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Triggering Green Transformation of the Private Sector Through Central Bank-led Initiatives: The Role of Bangladesh Bank in Mainstreaming Green Finance in Bangladesh

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ECONOMIC DIALOGUE ON GREEN GROWTH

EDGG

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Acronyms

CAMELS	Capital adequacy, Asset quality, Management, Earnings, and Liquidity
CNG	Compressed Natural Gas
ETP	Effluent Treatment Plant
FCB	Foreign Commercial Bank
FI	Financial Institutions
HDPE	High-Density Polyethylene
IDCOL	Infrastructure Development Company Limited
LDPE	Low-Density Polyethylene
LED	Light-Emitting Diode
LEED	Leadership in Energy and Environmental Design
MIS	Management Information System
PCB	Private Commercial Banks
PP	Polypropylene
PS	Polystyrene
PV	Photo Voltic
PVC	Polyvinyl Chloride
SDB	Specialised Development Banks
SOCB	State Owned Commercial Banks
TFLD	Total Funded Loan Disbursement

Executive Summary

Guidelines and circulars issued by Bangladesh Bank directing banks and financial institutions under its jurisdiction to factor in environmental concerns while making financial and in-house operational decisions have enhanced awareness about the concept of green banking in Bangladesh. Actual disbursement of green finance, which is yet to be given a precise definition by the central bank, however, has been inadequate. 93% of the 2,370,392.45 million Taka disbursed as green finance between 2013 and 2017 has been loaned under the category of Indirect Green Finance. This essentially is the amount loaned to any project having an Effluent Treatment Plant (ETP) or a similar system with no regard for the specific volumes of funds spent on actually operating ETPs.

This problem is not lost on policymakers at Bangladesh Bank. In a bid to increase disbursement of Direct Green Finance, Bangladesh Bank has set a target that 5% of total loan disbursements made by banks and non-banking financial institutions should be to the approved list of green initiatives. This supply driven approach, however, has not yielded results.

Our key recommendations for triggering green transformation of the private sector through central bank-led initiatives include:

- Bangladesh Bank should shift from a supply-driven approach of disbursing green finance to a demand-driven one. For this, a functional conceptualisation of the term is required. The functional conceptualisation that we offer in this paper includes:

  (i) A definition that guides practical application;

  (ii) A new categorisation that recognises that demand for green finance by different segments of the private sector in their different roles has different roots; and

  (iii) Identification of the drivers motivating expenditure on green solutions by private businesses and consumers to enhance demand.

- We identified compliance with regulation, prospect of making economic gain, and personal environmental awareness as motivations that drive demand for green finance by private households and businesses. In this paper, we focus on the first two factors, as summarised in the table below:

Table: Summary of the Targeted Approach to Disburse Green Credit Finance to the Private Sector

Segment of the Private Sector	Role	Motivation Driving Expenditure on Green Solutions	
		Regulation	Economic Gain
Private Business	**Innovator**		The prospect of economic gains could motivate private businesses to innovate and adopt green solutions. Given the high degree of risk involved, innovation is not usual territory for bank-financed credit products. Bangladesh, regardless, needs home-grown green innovations to tackle its unique environmental and climate change-related problems. We recommend that Bangladesh Bank should instruct banks and financial institutions to establish a Green Innovation Fund with 10% of their corporate social responsibility budget. This fund could provide research grants to SMEs and researchers. **However, funding innovation for the prospect of making economic gain should not be left to the altruism of a profit-motivated banking sector.** If banks were provided the option of sharing patent rights of innovations funded by them, or they were allowed to reserve rights to be credit financiers of commercial projects that adopt these innovations, banks would take the maintenance and utilisation of the Green Innovation

Segment of the Private Sector	Role	Motivation Driving Expenditure on Green Solutions	
		Regulation	**Economic Gain**
			Fund seriously.
	Commercial Production or Merchandising		Even though Bangladesh Bank currently identifies 29 initiatives for commercially reproducing or merchandising green solutions as eligible recipients of Direct Green Finance, the absence of a market for most of these products hampers demand for green finance. Therefore, we suggest that Bangladesh Bank prioritises collaboration with the Ministry of Finance to first create a market for green solutions through fiscal and monetary incentives instead of pursuing a purely supply-driven approach. Further, we advise against introducing low-cost financing to profit-oriented green commercial ventures. Firstly, because it limits the supply of green finance, and secondly, because it deters business innovation. **For green growth to be sustainable, green commercial finance must follow market principles.**
	Installer	The demand for green finance can be driven by regulations that prescribe green solutions. **We suggest that the cost of funds should be lower, and a longer grace period**	Businesses may demand green finance to install eco-friendly solutions that offer cost savings compared to their polluting or resource-inefficient counterpart. In

Segment of the Private Sector	Role	Motivation Driving Expenditure on Green Solutions	
		Regulation	**Economic Gain**
		should be provided to the private sector facilitate compliance with regulations so that going green does not hurt a sector's growth and competitiveness. Bangladesh Bank already maintains four on-lending windows and refinancing schemes that serve as a source for such low cost funds. Additionally, **Bangladesh Bank may select private commercial banks that perform well in green banking and recommend them to seek accreditation with Green Climate Fund.** As Accredited Entities, those banks will then be able to finance cheaper credit for green transformation of the private sector in Bangladesh.	these cases, finance should be supplied at the regular market rate. **Whenever a business case for producing, mechanising, installing, or using green solutions is to be made, the intention should be to develop a market for the green product or service that is capable of operating on market principles so that green becomes the new normal.**
	User	Where costs are high, and the mechanisms for enforcement weak, regulations may not by themselves, guarantee demand for green solutions. This is the case with ETPs, where businesses need easy access to additional green finance to actually use green solutions post-installation. **We recommend that the current classification of Indirect Green Finance should be abolished and banks and financial institutions should be provided with**	If the installation of a green solution is triggered by the prospect of making economic gain, its usage cost is likely to have been factored into the business plans. In such cases, demand for green finance is likely to be non-existent.

Segment of the Private Sector	Role	Motivation Driving Expenditure on Green Solutions	
		Regulation	**Economic Gain**
		clearer instructions on how to monitor working capital loans provided by them for operating ETP (or for regularly using any other green solutions with high operational cost installed for complying with regulations) is actually used for the said purpose. An expense monitoring guideline developed in consultation with an ETP expert should be shared with banks and financial institutions.	
Private Consumers	**User**	Bangladesh Bank may directly or indirectly influence private households to adopt green solutions to comply with regulations. For example, Bangladesh Bank can work with designated agencies to influence household level adoption of green solutions by issuing regulations about specific green criteria (like use of certain percentage of non-fire brick blocks, installation of auto-sensor enabled electricity switch, use of natural ventilation) that real estate financed by banks and financial institutions must meet.	Private consumers may use green solutions for the prospect of making economic gain. Bangladesh Bank can directly influence household level consumption of green solutions by making cheaper consumer credit available for buying 'green certified' consumer durable items purchase of which is financed by bank loans. Even in categories of low value products whose purchase is not financed by bank loans, Bangladesh Bank may, in consultation with other competent agencies, indirectly influence household level adoption of green solutions by making non-green products or services more expensive by limiting credit for their production or trade.

1 The Relevance of this Paper

Given an abundance of literature on green finance, it is important to clarify why this paper had to be written, and how the discussion here is relevant to the green banking landscape of Bangladesh.

First, this paper offers a **diagnostic assessment of the initiatives taken up by Bangladesh Bank** to disburse green finance to the private sector of Bangladesh. This stands in contrast with most other papers on the subject, which are descriptive in nature. Our analysis is informed by a review of green banking related guidelines, circulars, and quarterly reports published by Bangladesh Bank, and dialogues with spokesperson of the Sustainable Finance Division of Bangladesh Bank, executives working in a sample of financial institutions operating under the central bank's jurisdiction, and representatives of the private sector. While in-person key informant interviews have been the primary mode of data collection, a round-table discussion with representatives of the private sector organised at the Metropolitan Chamber of Commerce and Industry has also been a rich source of insights.

Second, we offer a **functional conceptualisation of green finance.** Theoretical definitions of green finance abound but they are often too broad and vague to guide practical application. Further, in the many green banking related guidelines and circulars Bangladesh Bank has issued to date, any definition of green finance is absent altogether. A functional definition is necessary, so that all relevant stakeholders have a uniform understanding of the concept, and that targeted strategies for diffusing green finance across the risk spectrum can be devised. This paper offers a new, applied definition of green finance, and new ways of categorising it, and of tracing motivations that drive its demand.

Third, we recommend what a **targeted approach to finance green transformation of the private sector**, in light of the functional conceptualisation offered in this paper, would look like. In doing so, we address some overarching issues and highlight the importance of an effective support system to implement green banking initiatives of Bangladesh Bank and, in effect, the entire banking sector. The core offer of the final segment of this paper is a high-level strategic plan for creating a demand-driven, rather than the currently existing supply driven, market of green finance.

An important disclaimer at this stage is that this paper is written for the green banking policy makers at Bangladesh Bank, and hence, we primarily talk only about green credit finance. Financing for green transformation of the private sector, like financing for any private venture, can come as either debt or equity investments (Figure 1.1). **Bangladesh Bank is the regulator of the banks and non-bank financial institutions of Bangladesh. It has also historically taken a lead role in developing the green banking sector in Bangladesh. Our discussion here is focused on strategies that would trigger a green transformation of the Bangladeshi private sector through a proper management of demand and supply of green credit finance.**

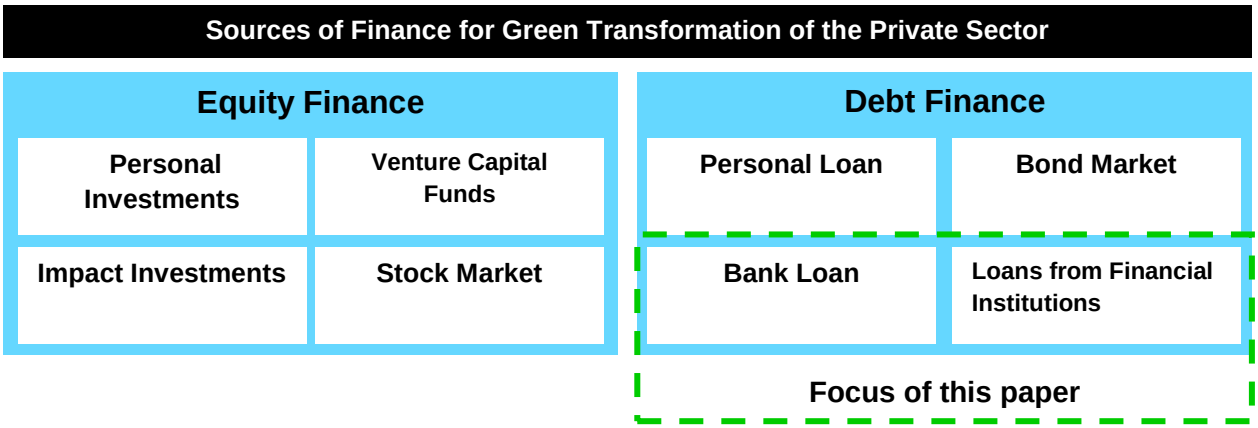

Figure 1.1: Sources of Finance for Green Transformation of the Private Sector

2 *Taking Stock of Bangladesh Bank's Green Banking Initiatives*

Bangladesh Bank is widely recognised as a pioneer of green banking in Asia. What started in 2008 with the issuance of a circular on 'Mainstreaming Corporate Social Responsibility in Banks and Financial Institutions in Bangladesh' to introduce caring for the greater good as a peripheral component of banking has evolved into an essential feature of banking in Bangladesh over the last decade. A number of guidelines and circulars issued by Bangladesh Bank have guided this transition. Here, we provide a chronological account of key green finance related guidelines and circulars issued by Bangladesh Bank and mention the major provisions introduced through them.

