

## **ADVANCEMENT OF GREEN BANKING LAYOUT AND TREND IN BANGLADESH**

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### **Abstract**

*A considerable issue regarding environmental changes is growth positively that depends on to reduce cutting trees and to make green our surroundings as part of economic progress through time. Industrial development truly accelerates the employment, the side effect of which is to emit carbons that demurs the outlook of nature. The premature ruin of woodland is the obstacle to greenery advancement to stay with strong health. As a low lying country, Bangladesh is the worst sufferer among the lands of South Asia. Financial sector is the only driving force to recovering from loss occurred day by day in various industries from the perspective of economic and environmental controversy. This sector finances a lot to industrial development. The root of all is nothing but banking. So, it is time to go green for which it is exigent to figure out and innovate the models, based on which the financial sector runs. The paper addresses the layout and advancement of green banking on the movement of financial institutions in Bangladesh.*

*Keywords: Green Banking, Green Finance, Law, Environment, Economic Development*

### **INTRODUCTION**

The world is being upgraded by holding up the hand of industrialization. The placement of science has also given a lot to us in the field of medicine, technology, research etc. whereas the financial innovation has added a new era to human being in the 21<sup>st</sup> century, because the economy is the crucial part of a country. And banks are the legs of that economy depending on

which a financial sector run. The revolutionary innovation of banking on social responsibility is nothing but green banking. Green Banking is the practice of eco-supportive products innovation as well as the breeding of consciousness to human mind as part of economic spillover to a nation. Financial participants in a country like Bangladesh are comprised of banks and non banking financial institutions. A society is not only made of environment but also included the economy. For the sustainable development the two should work together. From that perspective the idea of green banking comes out, which is now an alarming issue for the financial sectors of Bangladesh.

Green banking is not separate from general banking and noted as a socio-protective financial services. It just talks about the investment in the project that is not harmful to the environment or at least not to create negative externalities to the economy. The way the green banking works is to taking the in-house management system and to convince the deficit economic unit by providing fund that goes to the place which protects us from bad responses of ecology mentioned as green finance. Because of non-balancing of social factors either the environment or the economy suffers, or sometimes the both. Bangladesh is the most vulnerable country that suffers from the adverse impacts climate changes (UNDP, 2004). In Bangladesh, the central bank takes initiatives for the implementation of green technology. The major instances of Bangladesh Bank regarding automation as part of green movement are Bangladesh Electronic Fund Transfer Network (BEFTN), Bangladesh Automated Cheque Processing System (BACPS), National Payment Switch (NPS), Enterprise Data Warehouse (EDW), Electronic Government Procurement (e-GP), e-tendering and e-recruitment in the banking network. For smooth and quick payment settlement by banks, BB has already launched another software named Real Time Gross Settlement (RTGS) system initially with 5000 branch of 55 banks on October 29, 2015 (The Daily Star, 2015). Green finance shows the route how a person can get to be the first served in the bank for taking fund that is socially viable. However, a case study on the green freight initiatives of China done by the World Bank shows, most of the truck of china are not well utilized on energy efficiency technologies and practices. Because there are some reluctance and information dissemination of concerning authority which take the truck owner consume 54% of fuel of transport sector fuel consumption (World Bank, 2011). But, we are lucky enough due to having a lot of natural gas that works heavily for reducing smoke. Financing onto the green vehicle is also an initiative as green banking.

Banks holds more than 95% contribution to the financial transactions of Bangladesh for all of manufacturing, trading and servicing format. All organizations want to maximize wealth. Truly, the environment is a part of wealth. If it is safe, we are safe to do business. The carbon emission has no boundary; no one can claim the smoke of one country won't cross the border,

but the consciousness of one's can cross any border without visa. And since banks are working as an intermediary between the surplus and deficit economic unit, so it can be said that someone needs money. A bank provides this from its deposit to increase industrial concerns; the result is economic growth but, deteriorating society. So, the financing into eco friendly projects in most diversified areas is the raising consciousness that is only capable of being green evolution named as an appropriate financing. Bangladesh Bank initially allocated a revolving fund for green projects amounting BDT 200 crore in FY 2010 as an effective measure for the adoption of green technology in Bangladesh (Daily Sun, 2012). After noticing the successful implementation of green banking, Bangladesh Bank allocated an amount of BDT 26,647.02 crore for green banking for the year 2015 for all the financial institutions in Bangladesh including BDT 26,329.21 crore on green finance. And by the first half of year 2015 the banks and Non banking financial institutions (NBFIs) utilized BDT 12,000.87 crore fund on green banking (Bangladesh Bank, 2015). So, Green Banking is not a trifle matter at all for the sustainable growth, it comes forward for the better economic as well as environmental surroundings of a country.

## LITERATURE REVIEW

Green Banking covers a large part of financing and management system. The evolution provides a financial institution to grow up mentally to live long with a sustainable environment. Thing about it many researchers and business specialists shared their thought in the following way:

A research study on Green Banking in Bangladesh conducted by Bangladesh Institute of Bank Management (BIBM) considered five pillars of green banking as Green banking Approach include green vision, restricting ongoing environmental harm, saving scarce economic resources, supporting stakeholders and reporting with transparency. And Dr. Habib defines here the green banking products as global public goods that provide the opportunity to the society to get the external benefit not having with any positive or negative externalities. But, because of its high costing banks are apathy to set up the green products.

Achim Steiner, Executive Director of United Nations Environment Programme (UNEP), noticed a sequential economic growth in the Asia Pacific region which has social and environmental costs. Different countries' green approaches contribute to the sustainable development in this region. In 2014 the clean energy investment stood in 36 percent in the developing countries. But, public finance is not adequate for the green transition alone; the financial markets can work as a keystone for the development of green economy.

Khondokar Morshed Millat, Rubayat Chowdhury and Edward Apurba Singha focused on the definition of green bank as an ethical, sustainable as well as socially responsible bank that depends on a unit or a group of a team that defines not only more than a banker, but also an environmentalist like all rounder in a game. He also appreciated the budget at the inception of Green Banking of banks for the year 2012 and green finance through Environmental Risk Rating (EnvRR).

Ahmed, Zayed and Harun explained the green banking as a multi-stockholders' endeavor and elucidated that the green banking is the outcome of RIO+20 summits where the different nation raised their voice over environmental safety. And from factor analysis, they identified the six influencers affecting green banking that are economy, policy, demand, pressure, environment and legal factors that have a combined variance about 65.25% of green banking decisions.

European Investment Bank (EIB) construes green initiatives from the end of banking institutions as supporting the energy savings projects by funding as well as providing technical assistances for project choice and implementation for the European Union member states, where they indicates the conditions for fund including greenhouse gas emission reduction minimum 30% than that of the previous or meeting up the energy saving ratio minimum 20%. They are now granting funds up to € 150000.00 of the EIB loans from European Commission for supporting the environment. The discussion on the green banking indicates the initiatives have been taken positively by different countries and the movements throughout the world. So, it's an emerging issue nowadays in the banking industry and for the other financial market participants.

