

‘Shari’ah’ Based Banking and Green Financing: Evidence from Bangladesh

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Abstract

Environmental protection and sustainability is the part of Islamic finance to ensure the fulfilment and establishments of spirit of Islamic tenants. The need to care for the environment and the forms of life that Allah has created on this earth that includes proper usage of natural resources (Al-Fajr: 11-14). Green finance involves the allocation of funds to the environmental friendly projects that help the mankind from any harmful and compliance to the ‘Shari’ah’ rules. The main purpose of the study is to examine the role of ‘Shar’ah’ based banking on green financing in Bangladesh. The study has used the structural questionnaire for primary data that includes various dimensions on green financing of ‘Shari’ah’ based banking in Bangladesh. The study has also used secondary data relevant to articles, journals, books, and conference papers for theoretical development. In order to validate the findings, the necessary statistical measures include 5 point Likert scale, mean, and rank are used in the study. The study revealed that ‘Shari,ah’ based banking have made significant contribution in green financing that promote the preservation of natural resources and the need to respect all living things. The study seems to carry an enormous academic value since a few studies have been undertaken in this area. The results could be useful to the government, Bangladesh Bank, NGOS, Donors, international agency, World Bank, IMF, Academic researchers and national policy makers who have been making endeavor to save the environment in developing countries as well as Bangladesh as a whole.

Key words: Green financing, ‘Shari’ah’ based bank, sustainable development, Bangladesh

1. Introduction

Green financing emerged as an issue for sustainable development over the world. This issue has become conducive to the compliance of 'Shari'ah' based financing. 'Shari,ah' based banking has strong potentials to contribute towards sustainable financing ecosystem for the green world. Allah has not created anything in this universe in vain, without wisdom, value and purpose "We have not created the heavens and the earth and all that is between them carelessly. We have not created them but for truth" (Quran 44: 38-39). 'Shari'ah' is the moral code of Islamic law which provides the legal framework for regulation of many aspects of private and public life. Green financing involves the allocation of fund to the green projects that provides the environmental protection which is based on the concept of promoting good practices and values. It aids to the sustainable environment development, developing the water resources, cost and energy savings, comfortable services to the customers, improve the global warming and promotion of small-scale enterprises. The green financing activities provide the financial services to the entrepreneurs that promote the preservation of natural resources and the need to respect all living things. It prevents all abuse of resources which is conformity to the 'Shari'ah' based financing. The Quran states "Eat and drink but waste not by excess; verily he loves not the excessive (Quran: 7:31). The main objectives of green financing is to save the environment and resources from the harmful and maximize the utilization of resources towards mankind. In order to achieve those objectives, shariah based banks can diversify the fund towards the forest and nature, sustainable innovations in business processes such as agrification, organic agriculture, sustainable construction, sustainable energy from wind, water, sun and biomass, and other shorts of environmentally friendly investments. These green financing can ensure sustainable development, economic growth and friendly environment.

Prophet Muhammad (PBUH), in a hadith in Musnad Ahmad stated that mankind would be rewarded for efforts in improving greenery; making it incumbent on every Muslim to contribute towards such efforts. Failure to do so would be detrimental, as stated in verse 41 of Al-Rum where severe destruction of the land and sea would come upon those who mistreat the environment. It is therefore crucial for everyone, including Islamic banks to consciously play their role towards ensuring environmental sustainability. Achieving environmental sustainability is the responsibility of everyone and the banking industry must do its part. Islamic banks do finance to those projects which produce 'Shari'ah' compliance products for the welfare of society which is relevant to green financing. The 'Shari'ah' based banks are not permitted to allocate the fund under mode of investment to the products which are forbidden by 'Quran and Sunnah' such as wine, drug, and penicillin, gambling, tobacco and alcohol, etc.

The objectives of green financing must be accomplished by following the 'Shari'ah' rules in the mode of financing to the societal projects. The study seems to carry an enormous academic value since no

extensive study has been undertaken on this aspect of this problem. It may be helpful to the governments, Bankers, to the investors, to the researchers, and to the policy makers, who have been making serious endeavor to protect the environment, to develop the industry and economic growth as a whole.

2. Justification of the study in context of Bangladesh and Role of 'Shari'ah' Based Banks

Bangladesh is one of the most vulnerable countries to the potential impacts of climate change (World Bank, 2014). Bangladesh is increasingly changing in climate, degrading environment, deforestation, cutting the hill tracts, throwing the wastage, and pollution in water and air etc. The country has also produced the lack of accountability, irresponsibility, corruption, mismanagement, violation of law and misuse of public resources due to ruling of political party. These problems promote unfriendly environment and biggest restriction to turn the society into green. The population growth year by year is creating an unprecedented rise in demand for energy, water, transport, urban development and agricultural infrastructure. Consequently, the ability to meet this growing demand while concerning global environmental and sustainability obligations will be challenging. In this anti-situation of green society, the social stakeholders have great responsibility to protect the society from distorted to green by substantial amounts of investment in the water, agriculture, telecoms, power, transport, buildings, and industrial and forestry sectors to meet future population needs. 'Shari'ah' based banking is a social responsible bank and closely correlated with green financing. As social responsible banks, the bank should encourage the financing in environmental infrastructure such as renewable energy project, clean water supply project, wastewater treatment plant, solid & hazardous waste disposal plant, bio-gas plant, bio-fertilizer plant based on under the mode of investment. The 'Shari'ah' based investment will make the society into green and friendly environment. Eco friendly business activities and energy efficient industries will be given preference in financing by bank. The 'Shari'ah' based banks should finance the economic activities of the flood, cyclone and drought prone areas at the regular interest rate without charging additional risk premium. However, banks should assess their environmental risks for financing the sectors in different areas for creating a Climate Change Risk Fund. This will be used in case of emergency. The bank would ensure regular financing flows in these vulnerable areas and sectors. The fund could be created as part of banks' CSR expenses. If the bank fails to perform the social responsibility as well as green financing then the society and economic development would be greatly affected. No one can save from this distress. Green financing has to be made from the interest of all