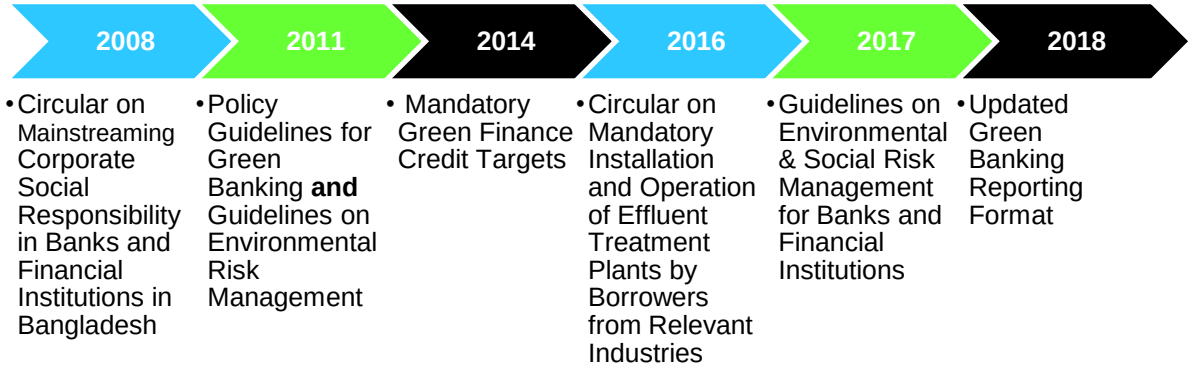

Figure 2.1: Key Green Banking Related Guidelines and Circulars Issued by Bangladesh Bank

The **Circular on Mainstreaming Corporate Social Responsibility (CSR)** issued in June 2008 by Bangladesh Bank contained a list of non-binding suggestions about how banks and non-bank financial institutions could design their CSR programmes. The **Environmental Risk Management Guideline,** launched in 2011, provided mechanisms for qualitatively factoring environmental risk factors into credit decisions. An updated version of the guideline, titled **Environmental and Social Risk Management Guideline**, was been issued in February 2017.

The **Policy Guidelines for Green Banking** issued in February 2011 was, in a practical sense, the beginning of greening of the banking sector, mainly because it made a departure from the non-binding nature of the earlier guidelines, and made compliance compulsory. Banks were given a three-stage plan to green their own internal infrastructure and promote green finance. Issuance of this guideline marked the first time the term 'green finance' was used in any official publication of Bangladesh Bank, albeit without any definition. The guideline facilitated the implementation of a number of good measures: Green Banking Units were set up in commercial banks (later through a circular issued in December 2016 Green Banking Units and Corporate Social Responsibility Units were merged and renamed Sustainable Finance Units), banks started acting on the requirements set by Environmental Risk Management Guidelines, initiatives were taken to reduce carbon footprint of day-to-day banking operations and banking infrastructure, training sessions were organised to educate bankers on green

banking issues. Banks and financial institutions were also provided detailed guidelines on the formation structure and scope of work of the Sustainable Finance Units. At this time, Climate Risk Funds were set up by a number of banks, and production of Quarterly Reports on Green Banking was formalised. The vision set out in the guideline, however, to date has not been fully realised.

The guideline required banks to formulate their own Green Banking Policy as a first priority. While banks did comply with this requirement, the bank-specific Green Banking Policies were so heavily similar to the original guideline issued by Bangladesh Bank that they were almost indistinguishable. Banks did not invest any serious resources into market research in developing a Green Banking Policy. Minimal resources were invested by banks in green marketing (against clause 1.6 of the guideline), developing sector specific environmental policies (against clause 2.1 of the guideline), green strategic planning (against clause 2.2 of the guideline), formulating bank specific environmental risk management plan and guideline (against clause 2.5 of the guideline), or taking up rigorous programs to educate clients (against clause 2.6 of the guideline). These demonstrated the absence of genuine commitment to developing a market for green finance.

The guideline indicated that banks would receive preferential treatments from the central bank based on their green banking performance in terms of being awarded points towards earning better CAMELS (Capital adequacy, Asset quality, Management, Earnings, and Liquidity) rating, getting permission to open new branches, and being recognised in a top-ten green performer bank list compiled by Bangladesh Bank – translation of these intentions into actions has not yet been possible.

The problem generated by the lack of a well-thought out definition of green finance registered its gravity when Bangladesh Bank started publishing Quarterly Review Reports on Green Banking Activities from the first quarter of 2013. The Policy Guidelines for Green Banking required banks to report their green banking activities to the central bank every three months. In 2012, banks were supplied a uniform reporting format to be used in this regard. From March 2013, Bangladesh Bank has been publishing consolidated report. Review of data published in the reports reveals that green finance has mostly been disbursed under the category of Indirect Green Finance. Bangladesh Bank allows classification of green finance into two categories: Direct Green Finance and Indirect Green Finance. Direct Green Finance is defined as financing for the 52 specific green products or initiatives (we discuss the list in the chapter that follows) identified by Bangladesh Bank. Indirect Green Finance is defined as financing for projects having effluent treatment plant (ETP) or similar systems. This lax definition of Indirect Green Finance allows financing provided to a broad range of industries to be identified as green finance simply because a small percentage of the total loaned amount might be used to install or operate ETP (loans disbursed separately only for installation of ETP is considered Direct Green Finance). As can be seen in Figure 2.2, even though it was claimed that 2,370,392.45 million Taka has been disbursed to the Bangladeshi private sector as green finance between 2013 and 2017, only 7% of that (174,399.54 million Taka) is Direct Green Finance.

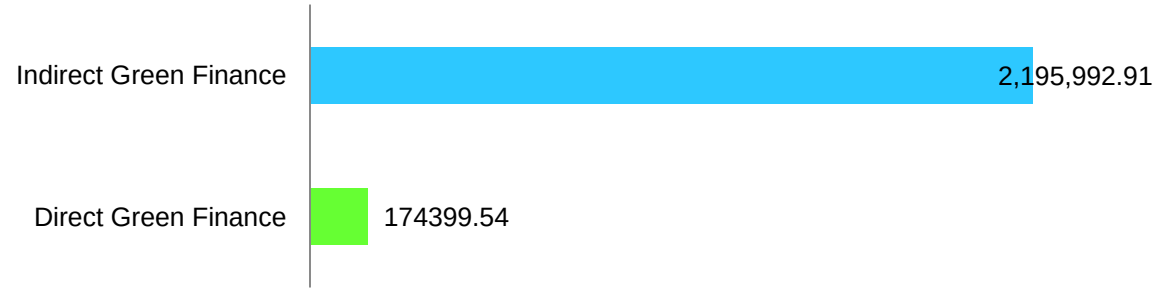

Figure 2.2: Total Direct and Indirect Green Finance Disbursed Between 2013 and 2017 (in million Taka)

Data Source: Green Banking Quarterly Reports of Bangladesh Bank[1]

Further, it can be seen in Figure 2.3 that, even though the loans disbursed as Indirect Green Finance increased impressively over the years, disbursement of Direct Green Finance has been pretty stagnant in comparison. Between 2013 and 2017, disbursement of Indirect Green Finance increased by 78%, while the disbursement of Direct Green Finance experienced only a 43% rise. In absolute terms, the difference is even starker: total amount of Indirect Green Finance disbursed in 2017 was 247,794.52 million Taka more than the amount disbursed in this category in 2013, while the total amount of Direct Green Finance disbursed increased by only 12,825.18 million Taka during the same period in contrast.

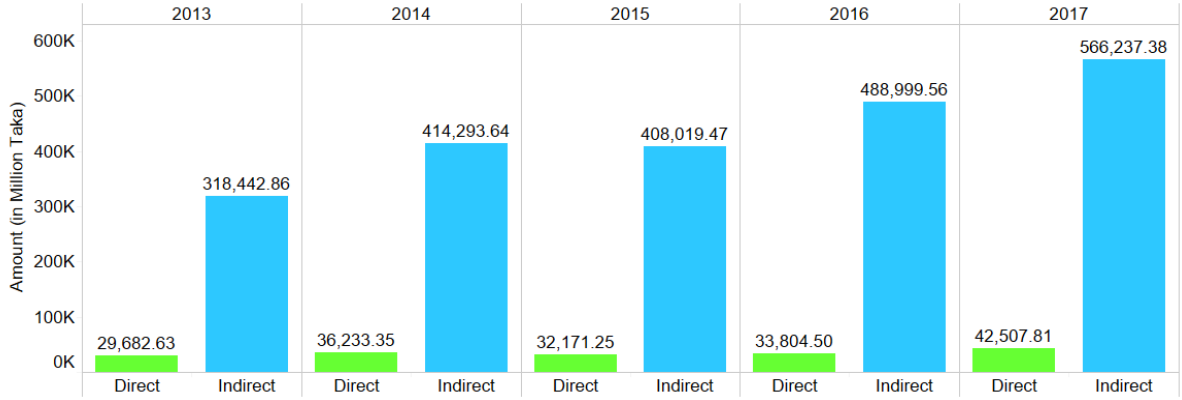

Figure 2.3: Yearly Breakdown of Disbursement of Direct and Indirect Green Finance Between 2013 and 2017 (in million Taka)

Data Source: Green Banking Quarterly Reports of Bangladesh Bank

The Green Banking Policy Guideline further required banks and financial institutions to establish a Climate Risk Fund with 10% of their corporate social responsibility budget. This fund is allowed to be spent on environment, climate change, natural disaster related events or projects. The data in Figure 2.4 shows that 85% of total Climate Risk Fund utilisation across different types of banks and financial institution over the last three years has been spent on events (awareness campaigns, trainings, etc) and not on projects with medium to longer-term impact. This calls into question the effectiveness of the Climate Risk Fund as a whole.

[1] A full list of Bangladesh Bank quarterly reports from which data has been extracted in preparation of the report is annexed.