### **Objectives of the Study**

Traditional banking system is taking into task the green banking now-a-days. Highlighting the way of green banking operated is the main objective of the study. In addition to this, the secondary objectives are:

1. To identify various model of green banking
2. To evaluate the procedures of green banking
3. To measure the concept of green finance
4. To show the trend of green banking in Bangladesh
5. To analyze the green performances of scheduled banks

### **Rationale of the Study**

Everyone needs money, but, for what is the main cause about financing. The financial intermediaries are knocking at the door for the prospects that support the greenery movement of

Banks. A lot of people are not aware of the motto, “Go Green”. That’s why it is necessary to looking for structural layout through which a green loan is disbursed and to analyze how the financial participants are performing in the market.

## **METHODOLOGY**

The study has been conducted by the views of key persons of banks and research institutes with unstructured discussions and secondary data available from Bangladesh Bank, World Bank, United Nations Environment Programme (UNEP), published articles in different journals and renowned newspapers, and the data available in web sites as well as the financial reports of banks and other financial institutions. The qualitative data have been reported overtly into the flowcharts, which indicate different wings about the tradeoff between environment and economy of green banking. And for quantitative data, three consecutive years’ (2012, 2013 and 2014) green banking performance has been taken into consideration. Those have been processed through horizontal analysis, growth analysis and showing trend with ratios.

## **ANALYSIS AND RESULTS**

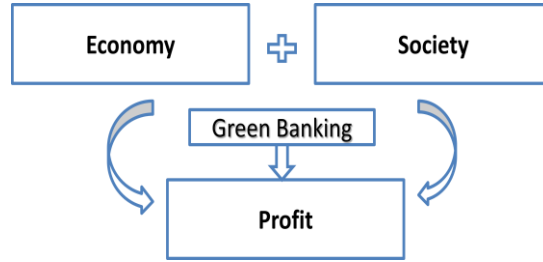
Every prospect in the world has two types of effect where the one is crucial and another is supportive or if one is positive, another is negative, most likely one is policy and another is implementation. Based on the two, the study is about the advancement of structural layout of green banking and the supportive of which is policy and the outcome, known as implementation of green banking.

### **Structural Layout and Advancement**

The policy of green banking is denoted as a buttress of taking anti-devastative measures of environmental organs by setting up some standards for the banks and non banking financial institutions. Most banks and financial institutions in Bangladesh have already set up the green banking policy as well as the in-house management system. Private banks are one step ahead from the state owned banks to implement the policy and make the guidelines. New banks are not in the rear side of this.

The technological outcome regarding finance is the green finance where the financial organizations work as middleman between the economy and the society. The wide thought comes from the financial innovation, and the green banking is one of them.

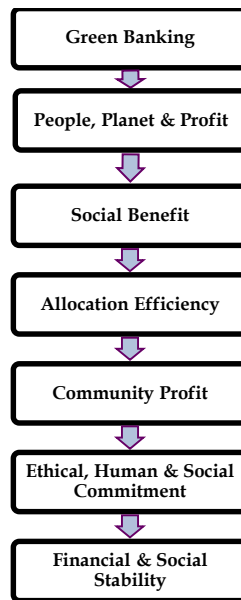
Figure 1: Countrywide Impact of Green Banking



Source: Own Construction

In figure 01, the impact of green banking is shown on the economy as well as on the society that makes profit to the financial company, but, how? The way includes the collection of three organs of a thought including people, planet and profit as the new paradigm of Green Economy (Bank Indonesia). The people are for the betterment of planet, the profit can accelerate the development of planet. So, none is less important. The combination of which provides the social benefit.

Figure 2: Chain of Green Banking in Financial and Social Stability

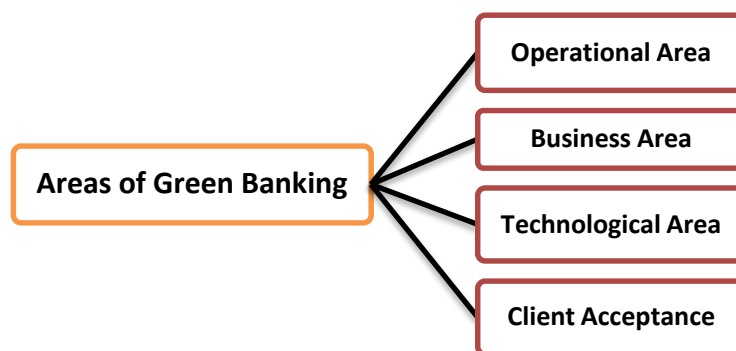


Source: Own Construction based on Bangladesh Bank Data

After being the social benefit the allocation of this comes forward, the segmental one part of which is the community benefit, that liable a person to built moral character. And last of which gives financial and social stability, which is the main theme of every research of financial world (shown in figure 02).

Though it seems that green movement is limited in nature in every work place of financial and non financial organizations, but actually it is not. A lot of areas efforts together for making the job location green. Not only that green banking is a trademark of banks, but also it is a part of business areas. The combination of different departmental support the green banking stands strongly. The areas where the green banking can present itself with the conventional banking, the job rotation of green banking depends on the following areas:

Figure 3: Areas of Green Banking in Financial Organization



Source: Own Construction

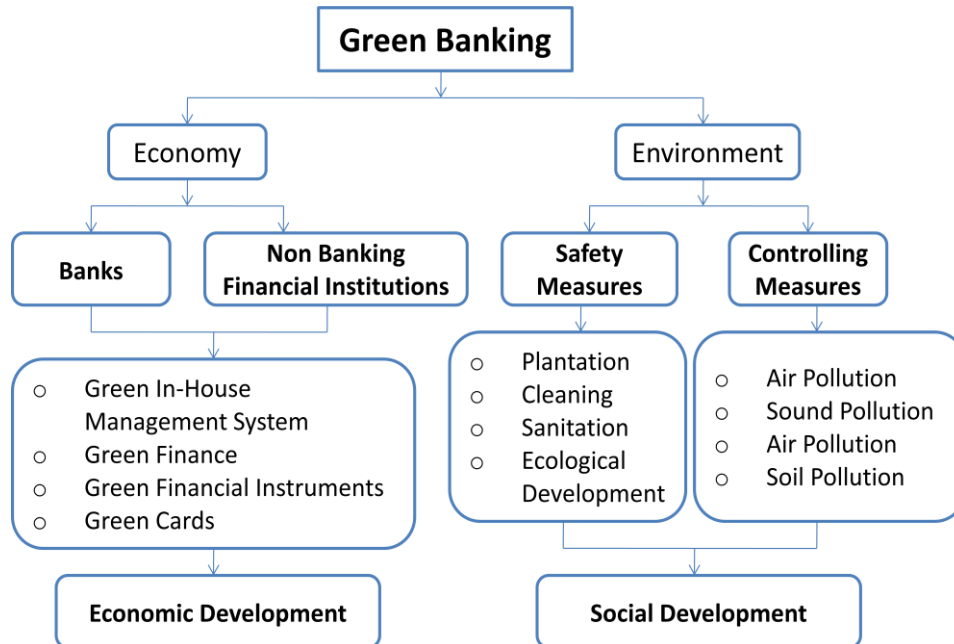
The success of a banking product innovation and circulation and to make easy to get the service on demand depends on the operational area, business prospects, technological advancement and clients' acceptance as given in Figure 03.

