

The role of financial institutions in Bangladesh in green finance and sustainable development

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Keywords

Bangladesh, Financial Institutions, Green Finance, Responsible Investment, Sustainable Economy, Sustainability.

Abstract

Bangladesh's investments drove GDP growth but also risk an unsustainable path. Environmentally irresponsible investments lead to pollution, damaging ecosystems and widening social inequality. In the realm of green finance, the strategic direction involves the allocation of investments towards initiatives that yield environmental benefits. This approach is recognised as a critical mechanism for integrating environmental considerations into financial decision-making processes and mitigating climate-related risks, with the overarching objective of fostering green and sustainable economic development. In Bangladesh, while commendable policy alignments have been observed in pursuit of sustainable development objectives, there is an opportunity to cultivate a conducive environment for both formal and informal financial institutions to actively propel the agenda of green growth in the existing and conceivable future. This study is focused on thoroughly investigating the pivotal role of financial institutions in Bangladesh in driving green finance and sustainable development. It will comprehensively explore the diverse sources of green finance available in Bangladesh, including grants, debt, and equity mechanisms. Additionally, the study will offer valuable insights into the green finance landscape in the country, delineate the challenges that financial institutions encounter in integrating green finance, and pinpoint opportunities for accessing green finance from internal and external sources to contribute to Bangladesh's sustainable growth actively. The descriptive and analytical study draws on primary data from a closed-ended questionnaire survey. Despite extensive research on green finance, there has been a lack of exploration into the financial sector's role in fostering a sustainable economy through green finance in Bangladesh. The findings of this study may offer valuable insights for policymakers in the financial industry, financial lenders, producers, governments, customers, and society. Furthermore, this research could facilitate collaboration among donor countries, non-profit organisations, international development organisations, and international financial institutions in line with the Paris Climate Agreement and the Sustainable Development Goals (SDGs).

Introduction

The Earth has unequivocally experienced a surge in natural phenomena, including strong winds, floods, and heat waves (Volz, 2018). Consequently, these issues have become significantly consequential for the global economy and international politics, given their close correlation with sustainable growth and human survival (Chen, J., et al., 2022). Implementing a green economy through green financing is crucial for fostering economic growth in developing nations and promoting sustainability by curbing energy consumption and emissions. Developing nations stand at a critical juncture, particularly vulnerable to climate change and reliant on international climate finance to safeguard and curb its impact. Nevertheless, their limited institutional experience in project design and planning has hindered their access to this financial support (Sadiq, M., et al., 2022).

Bangladesh is poised as an emerging economy with great potential but grapples with climate change challenges (Uddin, M.N. & Ahmed, M., 2018). The country is especially vulnerable to rising sea levels, which have caused habitat degradation and economic difficulties. Bangladesh has implemented green investment and finance strategies to mitigate these threats and promote sustainable development. Green financing is crucial in addressing climate change issues and achieving sustainable development goals in

Bangladesh (Park, H. & Kim, J.D., 2020). Green finance is optimal for funding eco-friendly projects and organisations that protect the environment. It encompasses various activities, covering renewable energy, energy efficiency, clean energy, pollution control, water management, climate change strategies, and biodiversity conservation. This type of financing plays a pivotal role in advancing the transition to a green economy and effectively addressing climate change and energy conservation (Tran, T., et al., 2020). Achieving the Sustainable Development Goals (SDGs) demands increased investment and the implementation of new financial tools and policy initiatives. By aligning financial decisions with environmental objectives, green finance can ensure optimal results for sustainable development in Bangladesh (Zheng, G.W., et al., 2021).

Green finance encounters significant challenges in developing nations heavily reliant on oil and natural gas. These challenges span from disagreements on principles and difficulties in assessing external effects to structural hindrances, knowledge imbalances, and challenges related to credit estimation. While offering environmental and investment advantages, green finance also presents drawbacks such as low yields, intricate processes, and a scarcity of expertise (Zhang, X., et al., 2022). Additionally, there needs to be a green project mediator, information resources, and specialised institutions to ensure companies' willingness to participate in green project development. The development of green finance necessitates creative talents in finance and environmental economics. Consequently, the inadequate talent pool, low returns, complex procedures, and high implementation costs impede the sustainable advancement of green finance in developing nations (Tran, T., et al., 2020).