concerned. The study has a great academic value because very few study conducted on the role of 'Shari'ah' based banking in green financing of Bangladesh.

3. Literature Review of the study

The study covers the relationship between 'Shari'ah' based banking and green financing in Bangladesh. Most of previous research have been conducted on the aspects of Green Banking practices in Bangladesh. None of the study was conducted on the role of 'Shari'ah' based banking in Green financing in Bangladesh. Green financing can be regarded as the allocation of fund to environment friendly projects that produces goods and services which are not harmful to mankind. Bihari (2011) elucidated that Green Banking includes promoting corporate social responsibility (CSR). It starts with the aim of protecting the environment where banks consider before financing a project whether it is environment friendly and has any implications for the future. Mani (2011) indicated that as Socially Responsible Corporate Citizens (SRCC), banks have a major role and responsibility in enhancement of governmental efforts towards substantial reduction in carbon emission. The author examined and compared the green lending policies by banks in India in the light of their compliance and commitment to environment protection and environment friendly projects. Rahman, et. al. (2013) focused on the green banking prospects in Bangladesh in their paper. Banks can be green through bringing changes in six main spheres of banking activities. Those are Change in Investment Management, Change in Deposit Management, Change in House Keeping, Change in the Process of Recruitment and Development of Human Capital, Corporate Social Responsibility (CSR), and Making Consciousness Among Clients. Masukujjaman and Aktar (2013) highlighted the green banking road map in Bangladesh and the status of its implementation. Further, an attempt has been made to explore activities of commercial banks in comparison with global green banking initiatives. Verma (2012) stated that Indian banking is gradually coming to green. Since in India the banks are one of the major sources of financing instrument for commercial projects, so they can play a major role in promoting environmental sustainability by funding the socially and environmentally responsible investment projects. Lalon (2015) focused on the green banking activities of commercial banks in Bangladesh. The study made attempt to identify the reasons why green policy was adopted and make comparison among green banking practices of commercial banks. Islam et.al. (2012) highlight the reasons for adopting green banking practices in the context of a developing country Bangladesh and try to enlist elaborately the rational and motivational grounds for adopting 'Green' in case of private commercial banks. Islam & Das (2013) stated that Green Banking is a new way of conducting the

banking business through considering the hygienic environmental issue as well as corporate social responsibility (CSR). Nowadays, it is inevitable to practice green banking by banks because of

globalization and to face the competition. The study concludes that green banking practices in Bangladesh is not satisfactory at all. Heim, et al, (2005) revealed that Credit risks are also associated with lending on the security of real estate whose value has diminished owing to environmental problems

(additional loss in the event of default). Further, risk of loan default by debtors due to environmental liabilities because of fines and legal liabilities and due to reduced priority of repayment under bankruptcy. There are also few cases where environmental management system has resulted in cost savings, increase in bond value etc. Gupta (2003); Goldar, (2007) revealed that they can have an environmental assessment requirement for the projects seeking finance. Banks also can issue Environmental hazards management procedures for the each project and follow through. Jeucken (2001) focused on “Sustainable Finance and Banking” has identified four phases action that banks should take for sustainability. They are sequentially defensive banking, preventative banking, offensive banking and sustainable banking. In this model, the bank that has several business divisions is classified as a whole entity. And the first three terms are defined as the stages or attitudes of banking with respect to environmental issues. His study actually pioneers the path of green or socially responsible banking system. From the global sense, the trend of green financing from commercial banks is slowly rising but still taking time to improve (Jeucken, 2005, personal interview). After all, the environmental market is quite diverse, and banks need to know which market segments are likely to grow and how resilient that growth will be. As a rule, this market for environmental financing is sometimes very dependent on government policy requirements and fiscal supports, and therefore somewhat not stable (Jeucken, 2004, p.213).