- **Operational Area:** This area includes the maintenance of in-house policy of green banking and to implement that theme to its operational process such as using the back sides of photocopied pages, which relocates the cost minimization of branch.
- **Business Area:** The area is to support the other banking and non banking financial institutions. So, supporting the other business organizations make a stronger business community that makes the country a better place to live the lives. Not only that a greater business initiative can be highly appreciated by the international community like the strategy of micro credit of Professor Dr. Md. Yunus.
- **Technological Area:** The whole world of today is running after technology. The technological advancement from different perspective provided the people of different

nation under the one roof. The green finance is the right hand of industrialization. The industry dumps a lot of poisonous waste to the river, so does the brick field using a lot of smoke, green banking provides the way of making bricks using higher technology like investment in HHK Brick Field.

- Clients' Acceptance: The clients will accept the product that is not harmful for them at all. Green Banking is asking for not using paper that are from cutting trees reducing the enough oxygen and increasing the carbon-di-oxide. So, what the clients accept most, the green banking works there by gathering public consciousness.

Model 1: Green Banking & the development



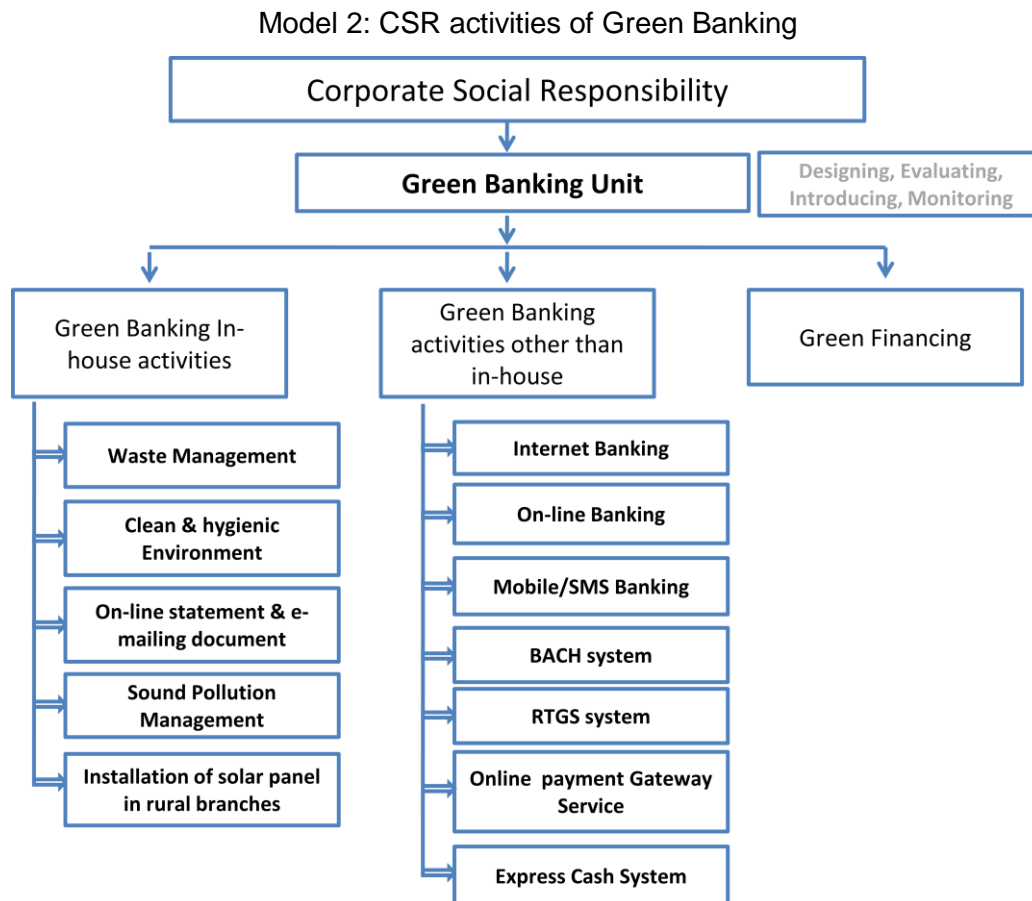
Source: Own Construction

The discussed four business area of green banking has the long term effects on the surroundings such as in economy as well as in environment. A structure where the theory of green banking can be implemented has already shown above (Model-01) where the economic development and social development are done together.

Green banking includes the economy as well as the environment. By the mixture of both safeties, the result which comes forward is Combined Development. From the above model the targeted sectors of green banking are economy comprised of banking and non banking financial institutions. The financial institutions can implement the in-house management system, and provide green loans, issue green financial instruments and green cards too. That has an effect



on environment, providing loan to the plantation is another part of agricultural loans. By green banking the use of paper will be less, and the office will be clean, which will keep balance for the ecology, are the safety measures. Reducing the cutting trees and making technology based work the pollutions can also be controlled. Then the left side of the model will be effective naturally for the right side, and the output will be economic and social development. Not only that, following these practices the green banking deals with corporate social responsibilities, a part of social outfit in the way below:



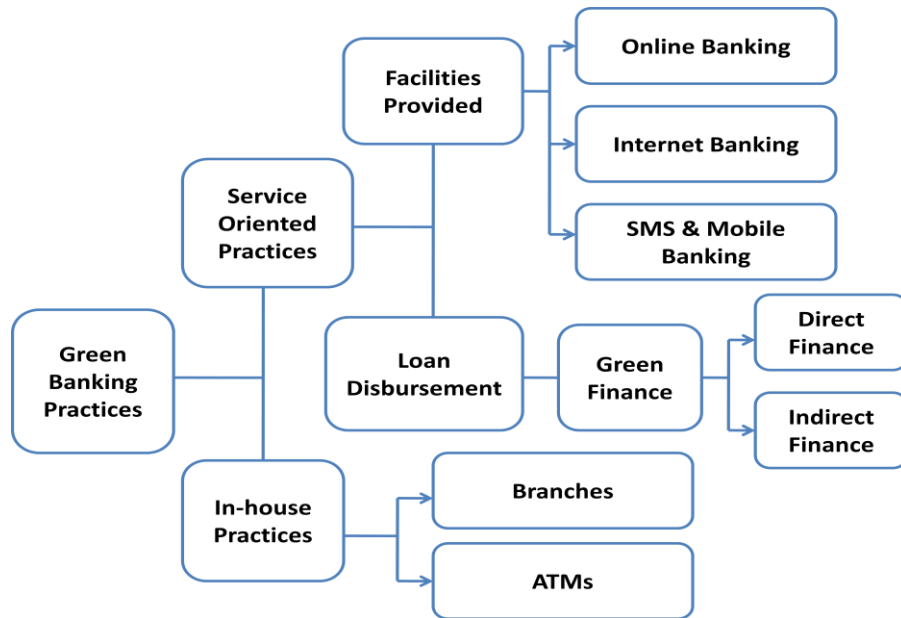
Source: Own Construction

Another model given above tells about how a company can take participation of corporate social responsibilities. The steps are in-house management system, outside activities of greenery movement and green financing. As part of in-house activities, a financial institution can have control over wastage, hygienic surroundings inside offices, technology based business communication, reproducing electricity from sun-ray. However, a bank can adopt internet and online banking as well as mobile banking etc. In Bangladesh, the BACH system is full-fledged active in clearing all kinds of bankers' cheques and for increasing time efficiency Bangladesh