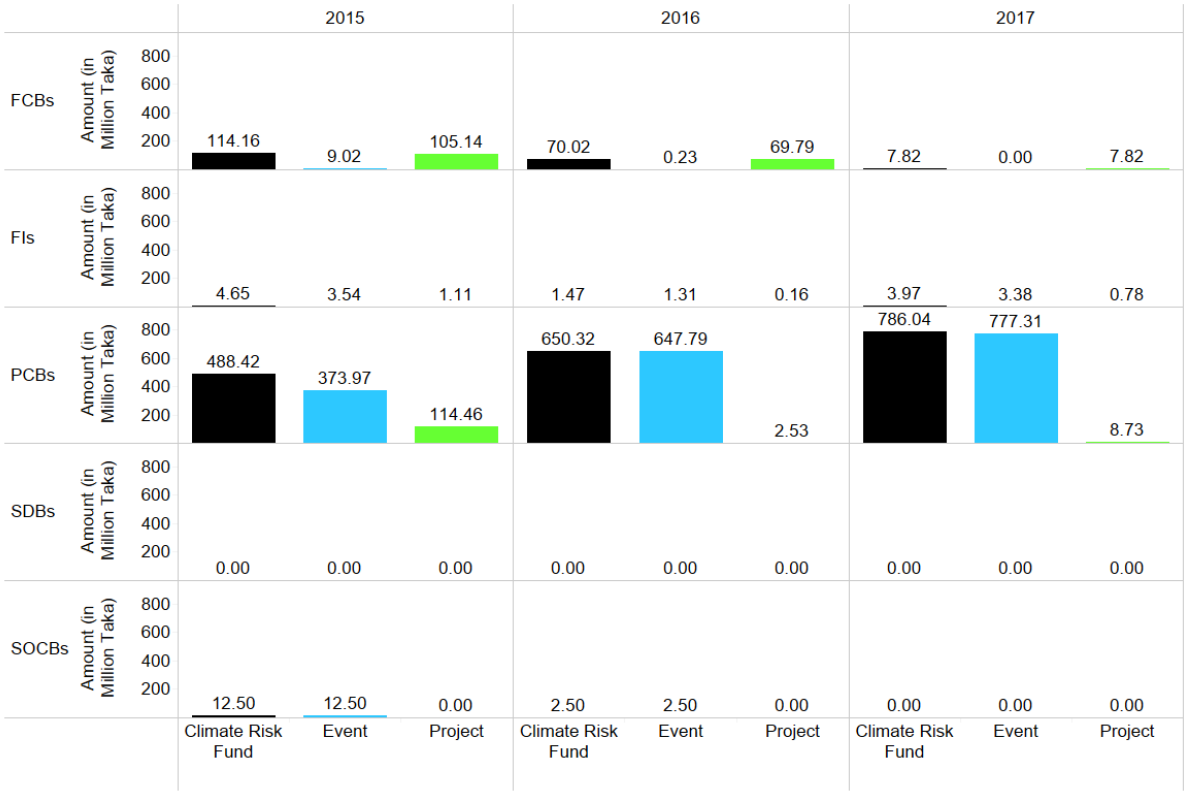

Figure 2.4: Utilisation of Climate Risk Fund in Funding Events and Projects
Data Source: Green Banking Quarterly Reports of Bangladesh Bank

In September 2014, Bangladesh Bank issued a **circular setting the annual Direct Green Finance disbursement target at 5% of total funded loan disbursed (TFLD)** from January 2016. For 2015, the target was set at 5% for all banks scheduled before 2013, 3% for banks scheduled after 2013, and 4% for non-bank financial institutions. It was indicated that meeting the target would positively influence CAMELS rating of the banks and non-bank financial institutions, and failing to meet the target would subject them to actions taken under the purview of Bank Company Act 1991 (amended in 2013) and Financial Institutions Act 1993. Analysis of data that is available for the first twelve quarters from January 2015 to December 2017 since issuance of the circular shows that actual Direct Green Finance disbursement rate has been less than 0.5% of total funded loan disbursed. Figure 2.5 has the details.

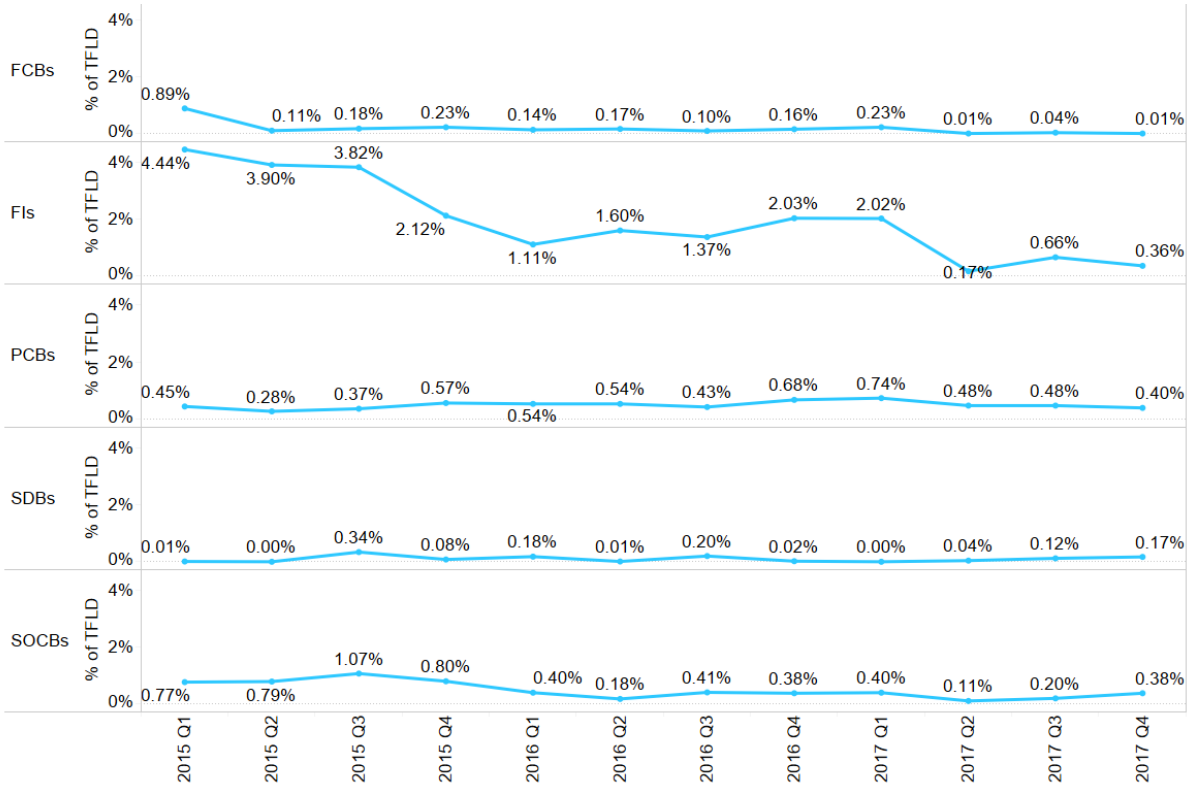

Figure 2.5: Disbursement of Direct Green Finance as a Percentage of Total Funded Loan Disbursed

Data Source: Green Banking Quarterly Reports of Bangladesh Bank

The reason behind such miniscule disbursement of Direct Green Finance as a percentage of total funded loan disbursed is that the 52 sectors targeted by Bangladesh Bank for supplying Direct Green Finance do not have sufficient demand for green funds; a problem we elaborate more on later in the paper.

In December 2016, a **circular was issued mandating banks and non-bank financial institutions to ensure all their present and prospective borrowers from relevant industries install and continually operate ETPs**. Figure 2.6 documents the impact that followed. Private commercial banks, the major supplier of credit finance to such industries, showed a significant spike in loan disbursement for waste water management in the year following issuance of the circular. ETPs are now being installed at a greater rate than any time previously in Bangladesh, however, owing to the high cost of running them, ensuring their continued operation remains a key challenge. This is another topic we talk more about in the paper later.

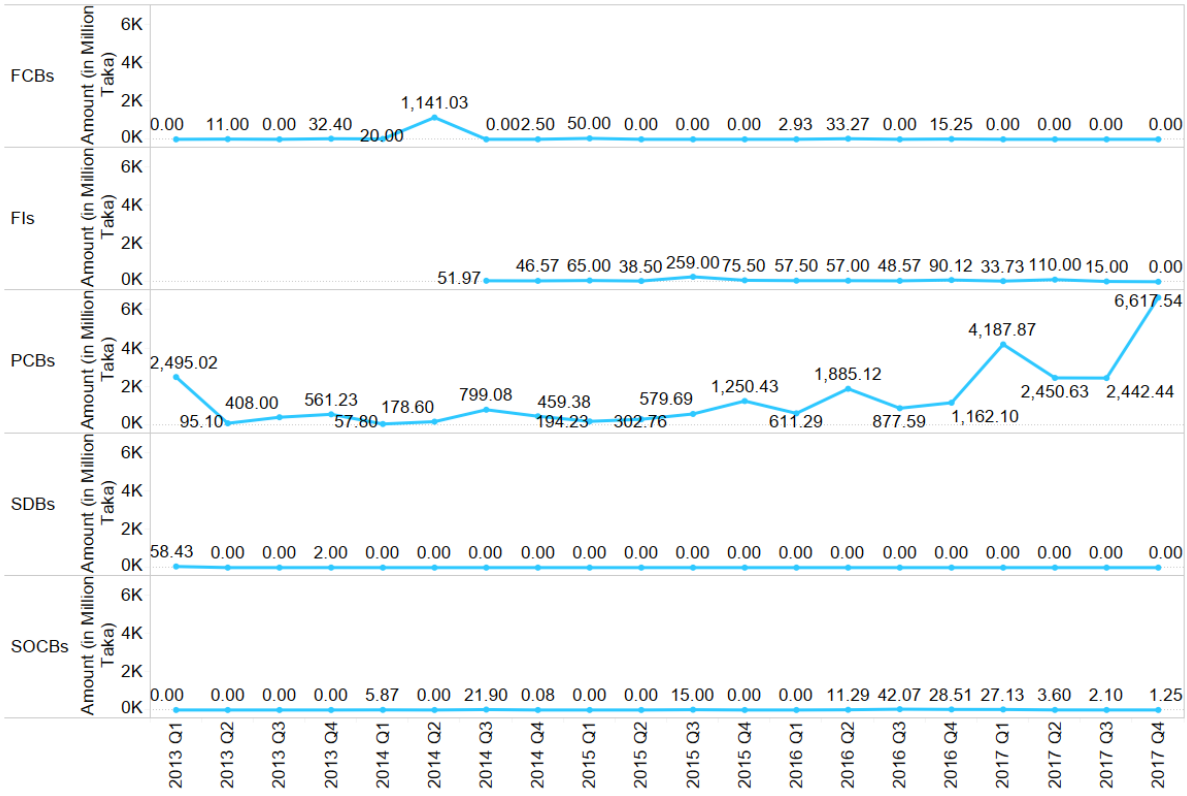

Figure 2.6: Quarterly Funding Provided to the Private Sector for ETP Installation
Data Source: Green Banking Quarterly Reports of Bangladesh Bank

In February 2017, the **Guideline on Environmental & Social Risk Management (ESRM) for Banks and Financial Institutions** was issued, replacing the old guidelines. This guideline provided a quantitative mechanism for environmental and social risk rating, and was more rigourous and user-friendly than its previous version.

At the time of writing this paper, Bangladesh Bank's latest major green banking related initiative has been **issuing an updated uniform reporting format** in January 2018 to be used by banks and non-bank financial institutions to report their green banking activities each quarter. The updated reporting format will allow significantly richer data collection, which in turn, will better insights for future strategy making exercises. During our conversations with bankers, however, they reported lack of management information system (MIS) capacities to complete the new reporting formats adequately. According to them, instead of asking banks and financial institutions to use the updated format from the first quarter of 2018, a better approach might have been giving the banks and financial institutions time to first develop their MIS capacities to collect information for filing the quarterly reports in the updated format correctly. Further, they have reported confusion about the distinctions between 'rural' and 'urban' segregation. According to them, it has not been made clear whether a loan would be considered 'rural' (or 'urban') if it is disbursed from a rural (or urban) branch of the bank, or if it is disbursed for a project or business located in rural (or urban) area. The confusion arises because it is possible that a client may apply for loan in an urban branch of the bank for a business or project that is located in rural area (and vice versa).

3 Towards a Functional Conceptualisation of Green Finance: Definition, Categorisation, and Driving Motivations

On back of the discussion presented in the preceding chapter it is clear that actual disbursement of Direct Green Finance to the private sector in Bangladesh is miniscule. 93% of the green finance is disbursed in the category of Indirect Direct Finance. Nurturing green growth in the Bangladeshi private sector will require a shift in approach to conceptualise what green growth is and the factors that catalyses it. Reconceptualising definition, categorisation, and motivations driving demand and supply of green finance are all going to be critically necessary in this regard. This chapter focuses on doing just that.