4. Green Financing in Bangladesh

Green Banking is relatively new in Bangladesh and yet to get momentum, but in the developing countries it is passing through a mature stage. Green Banking is a new way of conducting the banking business through considering the hygienic environmental issue as well as corporate social responsibility (CSR). Nowadays, it is inevitable to practice green banking by banks because of globalization and to face the competition. In banking system of Bangladesh, There are 56 banks and a central bank working in Bangladesh economy. “Bangladesh bank” has developed the regulations of Green banking in the year 2011. All 47 banks and 9 new banks include 2 State Owned Development Bank, 06 State Owned Commercial Bank, 30 Private Commercial Bank and 09 Foreign Commercial Bank etc. are working

diligently on Green Banking as instructed by Bangladesh Bank. As per Bangladesh Bank's data on "Green Banking" 2013, all scheduled banks have developed their own Green Banking Policy and Green Banking unit. After increasing the environmental risks, banks have distributed 793,561.25 million Taka in

10,868 projects. In year 2012, banks have distributed 270,921.53 Million Taka as Green Financing. Banks have been encouraged to utilize the 258.89 Million Taka as CSR (Corporate Social Responsibility) in Green Banking Activities and Green Projects. They have concentrated on Green Marketing, Training and Development utilizing 90.42 million taka from their fund. The green financing scenario of all banks in 2015 are stated as follows:

Total Green Financing scenario, 2015

Bank types	Annual Allocation of Fund			Fund Utilization (April-June)			Execution Quarterly
	GF	CRF	Total	GF	CRF	Total	
SCBs	11,310.90	213.5	11,524.4	756.51	0.10	756.61	6.57%
SDBs	210	0.20	210.20	0.05	00	0.05	0.023%
PCBs	186,473.86	351.46	186,825.32	94,384.82	177.57	94,562.39	50.61%
FCBs	53545.40	178.77	53724.17	18652.56	44.12	18,696.68	34.80%
New banks	1,155	00	1,155	768.62	00	768.62	66.55%
Total	252,695.16	743.93	153,439.09	114562.56	221.79	114,784.35	

Source: Bangladesh Bank

The table indicates green finance position of banking system in Bangladesh. Bangladesh Bank has set targets of direct green financing for all the banks. In the allocation of green finance, State-owned commercial banks have allocated 6.57 percent of total budget in the 2nd quarter which is in significant amount. State-owned development banks have executed 0.023 percent which is also insignificant amount. The study revealed that private commercial banks have utilized 50.61 percent of budget in 2nd quarter which is very significant. The study also revealed that foreign commercial banks have utilized 34.80 percent of budget in the 2nd Quarter of year which is significant. The study also indicated that new commercial banks have executed 66.55 percent of given budget which is more significant.

5. Objective of the Study

The main theme of the study is to critically examine the relationship between 'Shari'ah' based banking and Green financing in Bangladesh. As the assessment of role of 'Shari'ah' based banking on green financing in Bangladesh, the study would take into account the following objectives:

(i) To examine the perception and beliefs of investors and Islamic bankers towards green financing in Bangladesh

(ii) To examine the role of 'Shari'ah' based banking on green financing in Bangladesh

6. Methodology of the study

The study has been designed to examine the relationship between "Shari'ah' based banking and Green financing in Bangladesh. The study is based on both primary and secondary data. Primary data were

collected through a structured questionnaire which was administered personally to the investors, and bankers of 'Shari'ah' based banks in Bangladesh. Convenient sample technique has been used to interview the target population in Bangladesh. The target population of this study are investors and bankers of Islamic banks in Bangladesh. There are eight Islamic banks in Bangladesh namely; Islami Bank Bangladesh Limited, Al-arafa Islami bank Limited, Social Islami bank Limited, Exim. Bank Limited, Shahjalal Islami Bank Limited, First Security Islami Bank Limited, ICB Islami Bank Limited, and Union Bank Limited. The union Bank has been excluded from the study due to newly established in 2013. The study takes 5 branches of each bank from 7 'Shari'ah' based banks located in Chittagong and Dhaka. The main reason of selecting two districts are capital districts and convenient to researcher himself. The total sample is 105 respondents of which 35 bank officials and 70 customers were selected for interviewing from 35 branches of 7 Islamic banks in Chittagong and Dhaka equally. It was decided to allocate one questionnaire to each officials of each branch and two questionnaires were given two customers to the each branch. In view of the limited resources and time at the disposal, all the branches and all customers could not be investigated. Secondary data and information relevant to this study have been collected from available publications including journals, daily newspapers, Bangladesh Bank publications Studies conducted by various donor and development agencies such as UNDP, Environmental organizations, World Bank and NGOs. The study uses the time series data of green financing from 2011 to 2014 because of having no record of data before 2011. Data and information thus collected have been processed manually as well as through personal computer. Descriptive statistics such as 5 point likert scale, average, and percentage, have been used in this study to analyze the data for the validity of findings. The results of the study have been analyzed critically in order to make the study more informative, useful and acceptable to the readers, academicians, policymakers, and those people who are devoted to protect the environment and develop the friendly environment in developing countries as well Bangladesh as a whole.