Bank has launched RTGS (Real Time Gross Settlement) on October 29, 2015 which takes settlement without any waiting time (The Daily Star, 2015). And a bank can provide loan and advances doing green finance. Now we will see how the third one named green finance works.

Law and Practice both the terms depend on each other. A policy can be presented into the book but always not be applied, because of the nature of economy of a country. The actual scenario Bangladeshi economy faced in green banking practices and a newly bank how the policy will implement are shown below:

Model 3: Green Banking Practices mostly used in Bangladesh

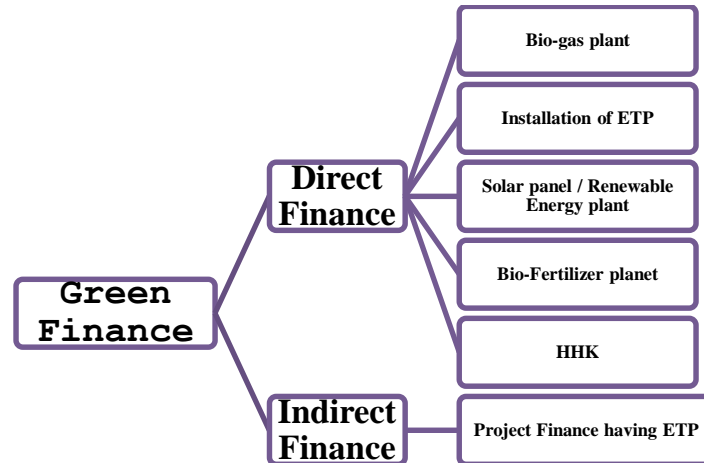


Source: Own Construction

Model 03 indicates the actual practice is being done in Bangladesh in the way mentioned above. The Green Banking is now into the uses in house and the serviced provided by the financial institutions. The services included online banking, internet banking and mobile banking. And the loan is green finance the details are discussed below, and the practices in-house diverted into ATMs from branches by the uses of solar energy for electricity production and uses for official and service purposes.

Green finance is to invest in the projects that are positively correlated with the environmental development. Because, all financing includes profit, but how authenticate it is for the environment is the root of green finance directly or indirectly.

Figure 4: Green Financing

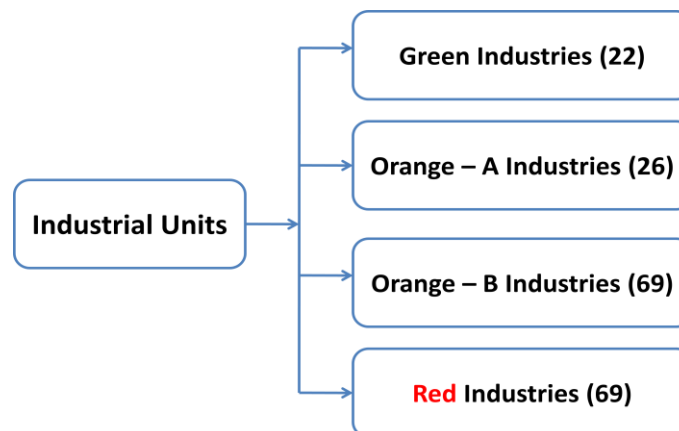


Source: Bangladesh Bank, 2012

The direct finance is investing in to develop the projects. And indirect finance is to provide additional facilities to increase the wings of a business that drives for green. The segments of direct green finance shown above in the figure are not only five, while it was limited to six; there are a lot and developing day by day. Now the main indicators have been increased to 11 from 6.

For the environment supportive green loan disbursement, Environmental Conservation Rules, 1997 (Bangladesh Gazette, 1997) indicated the category wise industries that affect the surroundings in different way, which are followings:

Figure 5: Industrial Units according to Environmental Conservation Rules, 1997



Source: Bangladesh Gazette, 1997

Here, Green categories' industry affects fewest to the earth. Those who are not included in 22 industries, have to be the cottage industry, including the firms with capital less than five hundred

thousand. Orange-A category is a little bit riskier than the green category and Orange-B category has more effects to the environment but the precautions for which also includes plant outside the residential area and preferably in the industrial economic zones. Red category is totally harmful to the environment; the funding is not ethical to those firms from the perspective of green movement of banks.

### Implementation & Trend of Green Banking in Bangladesh

Green Banking is such a humanistic evolution that has a long term effect on the financial system of a country. Bangladesh is not out of this blessing. The effect of a matter can be analyzed by noticing the moving path of that thing, so can the implementation. Green banking policy has been implementing since 2012. The people have passed the following two years since its inception in the economy of Bangladesh.

The 2013 year was the year of induction of new 9 banks, known as fourth generation banks. Their movement on green banking has been taken into consideration in 2013 and 2014. Based on the data available in the central bank's quarterly and annual report of green banking we chose seven indicators to analyze the trend of green banking, which are categorized in the following way:

Table 1: Implementation of Green Banking in Bangladesh

Implementation of Green Banking		
By Service Provided	By In-House Practices	By Financing
Online Banking	Using Solar Panel in Branches	Direct Green Finance
Internet Banking	Using Solar Panel in ATM Booths	Indirect Green Finance
SMS & Mobile Banking	Using Electronic System instead of using paper,	