Numerous studies have underscored the practices, prospects, challenges, and sustainable reporting of green banking in Bangladesh Hossain(2019); Sandeep Kumar Rawat & Dr Anu(2020), Uddin, M.N. & Ahmmed, M. (2018), Zheng, G.W., et al. (2021). However, the specific role of banks and financial institutions in key aspects of green finance and sustainable development, as well as the challenges of implementing green finance, still needs to be explored. Additionally, more comprehensive studies on the dimensions of green finance need to be conducted based on primary data.

This study has specific objectives. Firstly, it aims to provide a comprehensive overview of the current status of green finance in Bangladesh. Secondly, it seeks to analyse the role of Bangladeshi banks and financial institutions in promoting green finance and sustainable development. Thirdly, the research aims to identify the significant challenges hindering the growth of green finance in Bangladesh using primary data. The study will address the following questions: What roles do banks and non-bank financial institutions play in implementing green finance to achieve sustainability in Bangladesh, and what are the significant barriers to implementing green finance in the country?

The forthcoming sections of the paper are structured as follows: Section 2 will encompass a review of recent literature on green finance in Bangladesh and some recent debates regarding green finance and sustainability. Section 3 will detail the research design, sampling technique, data collection, and data analysis process. Section 4 will cover the findings. Section 5 will explore the discussion and conclusion, leading to the limitation and direction for future research presented in Section 6.

2. Literature review

2.1. Literature Review

Researchers and experts globally are increasingly studying sustainable economic growth, green banking, finance, and financial sustainability (Liu, R., et al., 2019). The financial sector connects long-term economic development and environmental preservation, impacting ecological sustainability (Khatun, M.N., et al., 2021). Green finance remains a relatively new concept for financial institutions in Bangladesh, involving issuing green bonds, green equity, or green debentures. Nevertheless, green financing is considered one of the most critical factors in developing sustainable economies, particularly in countries like Bangladesh (Rahman, S., et al., 2022). Green finance is a rapidly evolving concept aiming to align financial activities with environmental sustainability and the achievement of sustainable development goals (SDGs), effectively combining financial benefits with ecological protection (Sandeep Kumar Rawat & Dr. Anu, 2020). The two current research focus areas for academics are sustainable development and finance. These areas place substantial emphasis on green finance as a critical financial tool for fostering sustainable economic growth in any country (Wang, Y., et al., 2021).

Green banking and finance are crucial for sustainable economic growth in developing countries like Bangladesh (Haque, M.S. & Murtaz, M., 2018). The 2024 report from Bangladesh Bank shows 61 scheduled banks and 34 non-bank financial institutions in Bangladesh. In the first quarter of 2024, the total disbursement of green finance by banks was 59,676.53 million BDT, while non-bank financial institutions disbursed 12,718.79 million BDT (Bangladesh Bank, 2024). It is imperative for all concerns, particularly financial institutions, to ensure fiscal sustainability, thus guaranteeing long-term success and sustainable development (Mohd, S. & Kaushal, V.K., (2018) & Akter, A. et al., (2019). The Central Bank of Bangladesh actively endorses green financing through concessional refinancing programs and credit allocations for financial firms (Hossain, 2019). Establishing green bank policies and sector-specific transformation projects, which international donors fund, reinforces this initiative. As a result, both banks and non-bank financial institutions in Bangladesh have implemented a green financing system to bolster green growth and ecological improvements (Bangladesh Bank, 2024).

According to a recent study, the green finance sector in China has effectively reduced carbon intensity by promoting the utilisation of non-fossil fuel sources. However, an increase in energy consumption has posed challenges to the growth of sustainable project investments. The study also highlights the significant impact of green finance policies on China's non-fossil energy consumption (Ren, X., et al., 2020). According to the study of Nawaz, M.A. et al. (2021), the N-11 economies and the BRICS nations show no significant difference in their green finance and climate threats. Sustainability is crucial for emerging and developing countries. It is recommended that both groups formulate policies to address the structural risks and vulnerabilities posed by environmental issues through green financing. Moreover, another study by Liu (2023) states that green finance is now a critical factor in driving green economic growth, emphasising social responsibility and environmental protection for sustainable development.