'What is green finance?' Green finance is the financing made available to ventures that seek to deliver environmental benefits or mitigate damage to the environment. It is funding for green transformation. Green transformation needs innovation, marketing, and adoption of green solutions (Figure 3.1). Innovation can be triggered by intellectual or entrepreneurial reasons. Marketing solutions involves commercially reproducing and/or distributing them, and adoption of green solutions involves purchasing and/or using them. **Green finance is thus financing provided to innovate, reproduce, distribute, purchase, or use green solutions** (Table 3.1).

Figure 3.1: Drivers of Green Transformation

Table 3.1: Financing Required for Different Elements of Green Transformation

Green finance is funding provided to facilitate green transformation. Green transformation involves:				
Innovating green solutions	**Marketing green solutions**		**Deploying green solutions**	
Example: Financing for innovating bio-degradable plastic	**Reproducing green solutions** Example: Financing for commercially reproducing solar cookers	**Distributing green solutions** Example: Financing for commercially importing solar panels for local distribution	**Purchasing green solutions** Example: Financing for installing ETP	**Using green solutions** Example: Financing for regularly operating ETP

Green finance can be broadly classified into two categories: green public finance and green private finance. Green public finance is financing made available to public enterprises to adopt green development projects and/or embed green orientation in their regular operations. **Green private**

finance is financing made available to private businesses and consumers to produce and/or use green solutions. Private sector, in this paper, is conceptualised as comprising two broad segments – businesses and consumers. Private businesses need financing for innovating, reproducing, distributing, installing, or using green solutions. Private consumers, as individuals or family units, need financing for buying green product or services for their own personal consumption. Buyers of green products or services for business related reasons belong to the private business block (Figure 3.2).

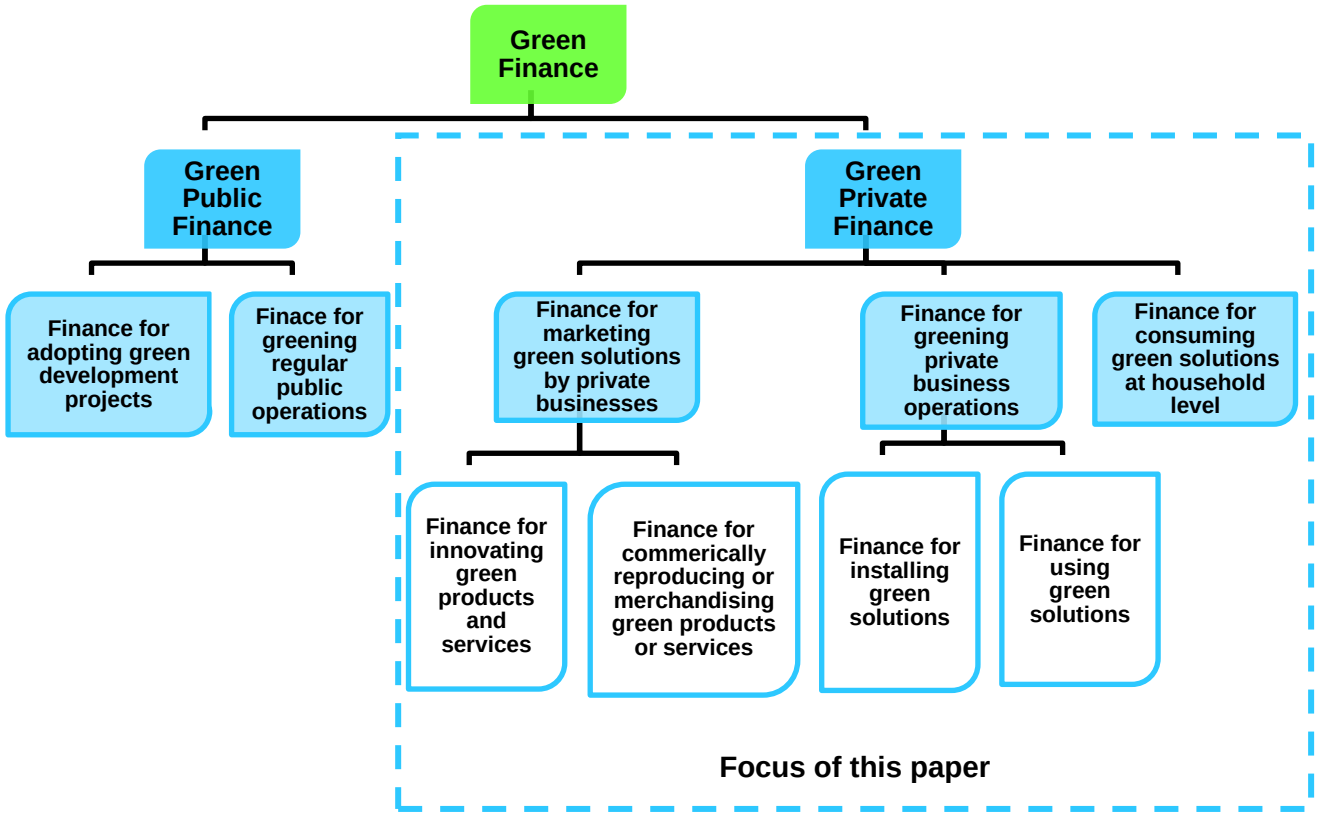

Figure 3.2: Classification of Green Finance

The demarcation between green public finance and green private finance is necessary because the motivations driving green expenditures by the public sector and the private sector starkly differ. While public expenditures on green solutions are, at least theoretically, motivated by protecting or maximising public welfare, private expenditures on green solutions are driven by regulations, prospects of making economic gain, or personal motivations. In Table 3.2 we elaborate our understanding of the drivers motivating private expenditure on green solutions.

Table 3.2: Drivers Motivating Private Sector Expenditure on Green Solutions

Regulations
Expenditure on green solutions by private businesses or consumers can be necessitated by government regulations. In order for regulations to have an impact, certain conditions must hold, such as: ▪ Adequately-staffed, technologically-empowered regulatory institutions, ▪ Effective monitoring mechanisms, ▪ Practicality of the regulations.
Prospects of Making Economic Gain
Businesses or consumers can be motivated to adopt green solutions by the prospects of making economic gains. These gains can come **directly from the sales of green solutions** or **indirectly in terms of savings from the use of green solutions, thus giving them a competitive advantage**. The core condition for successfully triggering green transformation this way is making an economic case for producing, distributing, installing, and regularly using green solutions.
Personal Environmental Motivation
When it comes to creating demand for green solutions at the consumer level, personal environmental motivations can be a driving factor. Triggering green transformation this way requires consumer education.

The two major segments of the private sector – private businesses and private consumers – are driven by different motivations in their different roles as innovators, producers, merchandisers, installers, and users of green solutions. **Regulations, and prospects of making economic gain can drive green expenditure by both businesses and consumers, but personal environmental motivations are a driving factor of green expenditure usually only for consumers.** Understanding what motivates expenditure in their varying roles is important if creating demand for green finance is the goal. **Unless the motivations driving demand for green finance is understood, Bangladesh Bank will not be able to formulate effective strategies to supply green finance to the private sector.** In Table 3.3, thus, we outline the motivations driving green expenditure by private businesses and consumers.

Table 3.3: Motivations Driving Green Expenditure by Different Segments of Private Sector in Different Roles

Segment of the Private Sector	Role	Motivation Driving Green Expenditure		
		Regulation	**Economic Gain**	**Personal Satisfaction**
Private Business	**Innovators**		Research and development (R&D) expenditure by private businesses to innovate green solutions for the prospect of making economic gain could create demand for green funds.	Even though intellectual satisfaction is a prime driver of innovation, here we assume private businesses are driven to innovate green solutions only for the prospect of making economic gain.
	Commercial Production or Merchandising		Private businesses may choose to reproduce or merchandise green solutions for a profit if there is a consumer market for such products or services.	
	Installers	Demand for green finance can be driven by regulations that require private businesses to install green solutions. For example, demand for green finance to install ETPs stemmed from need to comply with regulations.	Businesses may demand green finance to install eco-friendly solutions that offer cost savings compared to their polluting alternatives. For example, the demand for LED lights, which although are more expensive than fluorescent bulbs, reduce the energy bill for lighting by 30 percent and have a payback period of a little more than one year (Mahmud, 2016).	

Segment of the Private Sector	Role	Motivation Driving Green Expenditure		
		Regulation	**Economic Gain**	**Personal Satisfaction**
	Users	Regulation-compelled installation of green solutions may not guarantee its regular usage if the cost of regular usage is high and the mechanism to monitor usage is weak. This has been seen in the case of ETPs. In such cases businesses may need easy access to additional green finance to actually use green solutions post-installation.	If the installation of a green solution is triggered by prospects of making economic gain its usage cost is likely to have been factored in while making the decision to install them. In such cases, demand for green finance specifically to facilitate usage for the prospect of making economic gain is likely to be non-existent.	
Private Consumers	**Users**	Private consumers may use green solutions to comply with regulations.	Private consumers may resort green solutions for the prospect of making economic gain. For example, consumers use compressed natural gas (CNG) instead of petrol to fuel their private cars not because CNG is environment-friendly, but because it is cheaper.	Private consumers may resort to use green solutions because that is the right thing to do. Making this possible requires intensive consumer education. To date, however, it is mostly a developed world phenomenon. In Bangladesh, where piped gas is heavily subsidised, households are reported to keep their gas stove turned on for hours to save a single matchstick (Sarkar, 2018) (Saha, 2014).

Our approach to define, categorise, and trace motivations that create demand for green finance is able to explain why, in spite of the series of initiatives taken by Bangladesh Bank to supply green finance to the private sector over the past years, disbursement of Direct Green Finance both as a percentage of total green finance and as a percentage of total funded loan disbursement remain miniscule. For this, first in Table 3.4 we organise the 52 sectors or initiatives identified by Bangladesh Bank to be eligible for receiving Direct Green Finance according to the categorisation proposed in Figure 3.2 of this paper. Then, in Figure 3.3, we show the total disbursement of Direct Green Finance to these sectors since 2015.

Table 3.4: Organisation of the Sectors Eligible for Receiving Direct Green Finance According to the Categorisation of Green Private Finance Proposed in This Paper

Green Private Finance
I. Finance for Marketing Green Products and Services by Private Businesses
I.I Finance for Innovating Green Products or Services
Bangladesh Bank currently has not identified initiatives to innovate green solutions as eligible recipient of Direct Green Finance.
I.II Finance for Commercially Reproducing or Merchandising Green Products or Services
▪ Solar PV assembly plant ▪ Solar PV power plant ▪ Solar cooker assembly plant ▪ Solar water heater assembly plant ▪ Solar water heater and cooling system assembly plant ▪ Establishing new dairy farm and bio-gas plant together ▪ Producing organic fertiliser from slurry ▪ Medium size biogas plant ▪ Biomass based large scale biogas plant ▪ Poultry or dairy based large scale biogas plant ▪ Electricity saving auto sensor embedded power switch assembly plant ▪ Energy efficient cooking stove assembly plant ▪ LED blub production plant ▪ LED blub or tube light assembly plant ▪ Production of fuel oil in pyrolysis technology ▪ Producing electricity out of waste ▪ Producing organic compost out of waste ▪ PET bottle recycling plant ▪ Plastic waste (PVC, PP, LDPE, HDPE, PS) recycling plant ▪ Paper recycling plant ▪ Recyclable baggage production plant ▪ Recyclable non-woven polypropylene thread and baggage manufacturing factory ▪ Solar battery recycling plant ▪ Lead acid battery recycling plant

- Compressed block brick manufacturing project
- Foam-concrete brick manufacturing project
- Manufacturing brick using environment friendly technology
- Vermicompost production
- Palm oil production
- Wind power based electricity production

II. Finance for Greening Private Business Operations

II.I Finance for Installing Green Solutions

- Solar micro/mini grid
- Solar irrigation pumping system
- Solar powered cold storage
- Installing bio gas plant in existing dairy or poultry farm
- Hydro power based electricity production
- Replacing energy inefficient equipments (like energy efficient lighting system, energy efficient electronics, energy efficient boiler)
- Replacing energy inefficient old-style carbide burners with energy efficient new technology burners
- Waste heat recovery system
- Biological ETP installation
- Biological and chemical combined technology ETP installation
- Replacing chemical ETP into biological and chemical combined technology ETP
- Central ETP installation
- Waste water treatment
- Hazardous waste management
- Sludge management and processing
- Replacing pollution intensive brick manufacturing technology with clean technology
- Converting regular building into green building
- Green industry establishment
- Construction of green building
- Ensuring Work Environment and Security of Workers in Factories

II.II Finance for Using Green Solutions

Bangladesh Bank currently does not recognise any funding for using green solutions as eligible recipient of Direct Green Finance. Loans provided to projects with ETPs or similar systems installed are considered Indirect Green Finance. The specific amount of the total loan utilised to operate the ETP is not traced.