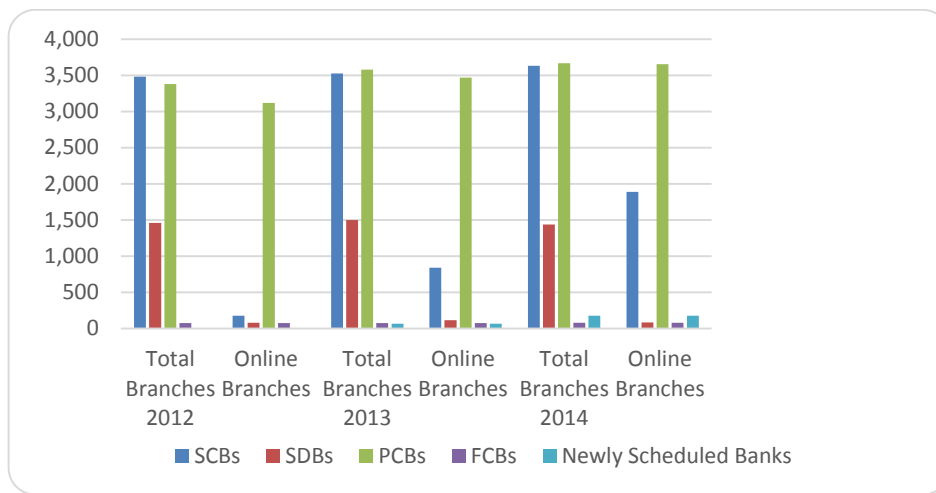
#### **Online Banking**

Each and every bank is service oriented. The banks are now expecting to be customer's demand oriented. Customers deposited money so that they can get money when they want, from where they want. That's why the online banking is in practice now. People can deposit the money everywhere and withdraw from every ATM booths where the bank connected. The online banking reduces the use of paper and the use of more human resources and mostly the uses of customer harassment outside the bank. Customer can only carry the cheques and give payments by them.

For better evaluation of the trend of banking institutions, the participants have been classified into 5 categories namely, State owned Commercial Bank (SCB), Specialized Development Bank (SDB), Private Commercial Bank (PCB), Foreign Commercial Bank (FCB) and newly scheduled bank that has got the licenses to start banking businesses in 2013 as fourth generation bank.

The chart below shows the trend of online branches from 2012 to 2014 comparative to total number of branches in Bangladesh.

Figure 6: Online Banking Facilities in the Banks of Bangladesh from 2012-2014



Source: Bangladesh Bank

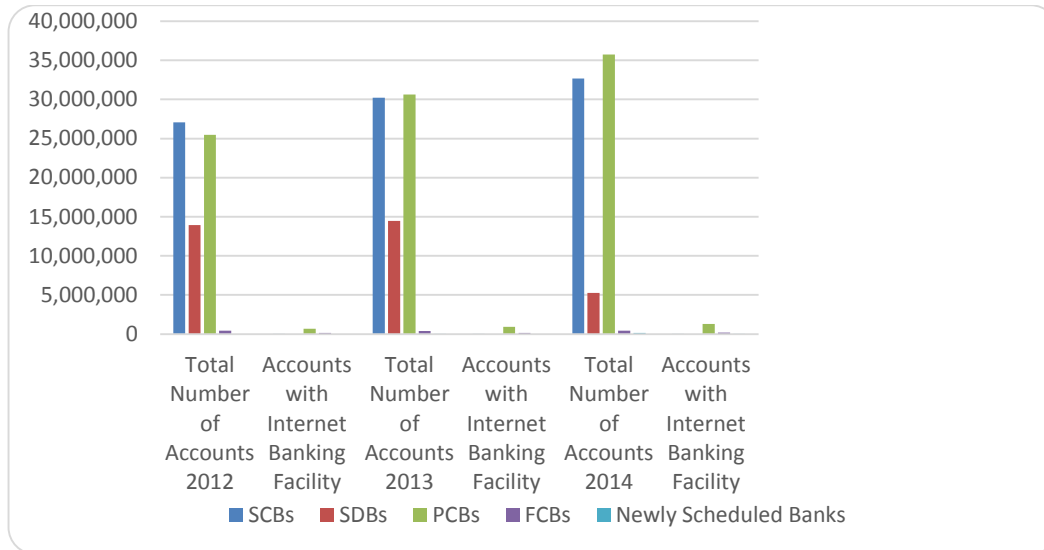
The consecutive performance of SCB and PCB is greater than that of others. The SCB operated 177 branches out of 3482 branches in 2012 that is 5.08 percent of total, which has increased to 839 to 1887 that are 23.79% of total in 2013 and 52 percent of total in 2014, indicates a tremendous success to provide online facilities to their customers. But, the highest performer is the PCB that has 92.24 percent online branches in 2012, 96.90 percent in 2013 and 99.73 percent at the end of 2014. Now at the inception of newly scheduled bank they tried to equip all their branches with online facility, which is 100 percent in 2013 and 2014, so did the foreign banks. The worst situation has been noticed by SDB from 2012 to 2014, although the online branches increased from 77 to 113 in 2013, but decreased to 81 in 2014. (See Appendix 1.1)

### **Internet Banking**

The internet banking is a little different from online banking, the “banking facility in customer’s computer”. A password is given to the customer. He can change the default password, and can operate by his own hand. He can see the day end balance. He can generate his statement and

print it. For that it is not needed to come to branch always. The facilities will decrease the use of paper for statement, the time, and increase the prospects.

Figure 7: Internet Banking Facilities in the Banks of Bangladesh from 2012-2014



Source: Bangladesh Bank

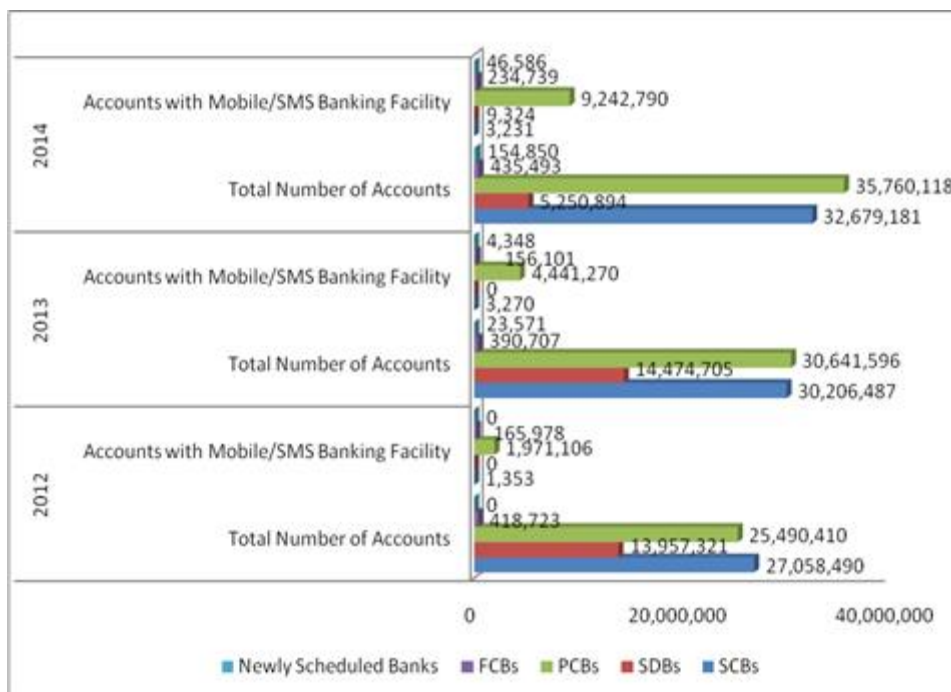
Only 21 out of more than 27 million account was under the facility of internet banking in 2012 of SCBs, but it is a matter of shock that the number was same in 2013 and 27 out of 32 million account at the end of 2014. It's because of unskilled employee and lack of enough instruments. There is no pressure of internet banking in branch. If the facility was available, the customer pressure and their embarrassment would be decreased. In this sense, foreign commercial banks are one step ahead who covered 35.71 percent in 2012 and 43.28 percent in 2014 although they hold only 4.35 lac accounts in Bangladesh (Appendix 1.2). The number of PCBs was more than FCBs but percentage of total is 2.62 to 3.62 from 2012 to 2014. And not a single account got the facility in SDBs during the time.