7. Results and Description

Islamic Bankers' perception towards green financing in Bangladesh

Green financing is the recent and rising issue for sustainable development in the bank industry of Bangladesh. The study tries to explore the views of bankers of Islamic banks towards green financing in Bangladesh. The perception of bankers from the study has been analyzed as follows:

7.1. Demographic Profile of the bankers

In the questionnaire, there is a section concerning respondents' profile to get a general idea about the respondents' age, education, designation, as various factors might also influence their perception. A profile of respondents' is presented in the following Table:

Table 7.1.1 : Demographic Information of the of the Respondent

N = 35		Frequency	Percentage
Gender	Male	28	80%
	Female	7	20%
Age	Below -30	3	9%
	30-45	25	71%
	45-60	7	20%
Marital Status	Single	5	13%
	Married	30	87%
Education	Post-graduation	25	71%
	CMA	3	9%
	FCMA	7	20%
Job Experience	Below 5	5	14%
	5-10	9	26%
	11-15	15	43%
	16-20	4	11%
	More than 20	2	6%

Source: Field investigation

The above table indicates that 80 percent of the respondents are male and 20 percent of the respondents are female in the study. Out of the total respondents, 9 percent of the respondents are below the age of 30, 71 percent of respondents are the age from 30-45 years and 20 percent of the respondents are the age between 45 and 60 years. In the study, 13 percent of the respondents are single and 87 percent of respondents are got married. The table also revealed that 71 percent of the respondents are post-graduates, 9 percent are CMA and 20 percent are FCMA in the study. The study also examines the job experience of respondents that 14 percent of total respondents having the experience below 5 years, 26 percent of the respondents have gathered experience between 5 and 10 years, 43 percent having experience between 11

and 15 years, 11 percent of the respondents have experienced from 16-20 years and 6 percent having experience more than 20 years.

Green banking status of Islamic banks in Bangladesh

The green banking concept has been introduced from 2010 at branch level. The study tries to examine the green banking position at branch level. The study result has been presented in

Table-7.1.2: Green Banking Status of Islamic Banks in Bangladesh

Statements	Response	
	Yes	No
Having separate green banking cell in the bank	89%	11%
Having any fund for supporting Green financing activities	70%	30%
Having any climate change risk fund	65%	35%
Complying the shari'ah and environment friendly in financing	95%	5%

Source: Field Investigation

The above table indicates that 89 percent of the respondents opined that they have green banking cell in the bank and the remaining 11 percent of respondents told that they don't have any green banking units at branch level. The study also revealed that 70 percent of respondents discoursed that they have fund for green financing activities at branch level and 30 percent of the respondents don't have any fund for green financing activities. 65 percent of the respondent opined that they climate risk fund and 35 percent opined that they have no climate change risk fund. The 95 percent of respondents reported that they comply the shari'ah and maintain the aspects of environment in financing to the new projects.

7.1.3: Managers' preference towards green financing in the following projects

Types of projects	Frequency	Percentage
Solar panel	35	100%
Wind mill	20	57%
Bio-gas plant	33	94%
Organic fertilizer	25	71%
ETP	35	100%
Others	5	14%

Source: Field Investigation

(Note: Percentage exceeds 100 because respondents mentioned more than one factor)

The above table indicates that 100 percent of respondent the give preference to finance in solar panel and ETP. The study revealed that 57 percent of total respondents prefer to wind mill for green financing. 94

percent of respondents of Islamic banks give preference to Bio-gas plant. 71 percent of respondents prefer to organic fertilizer and 14 percent of respondents prefer to others.

7.1.4: Relationship between Green financing philosophy and shari'ah compliance of Islamic banks

Respondents felt that Green financing philosophy is very conducive to the shari'ah compliance. Green financing is a part of Islamic financing and it is high correlated with each other's.

Table: 7.1. 4: Relationship between Green Financing and Shari'ah based banking

Statements	Response	
	Yes	No
Does Green financing philosophy is conducive for shari'ah compliance? And how?	100%	0%

Source: Field Investigation

The above table indicates that 100 percent of respondents felt that green financing philosophy is very conducive to shari'ah base financing because shari'ah rules are conformity with green financing.

Table 7.1.5: Manager's perception towards the investment before making investment decision

statements	1	2	3	4	5	Total	Mean	Rank
Cleaning and hygienic business environment	140	12	9	2		163	4.66	4
Green factoring building	125	16	6	8		155	4.43	6.5
Reforestation around the factory	100	20	12	6	3	141	4.03	10
Waste management	90	40		10	2	142	4.06	9
Installation of solar panel on the roof of the factory	150	8	6			164	4.69	2.5
Using high mileage vehicles	50	48	9	20		127	3.62	14
Reducing the sound pollution	115	40	9			164	4.69	2.5
Video conferencing instead of physical meeting	25	16	3	40	5	89	2.54	15
Water contamination	100	40	15			155	4.43	6.5
Soil contamination	75	32	21	10		138	3.94	12
Air pollution	110	32	15			157	4.49	5
Energy savings	150	12	6			168	4.80	1
Tree plantation	90	32	12	10		144	4.11	8
Production of green products	75	40	15	8	1	139	3.97	11
Reduction of carbon	50	48	24	10		132	3.77	13

Source: Field Investigation

The study was conducted to explore the managers' views regarding investment climate before investment decision. Green environment is pre-requisite for green investment. The managers should investigate the environmental aspects before investment decision. A very significant number of respondents reported that the bankers must examine whether investors save the energy in the investment premises or not which is ranked by number 01. A significant number of respondent opined that banker should investigate whether

investors install any solar panel on the roof of the factory building and exists any arrangement of reducing the sound pollution which have been ranked by 2.5. A good number of respondents recommended that a banker should examine the cleaning and hygienic business environment in the business premises which is ranked by 04. A significant number of respondents opined that bankers should investigate the air pollution in the investment arena which is ranked by 05. A number of respondents felt that bankers should investigate the investors having the green factory building and water contamination which is ranked by 6.5. A considerable number of respondents reported that a banker should see the investors having the interest of tree plantation in investment premises which is ranked as 08. The respondents also made comment that a banker should evaluate the waste management of factor which is ranked by 09. The respondents also opined that a banker should see the investors having the intension of reforestation in the investment arena which is ranked by 10. A number of respondents felt that a banker should investigate whether investors produce green products or not which is ranked by 11. The respondents also reported that bankers should see the soil contamination of investment which is ranked 12. An average number of respondents opined that reduction of carbon is one of the positive environment factors for green financing which is ranked by 13. A number of respondents shows their opinion regarding using high mileage vehicles which is ranked 14. A few number of respondents opined that most of the bankers place their meeting physically instead of video conference which is ranked by 15.