III. Finance for Consuming Green Products and Services at Household Level

- Solar home system
- Solar micro/mini grid
- Installing bio gas plant in existing dairy or poultry farm
- Medium size biogas plant

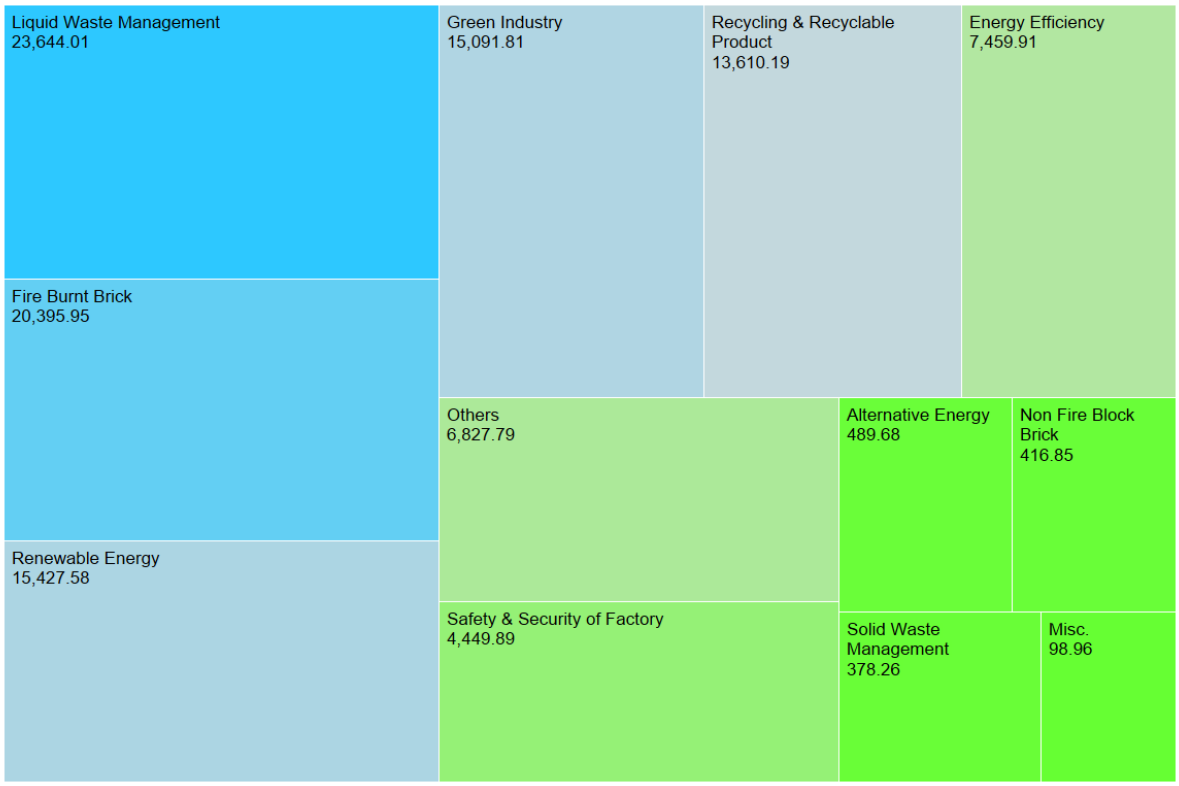

Figure 3.3: Sector-wise Disbursement of Direct Green Finance Since 2015 (in million Taka)

Data Source: Green Banking Quarterly Reports of Bangladesh Bank

As can be seen in Table 3.4, 29 initiatives for commercially reproducing or merchandising green products or services by private businesses, 21 initiatives for installing green solutions in business premises, and 4 initiatives for using green solutions at the household -level are eligible for Direct Green Finance from banks and non-bank financial institutions in Bangladesh[2]. Figure 3.3 shows that initiatives related to Liquid Waste Management, Fire Burnt Brick, Renewable Energy, Green Industry, Recycling and Recyclable Product, Safety and Security of Factory, and Energy Efficiency have received the highest amount of Direct Green Finance, and in that order. Disbursement of Direct Green Finance to all other sectors is negligible in comparison. **The question that needs to be answered is – what has motivated demand for green finance for these sectors and why has demand for green finance for the other initiatives been so low?** We turn back to our proposed way of categorising and tracing motivations behind creation of demand for green finance for an explanation. The explanation is organised in Table 3.5.

[2] The total here sums up to 54 because both businesses and household level consumers are eligible to seek loan for some initiatives like installation of Solar Micro/Mini Grid.

Table 3.5: Explaining Demand for Green Finance in Top Sectors Receiving Direct Green Finance

Green Initiative Cluster	Target Group of Client[3]	Category of Green Finance	Motivation Driving Demand for Green Finance	Comments
Liquid Waste Management	Businesses	Finance for greening business operations	Regulation	Installation of ETP in toxic wastewater producing factories in Bangladesh is guided by Environment Conservation Act 1995 and Environment Conservation Rules 1997. Further, through a circular issued in December 2016, Bangladesh Bank barred all banks and financial institutions under its jurisdiction to provide loans to toxic water producing factories that do not have ETP. Strict enforcement of this regulation has created high demand for green finance for installing ETP.
Fire Burnt Brick	Businesses	Finance for greening business operations	Regulation	Brick Making and Kiln Establishment (Control) Act 2013 required all traditional brick kilns in Bangladesh to be converted into modern, energy efficient ones by 2013. On back of this, demand for green finance in this sector has been created. However, due to the informal nature of a large chunk of brick manufacturing industry, significant potential of disbursing more green finance to this sector remains unrealised.
Renewable Energy	Businesses, Household	Finance for marketing green solutions,	Prospects of making economic	Demand for green finance in the renewable energy sector has primarily been motivated by the prospects of making economic gain. The simple fact that a

[3] Identification of the target group of clients is referenced from (Bangladesh Bank, 2017)

Green Initiative Cluster	Target Group of Client[3]	Category of Green Finance	Motivation Driving Demand for Green Finance	Comments
	level consumers	Finance for greening business operations, Finance for consuming green solutions at household level	gain	large segment of Bangladeshi population live in off-grid areas created consumer market for Solar Home System. The demand for green finance in this sector stemmed from both segments of the private sector: consumers in need of financing to install the systems in their homes, and businesses in need of financing to market the systems to consumers.
Green Industry	Businesses	Finance for greening business operations	Prospects of making economic gain	The Government of Bangladesh provides preferential tax treatment to garments factories having LEED certification by taxing them at a lower rate than their non-LEED certified counterpart. Achieving LEED certification is also good for business for factories dealing directly with international clients. Such prospects of economic gain in the form of tax cuts and better business opportunities have created demand for green finance for establishing green industries.
Recycling and Recyclable Product	Businesses	Finance for marketing green solutions	Prospects of making economic gain	
Safety and	Businesses	Finance for greening	Regulations	Post the collapse of Rana Plaza in 2013, garments industry owners in

Green Initiative Cluster	Target Group of Client[3]	Category of Green Finance	Motivation Driving Demand for Green Finance	Comments
Security of Factory		business operations		Bangladesh has been under increasing pressure to ensure safety and security of workers in factories through concentrated efforts of Government of Bangladesh, Alliance, and Accord. Need to comply with such regulations have created demand for green finance in this sector.
Energy Efficiency	Businesses	Finance for marketing green solutions, Finance for greening business operations	Prospects of making economic gain	Even though eight green initiatives are recognised for being eligible for receiving Direct Green Finance in this cluster, the demand for green finance in this cluster is mostly for LED lights production and assembly plants. As LED lights consume less electricity resulting in a smaller electricity bill, businesses and household level consumers both are inclined to install and use them. In presence of a consumer market for such energy efficient lighting, business are also inclined to market them for the prospect of making economic gain and thus are creating demand for green finance in this sector.

Conclusions based on the preceding analysis essentially are:

- In the socio-economic context of Bangladesh, strictly enforced regulations for greening business operations or the prospects of making economic gain are the primary drivers of demand for green finance.

- Bangladeshi businesses or consumers can be self-motivated to install and use green solutions primarily if the green options are cost-effective or cheaper compared to their non-green alternatives.

- A supply driven approach to disburse green finance has proven to be largely ineffective. Bangladesh Bank would have to first devise a targeted approach to create demand for green finance, and then guide banks and financial institutions under its jurisdiction to supply it. This is discussed in more detail in the next chapter.

4 A Targeted Approach to Finance Green Transformation of the Private Sector

In this chapter, we talk about priorities for designing a targeted approach to disburse green credit finance to the Bangladeshi private sector and the role Bangladesh Bank could play in this regard.

Finance for Innovating Green Solutions

Bangladesh suffers from low levels of investments in research and development. Owing to challenges in funding innovation, the country pays many times over for the use of intellectual property than it receives (Figure 4.1). Patent applications, further, filed with the national patent office by non-residents consistently outnumber the applications filed by residents (Figure 4.2).