### **Mobile/SMS Banking**

The people of Bangladesh is fast in using only mobile. The only way of financial inclusion was the facility of mobile banking the pioneer of which is "bKash" a concern of Brac Bank Limited. In the rural area it is impossible to go for providing banking service by branch. On behalf of banks the use of mobile set to transact added a new era.

The bar of chart 1.3 indicates better performance with mobile/SMS banking facility is of PCBs in terms of number of accouts, but as a whole the percentage of FCBs is higher than that of others, 39.64 percent in 2012, 39.95 percent in 2013, but it jumped to 53.90 percent in 2014.

Figure 8: Mobile/SMS Banking Facilities in the Banks of Bangladesh from 2012-2014



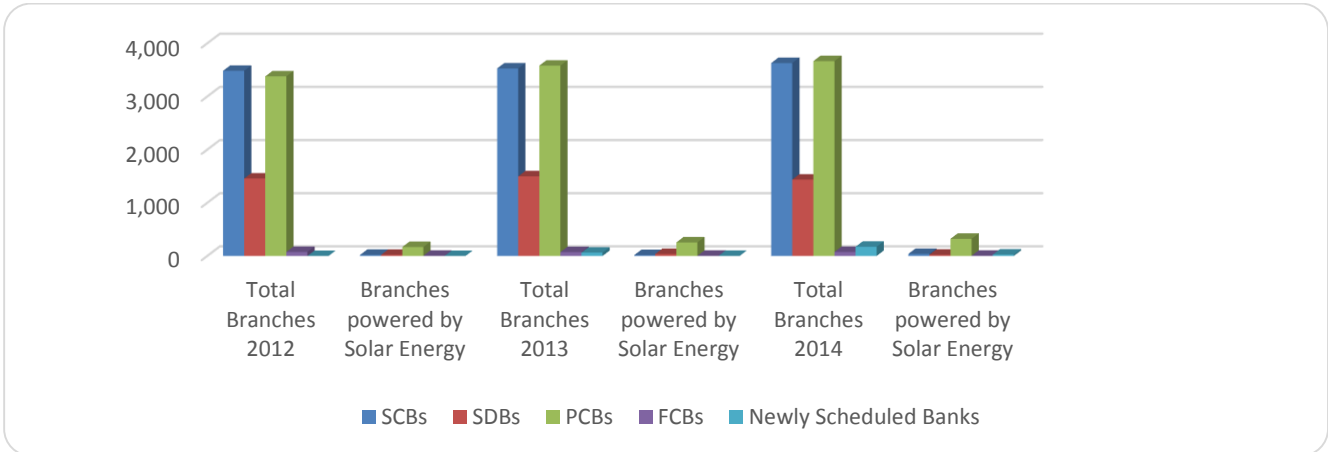
Source: Bangladesh Bank

The mobile or SMS banking facility shown above is 1353 accounts out of 27 million accounts of SCBs in 2012. But it is a matter of shock that the total number of account has been decreased in 2014 of SDBs comparative to 2012 and 2013, which is almost three times lower than the previous year. (Appendix 1.3)

**Branches powered by Solar Energy**

Using sun ray with the solar technology is the support that saves energy for the better supply of electricity at the time of load shedding. A branch powered by solar panel is a great initiative of banking institution. Because, it is said that, “first do yourself before advising others”. Depending on the motto, the use has been done as an in house green banking management system. The trend is in following chart;

Figure 9: Branches powered by Solar Energy of Banks in Bangladesh from 2012-2014



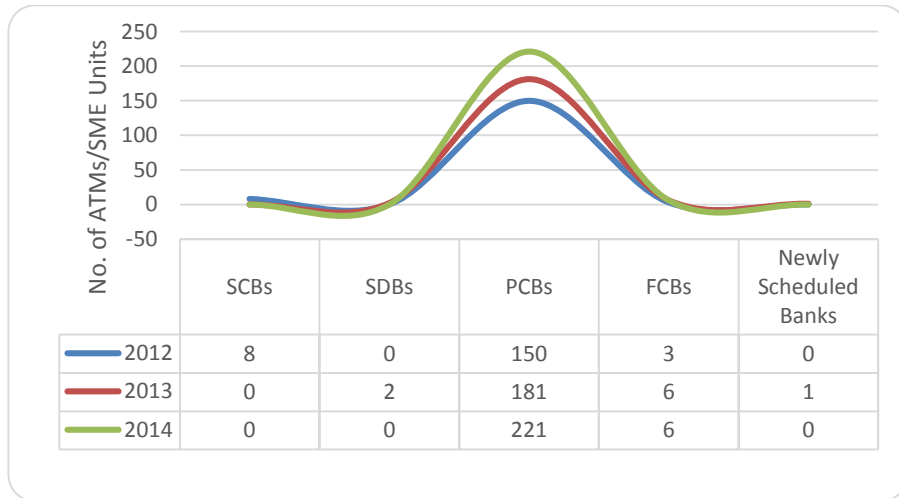
Source: Bangladesh Bank

Only 2.57 percent of total branches of banks in Bangladesh are powered by solar energy combined in 2012. As a percentage, the newly scheduled banks are one step ahead which has 14.45 percent of total branches using solar panel. But in terms of number of branches PCBs come first with 323 branches under this facility. But the lower number is hold by FCBs with only 4 in 2014 (Appendix 1.4).

**Solar powered ATMs/SME Units**

The following chart shows the solar backed SME units and ATMs in the banking sector from 2012 to 2014.

