantonments and Garrisons	112,665	81	Poverty Alleviation and Social Safety Division	2,354
30	Defence Production Division	4,338	82	Benazir Income Support Programme (BISP)	61,868
31	Economic Affairs Division	7,358	84	Privatization Division	3,443
32	Miscellaneous Expenditure of Economic Affairs Division	125,948	86	Religious Affairs and Inter-Faith Harmony Division	13,301
33	Power Division	5,255	87	Science And Technology Division	121,766

D.No	Demand Description	Green Budgeting	D.No	Demand Description	Green Budgeting
34	Petroleum Division	544,242	89	Water Resource Division	34,975
35	Geological Survey of Pakistan	6,122	A	Staff Household and Allowances of The President (Public)	4,139
36	Federal Education a Professional Training Division	233,659	B	Staff Household and Allowances of The President (Personal)	14,539
37	Higher Education Commission (HEC)	6,500	J	Islamabad High Court	14,266
38	National Rehmatulil Alameen Authority	2,101	L	Federal Ombudsman for Protection Against Harassment of Women at Work Place	1,079
39	National Vocational a Technical Training Commission (NAVTTC)	11,429	M	Wafaqi Mohtasib	19,658
40	National Heritage and Culture Division	25,223	N	Federal Tax Ombudsman	3,644
41	Finance Division	39,973			
42	Other Expenditure of Finance Division	58,267			
43	Controller General of Accounts	55,592			
46	Revenue Division	827			
47	Federal Board of Revenue	366,266			
48	Foreign Affairs Division	36,185			
49	Foreign Missions	407,398			

The financial resources allocated to various entities for environmentally friendly and sustainable initiatives are depicted in Figure 4 and Table 2. These figures illustrate the government's commitment to promoting eco-

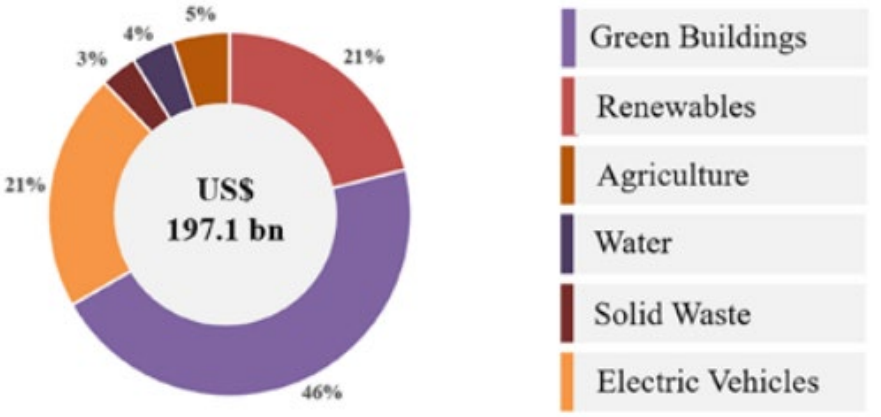
friendly practices, conservation, and sustainable development across diverse sectors including aviation, intelligence bureau, climate change and environmental coordination, communications, defense, education, petroleum, heritage and culture, finance, revenue, and foreign affairs. The allocated budget underlines the comprehensive approach adopted by the government to integrate green budgeting within the national financial framework.

Disbursement of Green Finance

In recent years, Pakistan has significantly shifted its focus toward climate-related initiatives, with the public sector allocating 8% of its budget to climate endeavors. The private sector has also embraced climate focused investments through corporate social responsibility and philanthropic actions. Foreign investments from entities such as the Global Environment Facility (GEF) and Green Climate Fund (GCF) have increased, yet they remain inadequate to address Pakistan's substantial climate challenges. Meeting the country's climate targets requires a minimum of US$101 billion for energy transition by 2030, while adaptation costs are estimated at US$7 billion to US$14 billion annually until 2050. The International Finance Corporation (IFC) has identified US$197.1 billion worth of opportunities across various sectors, aligning with green growth principles and contributing towards the 2030 climate goals (Chaudhry, 2017).

Figure 4

Sectoral Breakdown of Investment Potential for Green Growth in Pakistan



Environmental Risk Management (ERM)

Environmental Risk Management (ERM) in Pakistan is a critical aspect of sustainable development and business operations. This process entails recognizing, evaluating, and alleviating potential risks linked to environmental factors that might influence business activities, financial outcomes, and the broader reputation. Effective ERM strategies help organizations to navigate environmental challenges, regulatory compliance, and stakeholder expectations, while contributing to a more resilient and sustainable business landscape.