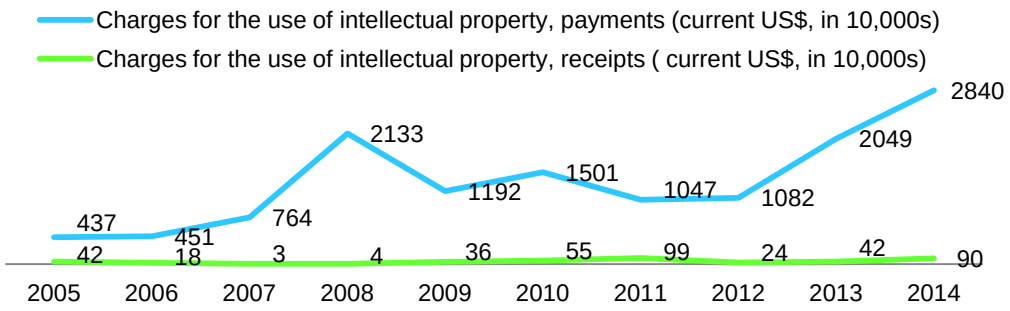

Figure 4.1: Charges for the Use of Intellectual Property

Data Source: World Development Indicators, World Bank

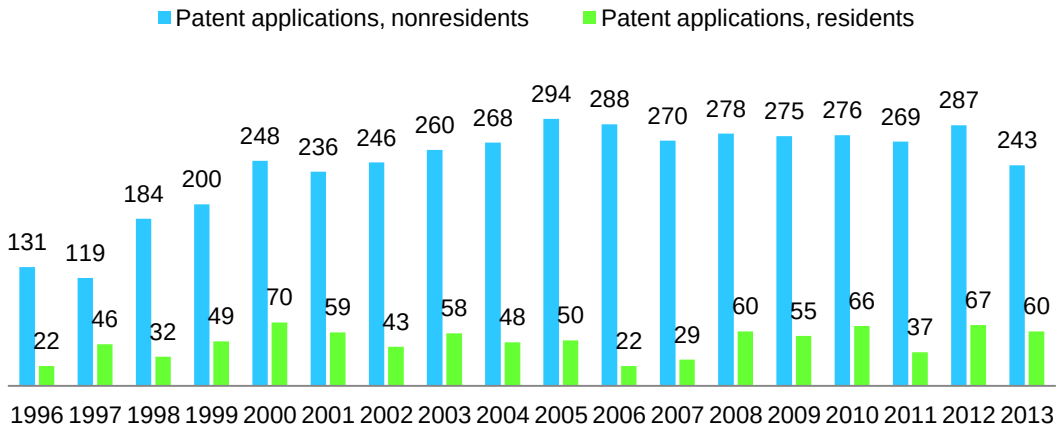

Figure 4.2: Patent Application by Residents and Non-residents

Data Source: World Development Indicators, World Bank

Green growth of Bangladesh can be expedited if locally suitable, home grown green solutions are innovated instead of primarily relying on use of foreign innovations. Bangladeshis have innovated a number of locally suitable green solutions in recent times[4], but access to finance has been reported as a barrier to such inventive initiatives. Locals of the Jhampa village in Manirampur, for example, have created a thousand-foot-long floating bridge that has relieved hundreds of people crossing the Jhampa Baor everyday from tremendous hardships. The 5 million Taka funding for the construction of this bridge, however, had to be raised by 60 members of the community as no form of support from any financial institution could be availed (Farhin, 2018). Productivity of such innovative ventures could be improved by facilitating easier access to finance. Innovation of green solutions may include:

- Innovating new green products or services; or
- Innovating new resource efficient or less carbon intensive means of production, supply, and distribution.

While it may be possible for established, big private corporations to raise bank loans for funding its innovative quests, this is hardly the case with SMEs and start-ups. Private ventures usually kick-off with seed financing from equity investors, and debt financing is attracted at later stages. Financing innovation, green or otherwise, is not a usual territory for banks and financial institutions. Given the sheer magnitude of credit risk involved in financing innovation it is, in fact, not even practical to expect banks and financial institutions to supply loans for innovative inquisitions. Bangladesh Bank, in this case, may consider asking banks and financial institutions to establish a Green Innovation Fund with 10% of their corporate social responsibility budget. As we showed in Figure 2.5, the Climate Risk Fund that banks and non-bank financial institutions currently maintain as per the instruction of Bangladesh Bank is primarily utilised to support climate change or environment related events with short-term impact. To support green growth for the long haul, investments in research and development is indispensable.

Creation of a Green Innovation Fund from the CSR budgets of banks and financial institutions to exclusively finance research on green innovation may prove catalytic in triggering green growth of the Bangladeshi private sector. Even though Bangladesh Bank currently allows utilisation of the Climate Risk Fund for funding environment and climate change related research projects, in absence of any prospect of making economic gains from such engagements, banks and financial institutions overwhelmingly limit themselves sponsoring events related to environment, climate change, or natural disasters, such as awareness-raising campaigns, or distributing relief among the victims of natural debacles. Thus, **we suggest creation of a Green Innovation Fund for exclusively funding green innovation oriented research**, and to create room for banks and financial institutions sponsoring research to make financial gain from such engagements. For this, institutions supporting specific research projects may be allowed to share patent rights with succesfull researchers for commercially viable green solutions developed with their financial support, and

[4] For examples of some government funded green innovations suitable for local needs see: Green Innovations of Rural Development Authority (2014), Ministry of Local Government, Bangladesh.

reserve the exclusive rights to be the credit financier when a commercial venture is brought to market (Figure 4.3).

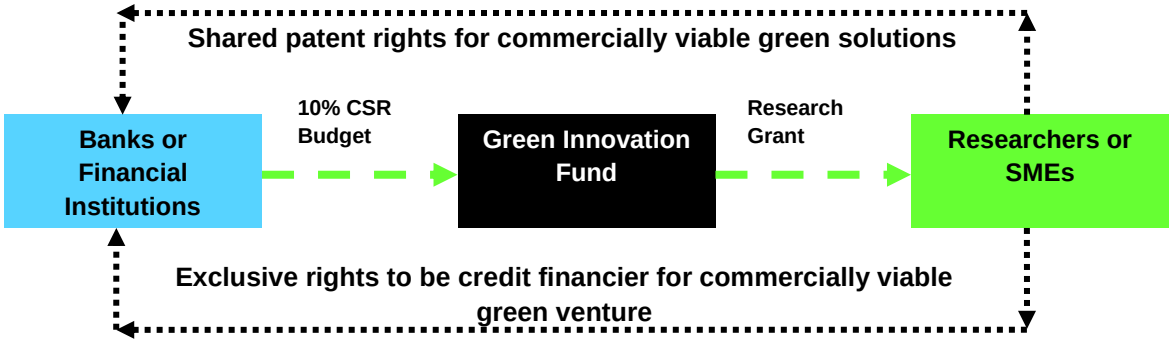

Figure 4.3: Structure of a Green Innovation Fund Offering Win-Win Solutions for Donors and Recipient of Green Research Grants

Finance for Commercially Reproducing or Merchandising Green Solutions

In order to trigger demand from private businesses, policy initiatives would first be required to create a consumer market for such products and services. **In Bangladesh, an overwhelming majority of consumers would choose green products or services if they could make savings from using them, and not merely because of them being 'greener' in nature.** Bangladesh Bank would need the support of Ministry of Finance in this regard to develop green value chains.

For example, if value-added-taxes are levied at a higher rate for non-green competitors of green solutions, consumers will be inclined to pick green solutions over their non-green counterparts. Creation of consumer demand for green solutions would thus lead to an increase in demand for green finance to reproduce or merchandise green products or services. Adoption of green ventures for such pursuit of economic gain would normalise proliferation of green solutions in the economy.

Figure 4.4: Tracing Root of Demand for Green Finance for Commercially Reproducing or Merchandising Green Solutions

We advise against directly making low-cost funding available to profit oriented green commercial ventures. For sustainable green growth, green finance must operate on market principles. To support development of market for green solutions, alternative benefits in collaboration with Ministry of Finance like easing access to market, lowering tax rates, better risk-sharing mechanisms could be offered, but low cost funding is not an optimal solution. **Because, firstly, it limits the supply of green finance, and secondly, it deters business innovation.** Banks and financial institutions should focus on financial health and profitability, and if they are compelled to

provide low cost funds to green businesses they would find financing such initiatives unappealing. Easy access to cheap funds would also send a wrong signal to manufacturers of green solutions or merchandisers making them feel 'protected' against their non-green competitors and deterring investments in business innovation to sustainably compete with them. The downsides of cheap financing for profit oriented green business ventures have made themselves evident in the case of Solar Home Systems in Bangladesh. Even though the country has installed four million Solar Home Systems over the last two decades most of them are of poor quality (Rahman & Mirza, 2018). According to Rahman & Mirza (2018):

> *"High prices charged for inferior systems have emptied the pockets of consumers, but have not had a lasting impact on the overall scenario of energy generation. The average home solar system installed in Bangladesh in the last decade merely had a generation capacity of 20-50 watt, which is good enough for lighting only a few bulbs and fans. While modern solar panels used globally have energy efficiency of up to 22%, the Bangladesh market is still stuck with 10-12% panel efficiency. As a result, even after two decades of successful Solar Home System dissemination throughout the country, the share of renewable energy in total electricity generation in Bangladesh is only 0.07%."*

It is thus important that Bangladesh Bank shifts its priority towards providing monetary and fiscal incentives in collaboration with Ministry of Finance to create a consumer market for green solutions instead of pursuing a supply-driven approach to disburse green finance to manufacture and merchandise green products and services. Currently, for example, Bangladesh Bank identifies production of non-fire brick blocks as a priority sector for disbursing Direct Green Finance. However, as Figure 4.5 shows, disbursement of Direct Green Finance to this sector has been miniscule over the years. This is not surprising because in absence of demand from consumers for non-fire brick blocks, private businesses do not have any economic motivation to invest in its production. A better approach to promote production and usage of non-fire brick blocks would be to take initiatives to create a market for the product. According to the latest issue of the Financial Stability Report published by Bangladesh Bank, loans to real estate construction and other infrastructure projects stood at 704.72 billion Taka in 2017 (breakdown shown in Figure 4.6). This amounted to 8.88% of total loans disbursed by the banking sector to the economy. Instead of giving banks and financial institutions a target for disbursing Direct Green Finance to non-fire brick blocks sector, Bangladesh Bank may bar institutions from loans to real estate or infrastructure construction projects that do not use a specific percentage of non-fire brick blocks. The minimum percentage of non-fire brick block usage should be set at a low proportion initially and gradually increased every year. This will create demand for non-fire brick blocks by the real estate companies, which in turn will motivate private sector brick manufacturers to manufacture non-fire brick blocks, thereby creating demand for Direct Green Finance.

The same approach should be applied for each of the 29 initiatives categorised as ventures for commercially reproducing or merchandising green solutions in Table 3.4.