Figure 10: Solar powered ATMs/SME Units of Banks in Bangladesh from 2012-2014



Source: Bangladesh Bank

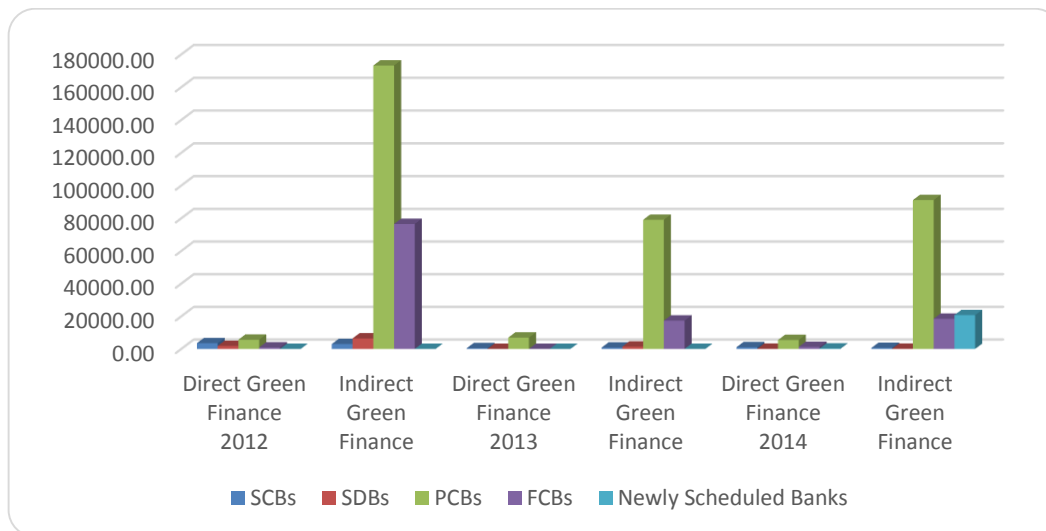


ATMs are comparatively so smaller than the branches in perspective of area, facility, electronic device and machines. That’s why the implementation of solar panel in ATM is not a tough work. In 2012, the private commercial banks made the 150 units powered by solar energy, which was increased to 181 in 2013 and 221 in 2014. The outcome of other banking section was so distressful during the selected 3 years (Appendix 1.5), where the ATMs and Kiosk are going to be the main place of transaction for the next generation people.

### Direct and Indirect Green Financing of Banks

The financing is the investment area of banks from which the operational profit is generated. The only ethical investment includes agriculture and green financing. Green financing can be direct and indirect from the perspective of banks. The following chart shows that, in 2012 the direct green financing was Tk. 11821.48 million whereas the indirect financing was 22 times (approx.) of direct financing. The initiation was good. But, due to the political turmoil started since 2013, the total green financing was less than half of 2012, and in 2014 the total was 30 percent higher than that of 2013 (Appendix 1.6).

Figure 11: Direct and Indirect Green Financing of Banks in Bangladesh from 2012-2014



Source: Bangladesh Bank

From the above chart it can be concluded that, although the indirect finance is lower in 2013, but it increased in 2014 and after the inception of the newly 9 scheduled banks they took a gigantic step to support environment. In 2014 the total green finance of newly scheduled bank is higher comparatively than that of the green finance of foreign banks.

## **SUMMARY**

The scope of green banking includes a vast area. In fact, the overall situation shows that, mobile banking has been increased a lot than the other indicators improvement in 2014. It's because of the easy acceptance of mobile phone by the rural people. And it also made a huge advancement for the financial inclusion. The cash carrying procedure is decreasing day by day with analyzing the risk of hard money holding. That's why and for no uses of extra papers; the attraction for mobile banking has been increased. Online banking as well as internet banking is expanding slowly but in increasing mode due to the lacking of technical support with technical skilled human resources. News generated from the data shows positively that the banks are going to be the power efficient which includes the uses of solar panel in branches as well as ATMs and SME units. In branch uses there was an increase from 2.59 percent in 2012 to 4.60 percent in 2014. The growth of using solar panel in ATMs and SME units was more than 18 percent since 2012, which saves the power highly.

## **RECOMMENDATIONS**

To make our surroundings green the proper policy and guidelines are necessary. That's why the policy formulation where a way is to decorate and in addition to this a yearly budget will have to be determined. A formal Green Banking Implementation Unit by which day to day green loan disbursement have to be supervised, and designing the administration will also be the subject matter of that unit. These are the main requirements going to be implemented into phase I, II, III by the declaration of Bangladesh Bank. In addition to these, some recommendations have been derived, which are followings:

- Consumers are not aware of green banking system and the way it works out into the development of ecology. That's why various campaign programs will have to be taken to raise awareness and raise voice against pollution.
- Media advertisement of financial institutions can reach to the knowledge of general client. Agri-financing is also a part of green movement. By advertisement rural people will also understand how to get financing and be a part of environmental sustainability.
- Due to the high loan pricing, green financing is less profitable to bank but to consumers than the conventional financing. So, a bank can move to involve in contributing green industry in the way a venture capitalist run the clients' business. This will appreciate the customers to initiate different types of green firms.
- Bank should encourage the businesses that are eco-friendly and the short-term green loan to be given to the small businesses who are working hard making the soil made, jute made,

bamboo made product to strengthen the cottage industry with a condition that if any polluting situation creates the loan interest will be high.

- NGOs and Cooperatives societies can be a part of this providing small funding and looking after the investment in visible, because they can easily reach the rural people from a short distance. And the consumers can get helped from banks when it is a large layout. So, mutual cooperation between financial institutions and NGOs and cooperative societies is necessary.
- An initiative has been taken by Agrani Bank Limited to finance in the roof gardening. In such a way, banks can provide small fund to the house owner to roof gardening, which can save the dwellers from overheating inside the room, directs to reduce the uses of air conditions and save energy.
- Lots of organizations are operated in Bangladesh like ready-made garments, leather companies and so on. All the firms dump a large amount of wastage to the riverbank as well as into the rivers. That application spreads the toxic chemical like nitrogen throughout the water which leads to the sea, the ultimate destination. It makes the dead zone in the sea initiating oxygen free area that is harmful to the underwater lives. Banks should finance into the green waste management system heavily and monitor closely after investment.
- Various environmental research organizations can play the role of watchdog observing the idea and application of green banking of financial institutions. In addition to this, they can publish paper quarterly or biannually basis which will make the general people know about the green initiatives taken by banks and other financial institutions.
- Banks should strengthen the research and development department, so that they can gift the eco-friendly products for the customers and to diversify the services that are coherent to the environmental development.
- A regular audit from intelligence unit of environmental risk management department should work for assessing the risk and developing solution. The credit department should not include the environmental clearance certificate only as a base for choosing non-risky firm, because most of them can easily collect that certificate from environment department of government representing their strong commitment to support environment and some sort of corporate social responsibilities (CSR) activities.
- A compensation program should be introduced for the firms who are the biggest participants to make harm to the society in the name of industrial development. And they have to pay according to their contribution in polluting society. The environmental

department of Bangladesh government should estimate the sequences of harms and the compensation to the respective companies.