Table 7.1.6: Banker's perception on various green products regarding the investment

Opinion	1	2	3	4	5	Total	Mean	Rank
Shari'ah compliance products	160	12				172	4.91	1
Bio-Gas plant	120	24		10		154	4.40	12
Solar/Renewable energy plant	150	8	9			167	4.77	3
Bio-fertilizer plant	125	20	6	6		157	4.49	10
Effluent Treatment plant (ETP)	145	12	6	2		165	4.71	4.5
Project having ETP	135	24	6			165	4.71	4.5
Production of Green Products	140	8	9	4		161	4.60	7.5
Waste Management Projects	100	32	6	10		148	4.23	13
Energy saving bulbs production plants	155	8	6			169	4.83	2
Recycling plant	125	16	18			159	4.54	9
Projects having Zig Zagkiln	50		36	16	5	107	3.05	
Green Loans	130	24	9			163	4.66	6
Carbon credit business (CDM)	75	20	60			155	4.43	11
Green Credit Cards	130	16	15			161	4.60	7.5

Source: Field Investigation

The study was conducted to explore the banker's views on various green products regarding investment. A very significant number of respondents opined that the Islamic banks invest in shari'ah which is ranked by number 01. They made attempt to maintain the shari'ah rules in investment. A significant number of respondent opined that bankers are interested to invest in energy saving bulbs production plants which is ranked in number 02. A good number of respondents recommended that a banker invests a considerable amount in Solar/Renewable energy plant which is ranked by 04. A significant number of respondents opined that bankers invest an amount in Effluent Treatment plant (ETP) and Project having ETP which is ranked by 4.5. A number of respondents felt that bankers provide a significant amount of green loan to the customers which is ranked by 6. A considerable number of respondents reported that a banker does investment in Production of Green Products and issues Green Credit Cards which are ranked as 7.5. The respondents also opined that a banker invests an amount in Recycling plant which is ranked by 09. The respondents also opined that a banker invested a sum of money in Bio-fertilizer plant which is ranked by 10. A number of respondents felt that bankers invested an amount in Carbon credit business (CDM) which is ranked by 11. The respondents also reported that bankers invested a sum of money in Bio-Gas plant which is ranked 12. An average number of respondents opined that bankers have invested in Waste Management Projects reduction of carbon which is ranked by 13.

Table 7.1.7: Banker's perception regarding to main barriers to green financing in Bangladesh

Opinion	1	2	3	4	5	Total	Mean	Rank
Many fossil fuels are still subsidized (USD 300 billion globally)	75	40	15	6	2	138	3.94	4
Many low-carbon technologies involve large overall capital needs and higher financing costs than high-carbon alternatives	100	24	12	2	4	142	4.06	3
Technologies are less well-known in the market and there is less capacity in the value chain for developing projects	70	40	18		5	133	3.80	7
Many technologies rely on access to networks (e.g. solar PV, wind and hydro require flexible and sufficient grid capacity)	60	32	30	8	1	131	3.74	9
Many renewable energy investments are small-scale (e.g. mini-hydro, SHSs), which makes delivery and after-sales maintenance more difficult, leading to higher transaction costs	70	24	24	14		132	3.77	8
Carbon externalities are not yet sufficiently and consistently priced	90	24	12	4	5	135	3.86	6
Project financiers have little understanding of technical solutions and lack the ability to differentiate between 'good' and 'bad' ESCOs according to their service quality	75	24	27	10		136	3.89	5

In Bangladesh, ESCO in-house technical expertise/ markets are underdeveloped and technical expertise for implementing energy efficiency projects is limited	100	32	6	6	2	146	4.17	2
Difficulty in assessing and pricing the risk involved in energy efficiency projects due to the complexity of the solutions deployed	60	12	45	10		127	3.63	10
Most financial institutions lack the capacity to evaluate the risk profiles of green investment projects	115	28	15			158	4.51	1