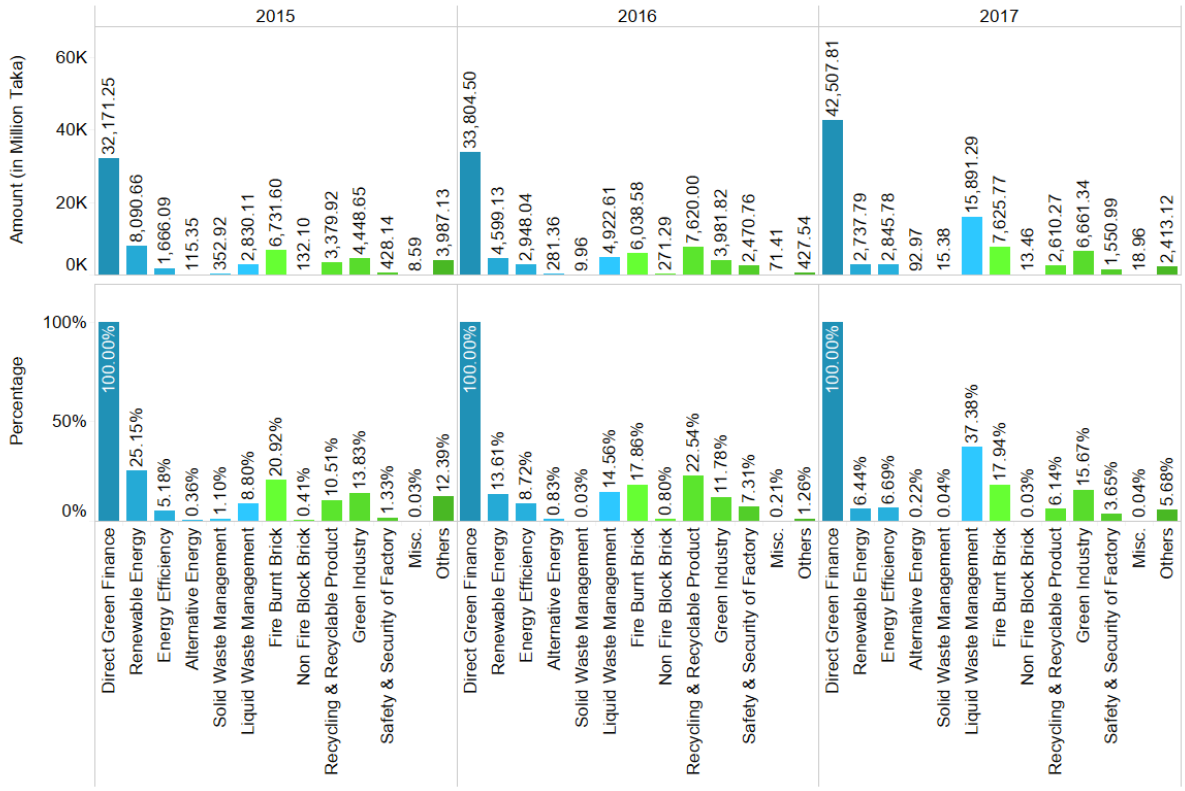

Figure 4.5: Yearly Disbursement of Direct Green Finance to Different Sectors

Data Source: Bangladesh Bank Quarterly Reports

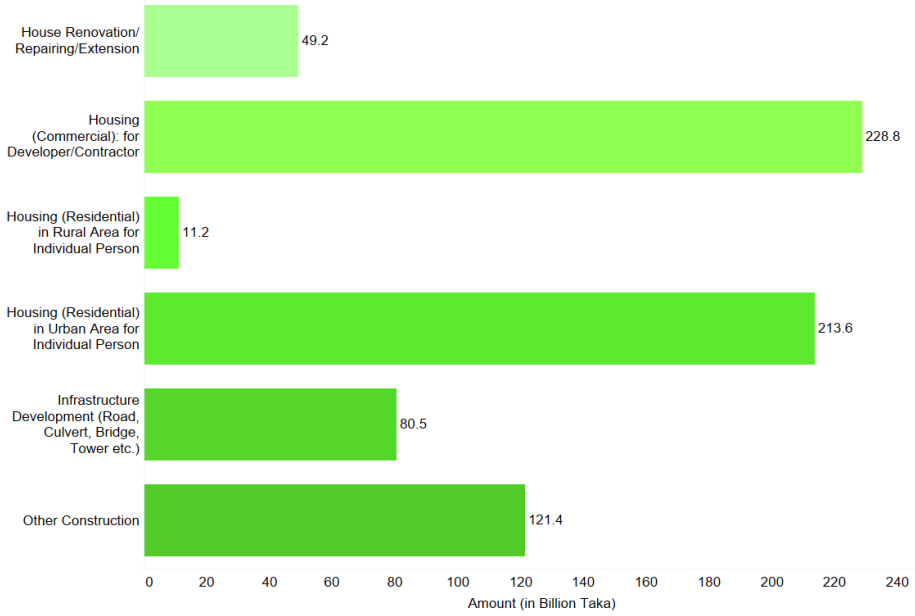

Figure 4.6: Loans to Sectors Using Brick at Raw Material

Data Source: Financial Stability Report 2017

Finance for Installing Green Solutions in Business Premises

As argued in Table 3.3, installation of green solutions can be motivated by regulations or prospects of making economic gain. **If the installation is motivated by compliance with regulations, cost of finance should be lower when the primary motivation is the prospect of making economic gain.** This is because while it is important that Bangladesh pursues a path of green growth, it is also

important to ensure that the pursuit of developing in an environment friendly manner does not harm the economic growth rate. If Bangladeshi firms are compelled to borrow large amounts money for installing green solutions, they may become less-competitive in the international market. This is particularly true for the export-oriented textiles industry for which installation (and operation) cost of ETPs is a major concern. Thus, when compelling firms to install green solutions for the sake of compliance, green direct finance should be disbursed at the lowest possible rate; if possible adjusting only for the time value of money.

Bangladesh Bank, for example, currently identifies both Establishing Green Industry, and Projects Adopted to Ensure Safety and Security of Workers in Factory as eligible initiatives for receiving Direct Green Finance from its Refinance Scheme for Green Products/Initiatives. While Establishing Green Industry is motivated by prospects of making economic gain, Projects Adopted to Ensure Safety and Security of Workers in Factory are motivated by compliance requirements. Bangladesh Bank, however, currently does not make a distinction between the two, and offers a grace period of 9 months in both cases. **We suggest that costs of funds should be lowered when going green is motivated by regulatory compliance.**

The next question would be about the source of this proposed cheaper finance to motivate green solutions. Bangladesh Bank already maintains four on-lending windows and refinancing schemes – Refinance Scheme for Renewable Energy and Environmentally Friendly Financeable Sectors, Financing Brick Kiln Efficiency Improvement Project funded by Asian Development Bank, Refinancing Scheme for Islamic-Shariah Based Banks, and Green Transformation Fund for Textile, Leather, and Jute Sectors[5]. Additionally, **Bangladesh Bank may select a handful of top performing banks doing well in green banking and support them to seek accreditation with Green Climate Fund.** As Accredited Entities those banks will be able to avail and supply funds to the private sector in Bangladesh.

Figure 4.6 shows the percentage contribution by different types of banks and financial institution towards total disbursement of Direct Green Finance in different sectors. As can be seen in the figure, it is primarily private commercial banks that disburse Direct Green Finance to private businesses for installing green solutions across different categories. Selection of banks for seeking accreditation with Green Climate Fund thus should be from the group of private commercial banks only. It is to be noted here that one of the financial institutions under Bangladesh Bank's jurisdiction, IDCOL, has already been accredited as a National Implementing Entity by Green Climate Fund. IDCOL currently specialises in the renewable energy sector, but private industries in Bangladesh are in need of low-cost financing for installing green solutions across a range of categories.

[5] For more on Bangladesh Bank's on-lending windows and refinancing schemes read: Khan et al. (2017), Financing Green Growth in Bangladesh: Challenges and Opportunities, Pages 17 to 18. The paper is available at: http://www.greengrowthknowledge.org/resource/financing-green-growth-bangladesh-challenges-opportunities

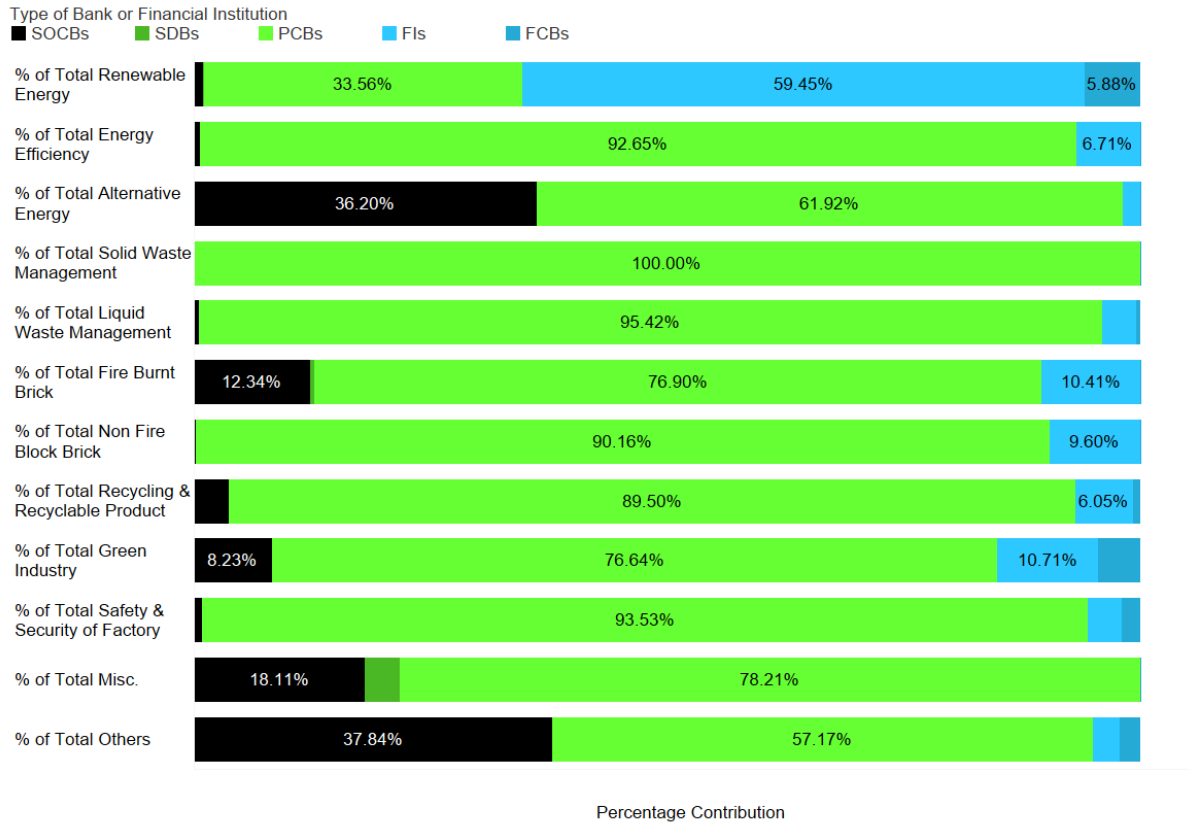

Figure 4.7: Percentage Contribution by Different Types of Banks and Financial Institution Towards Total Disbursement of Direct Green Finance in Different Sectors

Finance for Using Green Solutions in Business Premises

Just as with installation of green solutions, actual usage of green solutions may be motivated by either compliance with regulations or the prospects of making economic gain.

If the installation of a green solution is motivated by prospects of making economic gain, its usage cost is likely to have been factored in while making the decision to install them. In such cases, demand for green finance specifically to facilitate usage of the green solutions installed for the prospect of making economic gain is likely to be non-existent. For example, since the decision to buy energy-efficient machines or to install LED lights in factory premises for reducing the electricity bill is reached in the first place factoring in the cost associated with its usage, separate financing to promote usage of such machineries or lights post installation is not necessary.

On the other hand, regulation compelled installation of green solutions with little guarantee of regular usage or accrual of cost savings is a case where businesses should be offered easier access to additional green finance. For ensuring actual usage of the green solutions installed to comply with regulations, funds at low cost to facilitate its usage should be made available. Failing to ensure regular operation of ETP post-installation is an example of such a scenario. Strict enforcement of relevant regulations has ensured that banks and financial institutions engage with private firms that are required by law to install ETPs have actually installed them. Disbursement of funds to install ETPs is currently recognised as Direct Green Finance as well. As shown in Figure 3.3, Waste Water

Management actually is the sector that attracts the highest amount of Direct Green Finance disbursed. Allocation of funds to install ETPs, however, has not ensured actual greening of operations of the loan recipient firms as making sure that the ETPs are operated regularly has not been possible. From a strictly economic perspective, the high cost associated with operating the ETPs is to blame. At the same time, the Government of Bangladesh has been unable to use its monitoring and enforcement agencies (in this case, the Department of Environment) to ensure continuous usage.

Table 4.1 shows the comparison of installation and operation costs of Biological and Combined Bio-Chemical ETP. Bangladesh Bank recognises disbursement of funds to install these two kinds of ETPs or to convert Chemical ETP into Combined Bio-Chemical ETP as Direct Green Finance. Banks and financial institutions may disburse Direct Green Finance for these initiatives from their own reserves or from Bangladesh Bank's Environment Friendly Initiatives Refinancing Scheme. The table also mentions the key features of the loan disbursed from the central bank's refinancing scheme.