Climate change is a pressing global issue, particularly for countries like Bangladesh that rely on global climate funds for support (Volz, 2018). However, a lack of expertise often results in funding applications being rejected (Zhou, X., et al., 2020). Nonetheless, global finance aims to balance financial events, environmental stability, ecological preservation, and sustainable development goals for all nations (Wang, K.H., et al., 2022). Despite Bangladesh Bank's established guidelines for green financing policies, banks and financial institutions face challenges in effectively managing green projects, limiting the promotion of green finance (Hossain, 2019). High transaction costs and an underdeveloped market for green products further complicate the situation (Zheng, G.W., et al., 2021). Furthermore, the constrained potential for generating green equity finance is attributed to the need for a conducive business environment and regulatory framework to attract impactful investments. Operational risks also loom large for green projects due to adopting new technology and commercialisation perspectives (Hossain, M.M. & Rahman, T., 2013). Notwithstanding obstacles, research in green finance has made considerable global progress. It is widely acknowledged that green finance contributes to environmental preservation and benefits investors. However, green finance faces challenges such as low yields, complex processes, and a need for more expertise. Advancing green finance requires individuals with diverse skills, including expertise in finance and ecological economics (Khairunnessa, F., et al., 2021).

2. 2. Research Gap

In recent years, various global studies have been undertaken to examine green finance (Hossain (2019); Jha, B. & Bakhshi, P. (2019); Shalneva, M.S. & Zinchenko, Y.V. (2019). These comprehensive investigations have predominantly centred on discerning current trends, challenges, and opportunities in green finance to further sustainable development goals (SDGs). Additionally, certain studies have sought to ascertain the interrelationship between green finance and the green economy. (Ren, X., et al., 2020), green finance and climate change mitigation in N-11 and BRICS nations, and the correlation between green finance, carbon intensity, and non-fossil energy consumption (Nawaz, M.A., et al., 2021). While extant research has shed light on the practices and potential of green banking in Bangladesh, there still needs to be more exploration into the role of financial institutions in pivotal facets of green finance and the associated challenges. Furthermore, limited studies have delved into the dimensions of green finance based on primary data. The recent study has elucidated numerous research gaps that underscore the necessity for additional investigation to facilitate the effective integration of financial institutions' role in Bangladesh in green

finance and sustainable development. Therefore, further research is warranted to offer unbiased insights on this matter.

3. Research methodology

3.1 Design of the Research

The current research aims to uphold objectivity and impartiality. Consequently, the positivism research philosophy has been selected as suitable for this investigation (Eisend, M. & Kuss, A., 2019). The study utilises the deduction method with a cross-sectional and descriptive research design. It involves a field study intended to comprehensively examine all pertinent issues and yield new information for future research (Mark Saunders, et al., 2019). The researcher intends to utilise a quantitative approach to investigate the research topic (Misra, 1989).

3.2 Sample and Data Collection

Financial institutions, including banks and non-bank entities, were selected for this study due to their significant role in providing green finance in Bangladesh. The study's primary aim is to ascertain financial institutions' involvement in green finance and to pinpoint the significant obstacles hindering its implementation in Bangladesh. The analysis relied on primary and secondary data to achieve these objectives. Primary data was collected through a close-ended survey questionnaire distributed to key stakeholders such as academics involved in SDGs and green finance research, professionals in financial work, stakeholders about financial institutions, related think tanks, and finance and banking graduates in Bangladesh. The questionnaires were disseminated via email and social media, utilising convenience sampling to reach the targeted participants. Despite aiming for 100 respondents, only 10 completed a portion of the survey, with two individuals opting not to participate at all. Consequently, the final sample size totalled 88, indicating an 88% response rate.

The study gathered secondary data from institutional publications, literature reviews, academic journal articles, and various sources, including Google Scholar, Emerald, EBSCO, books, and internet sources. This was done to obtain academic knowledge on sustainability, sustainable development, green finance, financial institutions, opportunities, challenges, and Bangladesh.