Source: Field Investigation

The study investigates the perception of the bankers toward barriers to green financing in Bangladesh. The respondents indicate that the main problem is most financial institutions lack the capacity to evaluate the risk profiles of green investment projects which is ranked number 01. Currently, they felt that they think that In Bangladesh, ESCO in-house technical expertise/ markets are underdeveloped and technical expertise for implementing energy efficiency projects is limited which showed as 2nd problem which is ranked no 02. A significant number of respondents opined that many low-carbon technologies involve large overall capital needs and higher financing costs than high-carbon alternatives which is identified as number 03. The study revealed that another green financing problem is many fossil fuels are still subsidized (USD 300 billion globally) which is trace out as number 04. A good number of respondents agreed that the barrier to green financing is Project financiers have little understanding of technical solutions and lack the ability to differentiate between ‘good’ and ‘bad’ ESCOs according to their service quality which is ranked number 05. A significant number of respondents opined that green financing has been restricted by Carbon externalities are not yet sufficiently and consistently priced which is ranked by 06. A number of respondents felt that a problem of green financing is that Technologies are less well-known in the market and there is less capacity in the value chain for developing projects which is ranked by 7. A number of respondents felt that many renewable energy investments are small-scale (e.g. mini-hydro, SHSs), which makes delivery and after-sales maintenance more difficult, leading to higher transaction costs which is ranked by 08. The respondents also reported that many technologies rely on access to networks (e.g. solar PV, wind and hydro require flexible and sufficient grid capacity) for green financing is not growing which is ranked 09. An average number of respondents opined that difficulty in assessing and pricing the risk involved in energy efficiency projects due to the complexity of the solutions deployed which is ranked by 10.

7.2. Demographic Profile of the Investors

In the questionnaire, there is a section concerning respondents' profile to get a general idea about the respondents' age, education, income, job experience, designation, and nature of business as various factors might also influence their perception. A profile of respondents' is presented in the following Table:

Table 7.2.1: Demographic Information of the of the Respondent

N = 70		Frequency	Percentage
Gender	Male	63	90%
	Female	7	10%
Age	Below -30	7	10%
	30-45	42	60%
	45-60	21	30%
Marital Status	Single	21	30%
	Married	42	70%
Education	SSC	5	7%
	HSC	9	13%
	Graduation	21	30%
	Post-graduation	35	50%
Job Experience	Below 5	10	14%
	5-10	17	25%
	11-15	33	47%
	16-20	10	14%
	More than 20	0	0%
Income	Less than 1 lakh	10	14%
	100,000- 2,00,000	15	22%
	2,00,001-3,00,000	25	36%
	3,00,01-4,00,000	10	14%
	Above 4,00,000	10	14%
Nature of Business	SME	10	14%
	RMG	5	7%
	Manufacturer	30	43%
	Agro-business	20	29%
	Others	5	7%
Geographical area	Urban	50	71%
	Rural	20	29%

Source: Field investigation

The above table indicates that 90 percent of the respondents are male and 10 percent of the respondents are female in the study. Out of the total respondents, 10 percent of the respondents are below the age of 30, 60 percent of respondents are the age from 30-45 years and 30 percent of the respondents are the age between 45 and 60 years. In the study, 30 percent of the respondents are single and 70 percent of

respondents are got married. The table also revealed that 50 percent of the respondents are post-graduates, 30 percent are graduates, 13 percent are HSC and 7 percent are SSC in the study. The study also examines the job experience of respondents that 14 percent of total respondents having the experience below 5 years, 25 percent of the respondents have gathered experience between 5 and 10 years, 47 percent having experience between 11 and 15 years, 14 percent of the respondents have experienced from 16-20 years and 0 percent having experience more than 20 years. The study also considers income level of respondents that 14 percent of respondents are below of Tk1 lakh, 22 percent of respondents get hold of the income between Tk 1,00,001 and Tk,2,00,000, 36 percent of respondents are income between Tk,2,00,001 and 3,00,000. 14 percent of respondents generate income between Tk, 3,00,001 and Tk, 4,00,000 and 14 percent of respondents get income above Tk,4,00,000. The study also investigates the nature of business of respondents that 14 percent of total respondents are SME business holders, 7 percent of respondents hold the owner of RMG, A significant percent of respondents are manufacturers, 29 percent of respondents own the ago-business and 7 percent of respondents own others. The study takes into account the geographical area of respondents that 71 percent of respondents are located at urban and 29 percent of respondents are located at rural area.

Table 7.2.2: Investor's Green perception regarding investment arena:

Statements	Response	
	Yes	No
Do you like green society?	100%	0%
Have you heard the concept of green?	100%	0%
Do you think going green is costly?	65%	15%
Are you aware about environment risk	75%	25%

Source: Field investigation

(Note: Percentage exceeds 100 because respondents mentioned more than one factor)

The above table indicates that 100 percent of the respondents opined that they like green society and none of respondents like green society. The study also revealed that 100 percent of respondents discouraged that they have heard the concept of green and none of respondents heard the concept of green. 65 percent of the respondent opined that going the green is costly and 15 percent of respondents don't have the idea of cost of green. 75 percent opined that they are aware about environmental risk and 25 percent have no idea about environmental risk.