## CONCLUSIVE THOUGHTS

Bangladesh is a small country who has just catalyzed into the low-middle incoming country. The government is trying hard to reach the middle incoming level. The per capita income, employment level as well as the financial strength work combined for the economic and social development, where the financial sector is the lead conductor. That's why the recent innovation for the financial organization and society is the green banking. The finding shows the upward trend and the models how a bank or NBFIs is going to be green. The in-house practices can give a dramatically changes to the financial sector. Since all the industry are moving keeping hand to hand with banks, the flow of the financing to the working capital investment and project investment will affect positively for eco-supportive product innovation, and by this way the green house gas emission, as well as the air, water, sound pollution will be decreased in a higher range within a shortest possible of time. The environment is comprised of people, trees, animals, birds etc. Every living being has the right onto the environment. We the human cannot ruin all the creatures of the world. The exchanges of commodity established the relation among the living entity and the medium of exchanges is money. So, financial sector is the root of human strength and only financial sector play the most contributory role for the development of economy as well as society. That's why the advancement of green banking is one of the paths following which all the countries can go for sustainable development. The trend also shows that. After all, green banking is the banking for green revolution accepted by the world leading, developed, and developing as well as least and under developed countries. The recommendations construed here will be effective when they are followed by the national and international financial bodies, which will revive the forestation and enough oxygen for the living being.

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## APPENDICES

## Appendix - 1.1: Online Banking Facilities

Type of Bank	2012			2013			2014		
	Total Branches	Online Branches	% of Total	Total Branches	Online Branches	% of Total	Total Branches	Online Branches	% of Total
SCBs	3,482	177	5.08%	3,527	839	23.79%	3,629	1,887	52.00%
SDBs	1,457	77	5.28%	1,498	113	7.68%	1,436	81	5.64%
PCBs	3,378	3,116	92.24%	3,580	3,469	96.90%	3,665	3,655	99.73%
FCBs	75	75	100.00%	73	73	100.00%	76	76	100.00%
Newly Scheduled Banks	-	-	-	63	63	100.00%	173	173	100.00%
<b>Total</b>	<b>8,392</b>	<b>3,445</b>	<b>41.05%</b>	<b>8,741</b>	<b>4,557</b>	<b>52.13%</b>	<b>8,979</b>	<b>5,872</b>	<b>65.40%</b>

Source: Bangladesh Bank

## Appendix - 1.2: Internet banking Facilities

Type of Bank	2012			2013			2014		
	Total Number of Accounts	Accounts with Internet Banking Facility	% of Total	Total Number of Accounts	Accounts with Internet Banking Facility	% of Total	Total Number of Accounts	Accounts with Internet Banking Facility	% of Total
SCBs	27,058,490	21	0.00%	30,206,487	21	0.00%	32,679,181	27	0.00%
SDBs	13,957,321	0	0.00%	14,474,705	0	0.00%	5,250,894	0	0.00%
PCBs	25,490,410	666,916	2.62%	30,641,596	932,763	3.04%	35,760,118	1,296,300	3.62%
FCBs	418,723	149,541	35.71%	390,707	164,974	42.22%	435,493	188,470	43.28%
Newly Scheduled Banks	-	-	-	23,571	0	0.00%	154,850	1,035	0.67%
<b>Total</b>	<b>66,924,944</b>	<b>816,478</b>	<b>1.22%</b>	<b>75,737,066</b>	<b>1,097,758</b>	<b>1.45%</b>	<b>74,280,536</b>	<b>1,485,832</b>	<b>2.00%</b>

Source: Bangladesh Bank

## Appendix - 1.3: Mobile/SMS Banking Facilities

Type of Bank	2012			2013			2014		
	Total Number of Accounts	Accounts with Mobile/SMS Banking Facility	% of Total	Total Number of Accounts	Accounts with Mobile/SMS Banking Facility	% of Total	Total Number of Accounts	Accounts with Mobile/SMS Banking Facility	% of Total
SCBs	27,058,490	1,353	0.01%	30,206,487	3,270	0.01%	32,679,181	3,231	0.01%
SDBs	13,957,321	0	0.00%	14,474,705	0	0.00%	5,250,894	9,324	0.18%
PCBs	25,490,410	1,971,106	7.73%	30,641,596	4,441,270	14.49%	35,760,118	9,242,790	25.85%
FCBs	418,723	165,978	39.64%	390,707	156,101	39.95%	435,493	234,739	53.90%
Newly Scheduled Banks	-	-	-	23,571	4,348	18.35%	154,850	46,586	30.08%
<b>Total</b>	<b>66,924,944</b>	<b>2,138,437</b>	<b>3.20%</b>	<b>75,737,066</b>	<b>4,604,989</b>	<b>6.08%</b>	<b>74,280,536</b>	<b>9,536,670</b>	<b>12.84%</b>

Source: Bangladesh Bank

## Appendix - 1.4: Branches Powered by Solar Energy

Type of Bank	2012			2013			2014		
	Total Branches	Branches powered by Solar Energy	% of Total	Total Branches	Branches powered by Solar Energy	% of Total	Total Branches	Branches powered by Solar Energy	% of Total
SCBs	3,482	21	0.60%	3,527	16	0.05%	3,629	38	1.05%
SDBs	1,457	22	1.51%	1,498	37	2.45%	1,436	23	1.60%
PCBs	3,378	169	5.00%	3,580	255	7.12%	3,665	323	8.81%
FCBs	75	3	4.11%	73	3	4.11%	76	4	5.26%
Newly Scheduled Banks	-	-	-	63	1	1.59%	173	25	14.45%
<b>Total</b>	<b>8,392</b>	<b>215</b>	<b>2.57%</b>	<b>8,741</b>	<b>312</b>	<b>3.57%</b>	<b>8,979</b>	<b>413</b>	<b>4.60%</b>

Source: Bangladesh Bank

## Appendix - 1.5: ATMs/SME Units Powered by Solar Energy

Type of Bank	ATMs/SME Units powered by Solar Energy		
	2012	2013	2014
SCBs	8	0	0
SDBs	0	2	0
PCBs	150	181	221
FCBs	3	6	6
Newly Scheduled Banks	-	1	0
<b>Total</b>	<b>161</b>	<b>190</b>	<b>227</b>

Source: Bangladesh Bank

## Appendix - 1.6: Direct and Indirect Green Financing of Banks

Type of Bank	2012			2013			2014		
	Direct Green Finance	Indirect Green Finance	Total Green Finance	Direct Green Finance	Indirect Green Finance	Total Green Finance	Direct Green Finance	Indirect Green Finance	Total Green Finance
SCBs	3513.10	2994.15	6507.25	444.89	806.38	1251.27	1038.50	630.39	1668.89
SDBs	1803.36	6401.70	8205.06	12.85	1381.90	1394.75	46.92	100.00	146.92
PCBs	5623.74	173187.17	178810.91	6908.57	79062.01	85970.58	5455.93	91150.01	96605.94
FCBs	881.28	76517.03	77398.31	32.40	17322.66	17355.06	1217.14	18459.08	19676.22
Newly Scheduled Banks	-	-	-	-	-	-	224.59	20688.82	20913.41
<b>Total</b>	<b>11821.48</b>	<b>259100.05</b>	<b>270921.53</b>	<b>7398.71</b>	<b>98572.95</b>	<b>105971.66</b>	<b>7983.08</b>	<b>131028.30</b>	<b>139011.38</b>

Source: Bangladesh Bank