3.3 Data Analysis

Utilising multivariate statistical analysis yields dependable and practical results (Mertler, C.A., et al., 2021). The methodology outlined in this study blends frequency analysis of demographic variables, descriptive statistics, exploratory factor analysis, and reliability analysis. The primary survey data were analysed using SPSS software to ensure a comprehensive statistical analysis.

4. Findings of the study

4.1. Current State of Green Finance in Bangladesh

Green finance has garnered significant attention in the financial sector. Bangladesh, due to its geographical location, is susceptible to climate change, and it acknowledges the pivotal role of the financial sector in promoting environmentally friendly practices (Haque, M.S. & Murtaaz, M., 2018). Bangladesh Bank (BB) has served as a role model by introducing green financing initiatives since 2011 and actively guiding banks and non-bank financial institutions to expedite the adoption of sustainable practices in the real economy (Bangladesh Bank, 2024). While an inclusive green financing strategy has yet to be enacted in Bangladesh, the Central Bank of Bangladesh is actively supporting green financing through concessional refinancing programs and credit allocations for financial firms. Moreover, the bank has initiated green banking policies and sector-specific transformation projects funded by international donors (UKaid, 2017). Additionally, in 2016, the Bangladesh Bank (BB) mandated a compulsory 5% allocation from the total loan disbursements of all banks and financial institutions toward direct green finance (Bangladesh Bank, 2024).

Issue	Banks	Finance Companies	Total
Green Finance (in million BDT)	59,676.53	12,718.79	72,395.32
Green Finance as % of Total Term Loan Disbursement	11.82%	27.90%	13.16%

Figure 1: Disbursement of green finance by financial institutions in Bangladesh from January to March 2024 (Bangladesh Bank, 2024).

The 2024 report from Bangladesh Bank shows 61 scheduled banks and 34 non-bank financial institutions in Bangladesh. In the first quarter of 2024, the total disbursement of green finance by banks was 59,676.53 million BDT, while non-bank financial institutions disbursed 12,718.79 million BDT (Bangladesh Bank, 2024). In the reporting quarter, 43 out of 61 banks and 8 out of 34 non-bank finance companies had exposure to green finance. Figure 2 presents a sector-wise breakdown of green finance by banks and finance companies. **(In million BDT)**

Type of Bank/FI	Sectors of Green Finance						
	Renewable Energy	Energy & Resource Efficiency	Alternative Energy	Liquid Waste Management	Solid Waste Management	Circular Economy & Eco-Projects Financing	Environment Friendly Brick Production
SOCBs	10.63	21.98	0	74.37	0	24.24	703.76
SCBs	5.48	0	0	0	0	0	0
PCBs	2,028.85	12,600.01	3.5	882.62	0	4,675.32	78.7
FCBs	10	1,967.27	0	0	0	0	0
ISBs	116.42	2,488.57	1	577.24	0	1,190.51	834.57
Total	2,171.38	17,077.83	4.5	1,534.23	0	5,890.07	1,617.03
FIs	9,326.28	2,226.11	20.1	134.97	0	95.75	16
Grand Total	11,497.65	19,303.95	24.6	1,669.21	0	5,985.82	1,633.03

(Continued)

Type of Bank/FI	Sectors of Green Finance						
	Green/Environment Friendly Establishments	Green Agriculture	Green CMSME	Green Socially Responsible Financing	Blue Economy Financing	Information and Communication Technology	Miscellaneous
SOCBs	0	63.66	156.02	1,552.01	0	0	0
SCBs	0	0.73	0	0	0	0	0
PCBs	5,458.08	1,299.50	1,999.53	12,043.72	162	2,936.85	4.4
FCBs	0	0	0	59.25	0	0	0
ISBs	4,413.9	18.14	25.73	82.37	0	53.33	1,052.27
Total	9,871.98	1,382.03	2,181.28	13,737.35	162	2,990.18	1,056.67
FIs	32.79	59.05	167.19	490.04	28.50	115	7
Grand Total	9,904.77	1,441.08	2,348.47	14,227.39	190.50	3,105.18	1,063.67

Figure 2: Breakdown of green finance by banks and finance companies in the first quarter of 2024 by sector (Bangladesh Bank, 2024).