Table 7.2.3: Duration and Purpose of Green financing provided by Islamic banks

statements	Frequency	Percentage
Short-term loan (Less than one year)	55	79%

Mid-term loans (1-5 years)	10	14%
Long-term (More than 5 years)	5	7%
House building finance	10	14%
Working capital finance	15	21%
Project finance	30	40%
Automobile finance	6	9%
Brick field finance	5	7%
Others	4	6%

Source: Field investigation

(Note: Percentage exceeds 100 because respondents mentioned more than one factor)

The study made an attempt to ask the investor's perception to examine the duration and objectives of financing. The above table indicates that 79 percent of respondents have taken loan from Islamic banks for the duration one year or less (short-term). 14 percent of respondents revealed that they have taken loan

for mid-term (1-5 years) and 7 percent of respondents have taken loan for long-term (More than 5 years). The study also tries to ask the respondents that what the purpose of loan taken from banks are. 14 percent of respondents revealed that they have used the loan for house building. 21 percent of respondents indicate that they have taken the loan for financing in the working capital of the firm. A significant number of respondents (40%) have taken loan for financing in the projects. 9 percent of respondents have taken loan for financing in Automobile, 7 percent of respondents have taken loan for financing in Brick field and 6 percent of respondents have taken loan for financing in other projects.

Table 7.2.4: Terms and conditions for financing contract

statements	Frequency	Percentage
Environmental compliance	70	100%
Shari'ah compliance	70	100%
Cost of finance	30	43%
Duration of loan	-	-
Green Collateral	58	83%

Source: Field investigation

(Note: Percentage exceeds 100 because respondents mentioned more than one factor)

The study made an attempt to examine the terms and condition of made financing from Islamic banks. 100 percent of respondents revealed that they have been financed to maintain 100 percent environmental compliance. They told us Islamic banks provide financing with the condition of strictly maintaining the environmental compliance. 100 percent of respondents revealed that Islamic banks provide the financing with the condition of maintaining the shari'ah compliance and 83 percent of respondents opined that they have taken loan against the green collateral.

Table 7.2.5: Procurement of fund through modes of financing

Modes of Financing	Frequency	Percentage
Bai-Murabaha	30	43%
Bai-Istijrar	-----	0%
Bai-Muajjal	12	17%
Bai-Salam	8	12%
Bai-Istisna'a	3	4%
Modaraba	4	6%
Musharaka	6	9%
Hire Purchase under shirkatul Melk	7	10%

Source: Field investigation

The investors have the choice of alternatives for procurement fund from Islamic banks. Respondents are asked to indicate what types of modes they have used for the procurement of fund. 43 percent of investors have obtained financing through the basis of 'Bai-Murabaha'. None of investors use 'Bai-Istijrar' for procurement of fund. 17 percent of respondents have used 'Bai-Muajjal' for procurement fund. The study revealed that 12 percent of respondents have procured fund on the basis of 'Bai-Salam'. The study also revealed that only 4 percent of respondents have taken fund on the basis of 'Bai-Istisna'a'. 6 percent of respondents made comment that they have used fund through the mode of 'Modaraba'. 9 percent of respondents revealed that they have taken fund from Islamic banks on the basis of 'Musharaka' and 10 percent of respondents opined that they have procured fund through Hire purchase under 'Shirkatul Melk'.

Table 7.2.6: Investor's perception towards environmental factors of investment in Bangladesh

statements	1	2	3	4	5	Total	Mean	Rank
Cleaning and hygienic business environment	210	72	30			312	4.46	2
Green factoring building	150	80	30	20		280	4.00	8
Reforestation around the factory	125	60	60	20		265	3.79	11
Waste management	75	60	90	10	5	240	3.43	13
Installation of solar panel on the roof of the factory	175	100	30			285	4.07	7
Using high mileage vehicles	60	60	69	40		229	3.27	14
Reducing the sound pollution	190	88	30			308	4.40	3
Video conferencing instead of physical meeting	50		120	40		210	3.00	15
Water contamination	175	60	60			295	4.21	4
Soil contamination	150	80	60			290	4.14	6
Air pollution	170	64	60			294	4.20	5
Energy savings	210	112				322	4.60	1
Tree plantation	90	88	90			268	3.83	10
Production of green products	115	108	30	20		273	3.90	9
Reduction of carbon	100	80	45	30		255	3.64	12

Source: Field investigation

The study was conducted to explore the investors' views regarding investment climate before investment decision. Green environment is pre-requisite for green investment. The investors should investigate the environmental aspects before investment decision. A very significant number of respondents reported that they are very aware to save the energy in the investment premises or not which is ranked by number 01. A significant number of respondent opined that they keep their business premises in cleaning and hygienic business environment in the business premises which is ranked by 02. A good number of respondents recommended that they try best to reduce sound pollution around the investment premises which is ranked by 03. A significant number of respondents opined that investors made an attempt to make free

from water contamination for their usage which is ranked by 04. A number of respondents felt that they are very much sincere to make the free from air pollution which is ranked by 05. A considerable number of respondents reported that investors feel free from soil contamination which is ranked as 06. A significant number of respondents also reported that they have installed solar panel on the roof of the factory which is ranked by 07. The more than average respondents opined that they have green factory building which is ranked by 08. A number of respondents felt that they produce green products which is ranked by 09. The respondents also reported that they have tree plantation in their factory which is ranked 10. An average number of respondents opined that they do reforestation in the factor which is ranked by 11. A number of respondents felt that they play role in reducing carbon in the investment arena which is ranked by 12. An average number of respondents opined that they have the waste management in their factory which is ranked by 13. A number of respondents reported that they are cordial for using high mileage vehicles which is ranked 14. A few number of respondents opined that they do their meeting physically instead of video conference which is ranked by 15.