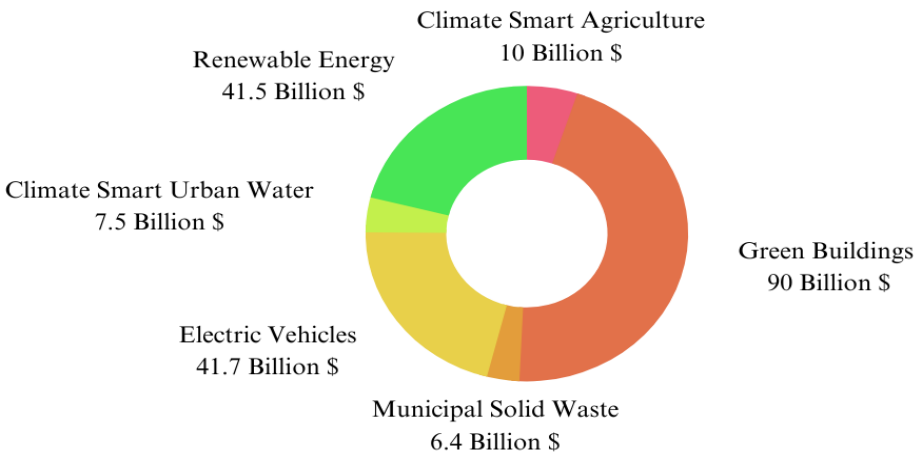
Environmental risk was found to be a significant aspect of credit risk, stemming from environmental factors and their interconnectedness with climate change. Revised budget allocations for Pakistan demonstrate the increasing recognition of this issue, as shown below.

- Fiscal Year 2021-22: Allocated budget of 436 million
- Fiscal Year 2021-22: Revised budget of 452 million
- Fiscal Year 2022-23: Allocated budget of 749 million

These budget revisions highlight the growing importance of addressing environmental risk within the broader financial and economic framework of Pakistan.

Figure 5

Climate Investment Potential in Pakistan



The International Finance Corporation (IFC), which is the private sector division of the World Bank Group, has assessed the market potential in Pakistan to be around US$197.1 billion. Among the various opportunities, green building financing emerges as the most significant, trailed by electric vehicles, renewable energy projects, agricultural initiatives, water resource management, and solid waste disposal. These potential initiatives are projected to lead to a potential reduction of up to 20% in greenhouse gas emissions by the year 2030.

Discussion

The main Discussion from the study can be summarized as follows: 1. Pakistan has taken substantial steps toward green financing, with policies introduced to align financial institutions with climate-resilient practices. 2. SBP's green banking policies and guidelines emphasize environmentally friendly initiatives and the establishment of a 'Climate Risk Fund'. 3. Budget allocations in Pakistan reflect a growing recognition of the importance of addressing environmental risk within the financial framework. 4. Despite progress, investments are insufficient to meet the ambitious climate targets. Hence, there is a need for additional financial resources to address climate challenges, effectively.

These findings highlight the evolving landscape of green financing in Pakistan, the role of financial institutions in supporting sustainable development, and the challenges that need to be addressed for a more environmentally resilient future.

Conclusion

Pakistan, like many countries in South Asia, faces significant climate change risks. It is imperative for the government and financial institutions to prioritize green financing in order to address these challenges and achieve sustainable development goals. Although the study is based on secondary information, it offers valuable insights into the importance of green financing in the Pakistani context. Similar to Bangladesh, Pakistan's regulatory bodies and financial institutions should work collaboratively to implement effective green financing policies, enhance awareness, and invest in environmentally friendly projects for a more sustainable future.

Recommendations and Suggestions for Green Financing in Pakistan

Enhancing Public Awareness

The government should initiate public awareness campaigns to educate the population about the significance of sustainable development and the role of green financing in addressing environmental challenges. Utilizing borrowed funds for sustainable initiatives and promoting eco-friendly projects can contribute to broader public understanding.

Review and Revise Green Financing Policies

The government and SBP should conduct a comprehensive review of existing green financing policies to ensure that they are effective and aligned with the country's sustainable development goals. Regular updates and adjustments to policies can stimulate progress in the green financing landscape.

Effective Implementation of Green Banking Guidelines

The government and SBP should actively monitor and enforce the application of green banking guidelines. Regular assessments and reporting mechanisms can ensure that these institutions keep integrating environmental considerations into their operations.

Efficient Application of Environmental Risk Management (ERM) Guidelines

SBP should guide and oversee financial institutions for the efficient implementation of ERM guidelines. This approach helps to identify and manage environmental risks associated with various projects and investments, contributing to more sustainable outcomes.

Strengthening Refinancing Fund

The government and SBP should work on strengthening the refinancing fund dedicated to green projects. By increasing the availability of funds for environmentally friendly initiatives, the adoption of green financing can be accelerated.

Enhancing Coordination

Effective coordination between SBP and financial institutions is essential for the successful implementation of green financing initiatives. Regular communication and collaboration can streamline efforts and

facilitate the integration of sustainability principles.

Increased Investment in Environment-Friendly Projects

Financial institutions should proactively allocate more funds to environment-friendly projects. This would not only support sustainable development but would also foster the growth of green industries and technologies.

Risk Assessment for the Environment and Climate

Before disbursing funds to projects, financial institutions should conduct thorough assessment of their potential impact on the environment and climate. This would ensure that investments are directed towards projects with positive environmental outcomes.

Promoting Green Products

Financial institutions should take the initiative to develop and promote a range of environment-friendly financial products and services. These offerings can cater to individuals and businesses looking to invest in sustainable ventures.

Conflict of Interest

The authors of the manuscript have no financial or non-financial conflict of interest in the subject matter or materials discussed in this manuscript.

Data Availability Statement

The data associated with this study is unavailable due to ethical, legal, or commercial restrictions.

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