During the review period, Banks and finance Companies did not invest in Green Bonds, Green SUKUK, or Impact Funds (Bangladesh Bank, 2024). In 2009, BB implemented a BDT 2 billion re-financing scheme to promote environmentally friendly products such as solar energy, biogas facilities, and effluent treatment plants. This initiative aimed to support the development of renewable energy, green industry, and

environment-friendly related sectors. Initially, six green products or initiatives were backed by this scheme, which effectively facilitated the expansion of the refinancing facility (Hossain, 2019). 2009 Bangladesh Bank established a BDT 2 billion revolving refinance scheme for green products. Due to growing demand, the fund has since been increased to BDT 10 billion. As of March 31, 2024, a total of Tk. 8766.78 million has been disbursed from the fund.

Sub-category/ Product	BDT in million
Compressed Block-Brick	48.65
Installation of Energy Auditor Certified machineries including boiler in industries	63.29
PET Bottle Recycling Plant	2.00
Small size biogas plants- 1.2, 1.6, 2.0, 2.4, 3.2 and 4.8 cubic meter gas production per day	1.29
Solar Mini Grid	72.44
Production of Vermicompost	1.86
Safety and work environment of factory related projects	9.73
Solar Home System	0.30
Waste Water Treatment Plant	24.56
Total Disbursement	224.12

Figure 3: The overall reimbursement for green product refinancing in the first quarter of 2024 (Bangladesh Bank, 2024).

4.2. Frequency Analysis for Demographic Variables

The research study utilised a close-ended survey questionnaire with three distinct parts. Eighty-eight participants, showcasing diverse backgrounds, were involved in the study. The questionnaire was structured into demographic questions on gender and age in the first part, questions on various aspects of green finance (economic, social, environmental, and sources of green finance) in the second part, and queries on the challenges faced by financial institutions concerning green finance in the last part. The frequency analysis table below showcases the distribution of gender and age within the dataset. As per the table, out of the 88 individuals, 33% were female and 67% were male. It is evident that among the total respondents, 19.3% belonged to the 20-29 age group, 50% were in the 30-39 age group, 26.1% were in the 40-49 age group, 3.4% were in the 50-59 age group, and 1.1% were 59 years or older.

	Frequency	Percent	Valid Percent	Cumulative Percent
<u>GENDER</u>				
Male	59	67.0	67.0	67.0
Female	29	33.0	33.0	100.0
Total	88	100.0	100.0	
<u>AGE</u>				
20-29	17	19.3	19.3	19.3
30-39	44	50.0	50.0	69.3
40-49	23	26.1	26.1	95.5
50-59	3	3.4	3.4	98.9
59 or above	1	1.1	1.1	100.0
Total	88	100.0	100.0	

Table 1: Frequency distribution of demographic variables (Author's Contribution).

4.3. Descriptive statistics

The following table presents descriptive statistics for different variables. Each row represents a variable, and the columns display various statistics, including sample size (N), range, mean, standard deviation, variance, skewness, and kurtosis. For instance, consider the variable "ECO 1"; in this case, the sample size is 88, the range is 4, the mean is 4.23, the standard deviation is 1.058, the variance is 1.120, the

skewness is -1.423, and the kurtosis is 0.257. These statistics facilitate an understanding of the central tendency, variability, and shape of each variable's distribution. The skewness and kurtosis values offer insights into the symmetry and peakedness of the distributions. Additionally, the mean and standard deviation provide an understanding of the average and spread of the data (Anderson, D.R., et al., 2020).