Table 7.2.7: Investor's perception on various green products regarding the investment

Opinion	1	2	3	4	5	Total	Mean	Rank
Shari'ah compliance products	190	40	36	20		286	4.09	6.5
Bio-Gas plant	150	112		24		286	4.09	6.5
Solar/Renewable energy plant	175	80	15	20		290	4.14	5
Bio-fertilizer plant	100	112	36		10	258	3.69	10
Effluent Treatment plant (ETP)	120	80	48	10	5	263	3.76	9
Project having ETP	160	32	30	20	10	252	3.60	11
Production of Green Products	170	64	60			294	4.20	4
Waste Management Projects	100	72	36	40		248	3.54	12
Energy saving bulbs production plants	200	80	30			310	4.43	1

Recycling plant	175	60	60			295	4.21	3
Projects having Zig Zagkiln	60	72	90	20		242	3.46	12
Green Loans	190	80	30	4		304	4.34	2
Carbon credit business (CDM)	75	48	81	32		236	3.37	13
Green Credit Cards	60	152	60			272	3.89	8

Source: Field investigation

The study was conducted to explore the investor's views on various green products regarding investment. A very significant number of respondents opined that they invest their capital energy saving bulbs production plants which is ranked by number 01. A significant number of respondent opined that investors are interested to take green loan which is useful for them which is ranked in number 02. A good number of respondents recommended that they agreed to invest a considerable amount in Recycling plant

which is ranked by 03. A number of respondents felt that they would like to invest in the production of green production of green products which is ranked by 04. A significant number of respondents opined that they would like to invest in Solar/Renewable energy plant which is ranked by 05. A considerable number of respondents reported that they have intention to invest in 'Shari'ah' compliance products and Bio-gas plant which are ranked by 6.5. A good number of respondents revealed that they used the green credit card which is ranked as 08. A number of respondents also opined that they invests an amount in Effluent Treatment plant (ETP) which is ranked by 09. The respondents also opined that investors invested a sum of money in Bio-fertilizer plant which is ranked by 10. A number of respondents felt that bankers invested an amount in Projects having Zig Zagkiln which is ranked by 11. The respondents also reported that they invested a sum of money in Bio-Gas plant which is ranked 12. An average number of respondents opined that they have invested in Carbon credit business which is ranked by 13.

7.2.8. Role of 'Shari'ah' based banking in Green financing (in Million)

Green financing is a new concept in Bangladesh. As per guidelines of Bangladesh Bank, the listed bank stated their financing in green project since 2010. The role of shari'ah based banks in green financing has given as follows:

Year	IBBL	SIBL	ExBL	FSIBL	AIBL	ICBIB	SJIBL	Total	Growth
2011	144	-----	28563	390	793	1627	362	31879	---
2012	239390	5607	160897	1019	1382	402	757	409454	1184.40%
2013	422836	7085	2546	1610	1617	3766	745	440205	7.75%
2014	128947	14422	12760	2135	1970	3885	2814	166933	(62.07%)

Source: Field Survey

In banking system of Bangladesh, there are 56 banks of which 43 banks had exposure in green finance, either direct (38 banks) or indirect (30 banks) mode in their quarter report. The banks has been invested in green projects Tk. 114,562 in April-june 2015 (official website of Bangladesh Bank). The above table indicates that all 7 'Shariah' based banks had invested in green projects of Tk 31879 million in 2011 and Tk. 409454 million in 2012 which is 1184 percent higher in 2012. The 'Shari'ah' based banks had also exposure in green finance Tk. 440205 million in 2013 which is 7.75 percent higher than 2012 and TK. 166933 million in 2014 which is 62.07 less than 2013. The green finance in 'Shari'ah' based banks has not been contributing significantly and not at all satisfactory level.

8. Conclusion and Policy implications

Green financing plays a vital role in 'Shari'ah' based banking for the protection of environment as well as sustainable development. Green finance enables the investors to provide the financing in green projects at less expensive. The main objective of the study is to investigate the relationship between 'Shari'ah' based banking and green financing in Bangladesh. The study concludes the major factors of green financing and examine the factors are practiced in 'Shari'ah' based banking from the view point of bankers and investors of the banks. The study provides the evidence that the factors of green financing in 'Shari'ah' based banks are significantly following but amount of green financing are not sufficient relative to total financing. Most of the respondents are satisfied with the current green financing and green banking and revealed that green financing is conducive to the 'Shari'ah' based banking. It is obvious that there are main obstacles for green financing in practice are lack of knowledge regarding green banking, lack of

assessment of green risk and lack of customer's awareness in green banking etc. The study provides concrete suggestions based on opinions of respondents that 'Shari'ah' based banking should practice green banking in house as well as outside the bank for sustainable development.

Policy Implications

From the evidence of the study, the following measures are recommended for the Bangladesh Banks, 'Shari'ah' based Banking, Commercial Banks, and for Bangladesh Government to ensuring the friendly environment from climate change as well as sustainable development:

- Government of Bangladesh should campaign for launching the green society in everywhere of the country for sustainable development.

- Government should develop a guidelines of green society that should be executed by channel of government machineries. The green society can only save the people from environmental detrimental.
- The ‘Shari’ah’ based banking should fully do green banking for sustainable development.
- The ‘Shari’ah’ based banks should develop the knowledge regarding green banking to internal employees and investors.

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