Descriptive Statistics										
	N Statistic	Range Statistic	Mean		Std. Deviation Statistic	Variance Statistic	Skewness		Kurtosis	
			Statistic	Std. Error			Statistic	Std. Error	Statistic	Std. Error
ECO 1	88	4	4.23	.113	1.058	1.120	-1.423	.257	1.467	.508
ECO 2	88	4	3.99	.089	.837	.701	-.820	.257	1.081	.508
SOC 1	88	3	4.10	.093	.872	.760	-.522	.257	-.740	.508
SOC 2	88	3	4.11	.109	1.022	1.044	-.828	.257	-.543	.508
SOC 3	88	4	4.00	.129	1.213	1.471	-1.344	.257	1.035	.508
ENV 1	88	4	4.32	.095	.891	.794	-1.575	.257	2.982	.508
ENV 2	88	4	4.06	.104	.975	.951	-1.029	.257	.870	.508
ENV 3	88	3	4.05	.090	.843	.711	-.441	.257	-.635	.508
ENV 4	88	3	4.14	.101	.949	.901	-.857	.257	-.234	.508
SGF 1	88	4	4.00	.115	1.083	1.172	-1.445	.257	1.893	.508
SGF 2	88	4	4.11	.111	1.044	1.090	-1.348	.257	1.658	.508
SGF 3	88	3	4.07	.090	.841	.708	-.723	.257	.095	.508
SGF 4	88	3	4.20	.092	.860	.739	-.633	.257	-.770	.508
SGF 5	88	3	4.11	.092	.863	.746	-.772	.257	-.001	.508
Ch 1	88	4	4.14	.125	1.176	1.383	-1.528	.257	1.654	.508
Ch 2	88	4	4.18	.100	.941	.886	-1.475	.257	2.676	.508
Ch 3	88	4	4.14	.089	.833	.694	-.996	.257	1.445	.508
Ch 4	88	3	4.22	.088	.823	.677	-.676	.257	-.473	.508
Valid N (listwise)	88									

Table 2: Analysis of Descriptive Variables (Author's Contribution).

4.4. Exploratory Factor Analysis

The table below presents the results of the exploratory factor analysis (EFA) conducted using principal component analysis and the reliabilities for all study variables (Watkins, 2021). The EFA was applied to 18 items to verify the factor loadings of the constructs, and the determination of the number of factors to be derived was based on Eigenvalue benchmarks. The EFA results consistently evaluated the economic, social, and environmental dimensions and sources of green finance. Sample adequacy was established with a Kaiser-Meyer-Olkin (KMO) value of 0.728, surpassing the minimum threshold of 0.5 for factorability. Bartlett's sphericity test ($p < 0.000$) was found to be statistically significant, with an approximate chi-square value of 943.136, signifying the importance of the correlation matrix. Furthermore, the dimensions of green finance accounted for 73.259% of the total variances. Consequently, Cronbach's alpha values were utilised to assess the reliability of each construct, with values ranging from 0.865 to 0.874 (Shrestha, 2021).

Factor Loading

Factors	Items	1	2	3	4	5
1. Economic	ECO 1	.859				
	ECO 2	.632				
2. Social	SOC 1		.548			
	SOC 2		.753			
	SOC 3		.651			
3. Environmental	ENV 1			.710		
	ENV 2			.789		
	ENV 3			.819		
	ENV 4			.753		
4. Sources of Green Finance	SGF 1				.704	
	SGF 2				.832	
	SGF 3				.756	
	SGF 4				.779	
	SGF 5				.664	
5. Challenges	CH 1					.634
	CH 2					.604

	CH 3					
	CH 4					.724
Eigen Value		6.032	3.058	1.626	1.308	1.163
Cronbach's alpha		.872	.874	.874	.871	.865

Table 3: EFA Analysis (Author's Contribution).

4.5. Reliability Analysis

The study employed Cronbach's alpha coefficients (CA) to assess the internal consistency and reliability of the green finance constructs (George, D. & Mallery, P., 2018). The CA values exceeding 0.860 were considered indicative of reliability, ranging from 0.865 to 0.874 across all dimensions of green finance, as demonstrated in Table 3. This analysis concludes that the factors and associated constructs within the measurement exhibit adequate and satisfactory validity and internal reliability.

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
ECO 1	69.93	85.857	.450	.872
ECO 2	70.17	85.178	.643	.865
SOC 1	70.06	84.836	.636	.865
SOC 2	70.05	87.423	.384	.874
SOC 3	70.16	81.584	.582	.866
ENV 1	69.84	88.848	.367	.874
ENV 2	70.10	85.334	.529	.868
ENV 3	70.11	88.608	.409	.873
ENV 4	70.02	87.908	.394	.873
SGF 1	70.16	84.940	.486	.870
SGF 2	70.05	85.975	.452	.871
SGF 3	70.09	86.865	.525	.869
SGF 4	69.95	85.492	.603	.866
SGF 5	70.05	86.596	.527	.869
Ch 1	70.02	82.137	.577	.866
Ch 2	69.98	89.149	.325	.876
Ch 3	70.02	86.045	.587	.867
Ch 4	69.94	86.790	.544	.868

Table 4: Reliability Analysis (Author's Contribution).

4.6. Challenges faced by financial institutions to implement green finance in Bangladesh

To identify the critical challenges in green finance facing financial institutions in Bangladesh, respondents were surveyed to gauge their level of agreement or disagreement with the various obstacles influencing the progress of green finance in the country. The table below ranks the significant challenges impacting the adoption of green finance by financial institutions in Bangladesh.

SL	Challenges	Mean	Standard Deviation	Rank
1	The gap between guidelines and involvement.	4.22	.823	1
2	Knowledge gap.	4.18	.941	2
3	Higher cost.	4.14	1.176	3
4	Discrepancy between risk and return.	4.14	.941	4

Table 5: The critical challenges in green finance facing financial institutions in Bangladesh (Author's Contribution).

5. Discussion and conclusion

The forthcoming study explores the pivotal role of financial institutions in fostering green finance and sustainable development in Bangladesh. It seeks to identify and analyse the primary challenges impeding the adoption of green finance in the region. Additionally, the study will present an updated assessment of the prevailing state of green finance in Bangladesh from January to March 2024. Building upon prior research in this domain, the study will underscore the substantial contribution of financial institutions to establishing a green and sustainable economy through the strategic utilisation of green finance, thereby aligning with the broader agenda of achieving sustainable development goals by 2030. Financial institutions are the primary funding sources for industrial projects in sectors such as steel, paper, cement, chemicals, fertilisers, power, textiles, and others, which are significant contributors to carbon emissions. As such, these organisations can play a pivotal role as intermediaries between economic and social development and environmental protection, promoting environmentally sustainable and socially responsible investment. (UKaid, 2017). According to the quarterly report (2024) released by Bangladesh Bank, significant sectors for green financing by financial institutions include Alternative Energy (24.6 million BDT), followed by Energy Resource Efficiency (19,303.95 million BDT), Green and Socially Responsible Financing (14,227.39 million BDT), and Renewable Energy (11,497.65 million BDT). However, there have been relatively low investments in projects related to Information and Communication Technology and Liquid Waste Management, and investments have yet to be made in Solid Waste Management projects.

To assess the role of financial institutions in promoting green finance and sustainability in Bangladesh, the study employs various analysis methods, including frequency analysis, descriptive statistics, exploratory factor analysis, and reliability analysis. It aims to explore different dimensions of Green Finance, such as economic, sociological, environmental, sources of green finance, and challenges related to implementing green finance. The findings illustrate that these dimensions are distinctive yet interrelated. The participant feedback indicates adequate awareness, beliefs, and understanding of these dimensions, supporting the implementation of green finance in Bangladesh. Moreover, the study has identified key challenges hindering Bangladesh's green finance development. The study confirms that the significant challenges associated with implementing green finance in Bangladesh include the gap between guidelines and involvement, the knowledge gap, higher costs, and the discrepancy between risk and return. Other studies have indicated that challenges such as maturity mismatch, inability to internalise environmental externalities, insufficient entrepreneurial interest in green projects, and lack of shared ownership among stakeholders contribute to obstacles in the disbursement of investments for green projects in Bangladesh (UKaid, 2017).

6. Implication, limitation and direction for future research

The findings of this study may offer valuable insights for policymakers in the financial industry, financial lenders, producers, governments, customers, and society. Furthermore, this research could facilitate collaboration among donor countries, non-profit organisations, international development organisations, and international financial institutions in line with the Paris Climate Agreement and the Sustainable Development Goals (SDGs).

Like many others, the present study has limitations that should be noted. Specifically, the research was focused on financial institutions, which may limit the ability to apply the findings more broadly. To improve the applicability of the findings, future studies could consider involving a more comprehensive range of stakeholders, including those from both banks and non-bank financial institutions. Additionally, further research could explore the impact of environmental performance and the financial sector's profitability on green financing in Bangladesh, taking into account different industries. Lastly, the study's focus on banks and non-bank financial institutions needs to capture the perspectives of clients and owners in these sectors, which should be explored in more depth.

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