Table 4.1: Installation and Operation Cost Comparison of Different Types of ETP and Features of Loan Made Available for Their Installation Under Bangladesh Bank's Environment Friendly Initiatives Refinancing Scheme

Green Initiatives in Waste Water Management Sector[6]	Maximum Loan Cap	Maximum Grace Period	Maximum Loan Term	Space Needed	Installation Cost ($60m^3$ / hour treatment capacity)	Operation Cost (tk/m^3)[7]	Monthly Operation Cost if Operated 24/7
Installation of Biological ETP	60 million Taka	06 months	05 years	4000-5000 square feet	Between 30 to 35 million Taka	4 to 5	172,000-216,000 Taka
Installation of Combined Bio-Chemical ETP	30 million Taka	06 months	05 years	2000-2500 square feet	Between 7.5 to 9 million Taka	15 to 28	648,000-1,209,600 Taka
Converting Chemical ETP into Bio-Chemical ETP	10 million Taka	06 months	05 years			15 to 28	648,000-1,209,600 Taka

Data Source: (Bangladesh Bank, 2017), (Mithun, 2012)

Even though different studies hail Biological ETPs as the more environment friendly alternative (Mithun, 2012), it can be seen in the table that space required for installing Biological ETP and its installation cost is significantly higher than Combined Bio-Chemical ETP. Further, even though Bangladesh Bank allows higher amounts of loan to be disbursed from its refinancing scheme for installing Biological ETP, the loan comes with the same cost, grace period, and maximum loan term as the lower amounts of loan disbursed to install Combined Bio-Chemical ETP. As a result, Combined Bio-Chemical ETP is more commonly installed in Bangladesh, but since its operation cost is very high it is not regularly run by factories in their bid to cut costs.

[6] Three other initiatives eligible of receiving Direct Green Finance in this sector include Installation of Central ETP, Waste Water Processing Plant and Sewage Liquid Processing Plant but given the low demand of funds for these initiatives we do not include them in the table.

[7] Operation cost includes cost of chemical, energy, and manpower.

The current practice of allowing identification of loans disbursed to firms or projects having ETPs as Indirect Green Finance is ineffective in tracing what portion of the total loan disbursed as Indirect Green Finance is actually used for operating ETP. **We recommend that the current classification of Indirect Green Finance should be abolished and banks and financial institutions should be provided with more clear instructions on how to monitor working capital loans provided by them for operating ETP (or for regularly using any other green solutions with high operational cost installed for complying with regulations) is actually used for the said purpose.** This would require the Bangladesh Bank to actively seek collaboration from government ministries, and particular those agencies responsible for monitoring compliance with regulations through a mixture of incentives and penalties. An expense monitoring guideline would need to be developed in this regard in consultation with an ETP expert that Bangladesh Bank can share with banks and non-bank financial institutions under its jurisdiction. **Only after clear monitoring mechanism is established, should one consider allocation of low cost working capital for facilitating their usage.**

Finance for Consuming Green Solutions at Household Level

Finally, we come at the last category of private green finance proposed in Figure 3.2 of this paper: finance for consuming green solutions at household-level. Even though direct consumer credit accounts for only about 5% of total credit supplied by banks and financial institutions to the economy of Bangladesh[8] (Bangladesh Bank, 2018), private consumers are key in demonstrating behaviour change and in changing the nature of demand that eventually affects the business models of the private sector. Thus, promoting consumption of green solutions at household level must be a strategic priority for Bangladesh.

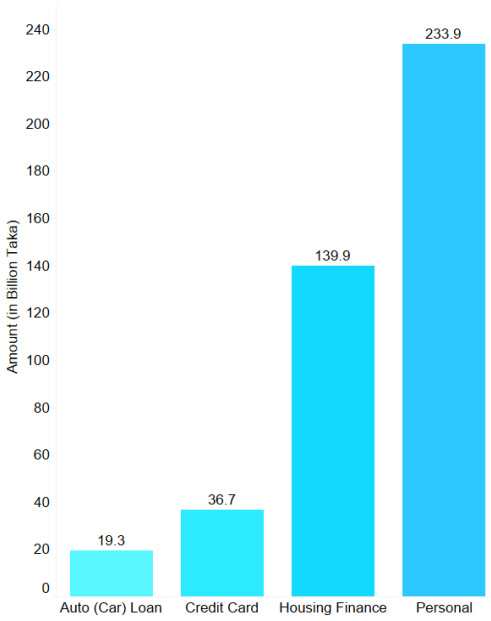

Figure 4.8: Consumer Credit for Different Needs in 2017 Data Source: Financial Stability Report 2017, Bangladesh Bank

As discussed in Table 3.3, household level consumers can be motivated to spend on green solutions for complying with regulations, for the prospect of making economic gain, or simply because personal environmental motivations. **While influencing consumption of green solutions for the sake of personal environmental motivations is not something central bank has control over, Bangladesh Bank can directly and indirectly influence consumption of green solutions at the household level when it's motivated by compliance with regulations or prospects of making economic gain.** For example, Bangladesh Bank may regulate that Housing Finance provided to consumers must be used to buy a certain percentage of green building materials (like non-fire brick blocks, auto-sensor enabled electrical switches) if the client is taking up the construction project

[8] Breakdown of consumer credit disbursement in four key areas in 2017 appears in Figure 4.8.

him/herself, or that the consumer can use the Housing Finance received to buy apartments from real estate developers that have complied with Bangladesh Bank's regulation of using a certain percentage of non-fire brick blocks in the construction project. **Bangladesh Bank may also influence consumption of green solutions for the prospect of making economic gain by making green the cheaper option compared to their non-green counterparts, when feasible.** It can be done directly by providing cheaper consumer credit to purchase apartments, cars, or consumer durable items that are greener, or indirectly by making green solutions cheaper compared to their non-green competitors (Table 4.2).

Table 4.2: Routes for Central Bank to Influence Household Level Consumption of Green Solutions

Type of Influence by Central Bank	Motivation Driving Household Level Consumption of Green Solutions	
	Regulation	Prospect of Making Economic Gain
Direct	Bangladesh Bank can directly influence household level consumption of green solutions by issuing regulations about specific green criteria (like use of certain percentage of non-fire brick blocks, installation of auto-sensor enabled electricity switch, use of natural ventilation) housing developed or purchased with Housing Finance availed by clients from banks and financial institutions must meet.	Bangladesh Bank can directly influence household level consumption of green solutions by making cheaper consumer credit available for buying 'green-certified' consumer electronics. Given that 30% of all electricity produced in Bangladesh is consumed at household level (SREDA, 2017) this move may help the country significantly. Such an initiative, however, could only be implemented after the Energy Star Rating currently being developed by Sustainable and Renewable Energy Development Authority (SREDA) is launched.
Indirect	In the context of Bangladesh, green growth of transport sector is not a clean fuel issue[9], it is an issue of fuel inefficiency caused by extreme traffic congestion and disproportionate utilisation of road space by public and private vehicles. Over the last years, number of private cars registered in Bangladesh has increased in a staggeringly higher	Bangladesh Bank may indirectly influence household level consumption of green solutions by making non-green products or services more expensive to consume. For example, if Bangladesh Bank instructs banks and financial institutions under its jurisdiction to increase the cost of credit supplied to businesses for importing plastic resins, products using plastic packaging will

[9] Since most vehicles are already run by clean fuel: Compressed Natural Gas (CNG).

Type of Influence by Central Bank	Motivation Driving Household Level Consumption of Green Solutions	
	Regulation	Prospect of Making Economic Gain
	rate than number of buses (Figure 4.9). To promote increased use and availability of affordable, good quality public transport, Bangladesh Bank may instruct the banks and financial institutions under its jurisdiction to make loans available to transport business owners for buying buses at easier terms (like longer loan period, lower client down payment, preferable loan rate for replacing fully depreciated vehicles) than loans disbursed to private consumers for buying personal vehicles. If these steps lead to an improvement in the quality of public transport in Dhaka, that will indirectly influence household level consumers to opt for greener commute choices.	become more expensive for households to purchase, which will in turn motivate household level consumers to look for alternatives not packaged in plastic materials. This will involve coordinating with the Ministry of Finance for their inputs on domestic taxes and duties. As a positive side effect, this will also motivate business innovation as producers will look for more environment-friendly packaging materials.

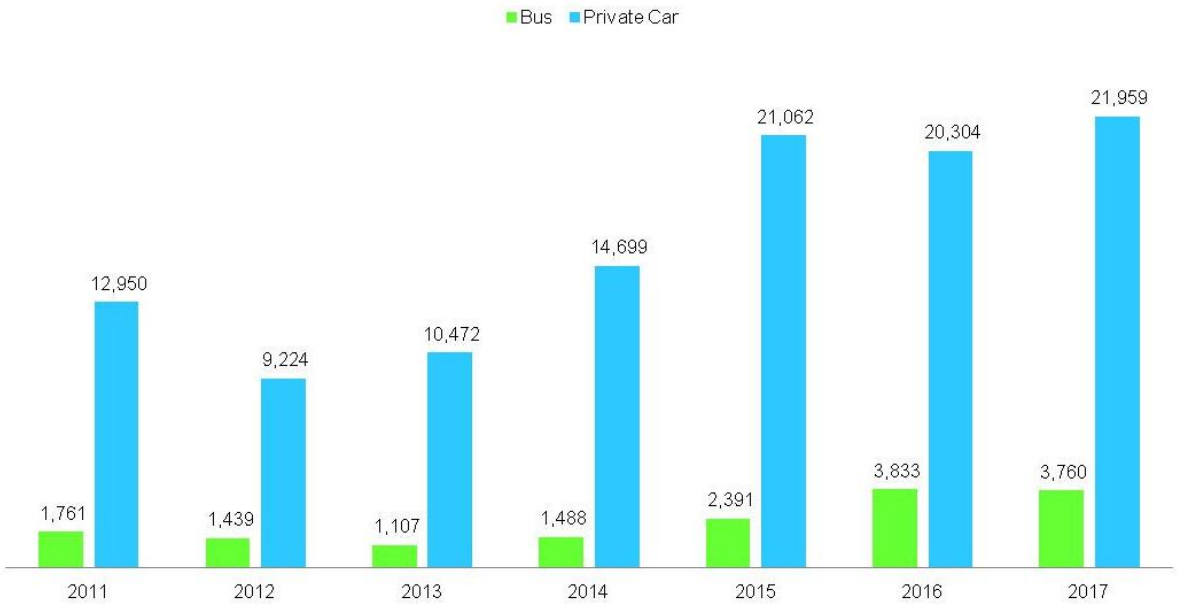

Figure 4.9: Number of Buses and Private Cars Registered in Dhaka Every Year Between 2011 and 2017

Data Source: Bangladesh Road Transport Authority

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Annex: List of Bangladesh Bank Green Banking Quarterly Reports Data Have Been Extracted From

Quarterly Review Report on Green Banking Activities of Banks, As of March 2013, Green Banking and CSR Department, Bangladesh Bank

Quarterly Review Report on Green Banking Activities of Banks, As of June 2013, Green Banking and CSR Department, Bangladesh Bank

Quarterly Review Report on Green Banking Activities of Banks and Financial Institutions, As of September 2013, Green Banking and CSR Department, Bangladesh Bank

Quarterly Review Report on Green Banking Activities of Banks and Financial Institutions, As of December 2013, Green Banking and CSR Department, Bangladesh Bank

Quarterly Review Report on Green Banking Activities of Banks and Financial Institutions, As of March 2014, Green Banking and CSR Department, Bangladesh Bank

Quarterly Review Report on Green Banking Activities of Banks and Financial Institutions, As of June 2014, Green Banking and CSR Department, Bangladesh Bank

Quarterly Review Report on Green Banking Activities of Banks & Financial Institutions and Green Refinance Activities of Bangladesh Bank, July-September 2014, Green Banking and CSR Department, Bangladesh Bank

Quarterly Review Report on Green Banking Activities of Banks & Financial Institutions and Green Refinance Activities of Bangladesh Bank, October-December, 2014, Green Banking and CSR Department, Bangladesh Bank

Quarterly Review Report on Green Banking Activities of Banks & Financial Institutions and Green Refinance Activities of Bangladesh Bank, January-March, 2015, Green Banking and CSR Department, Bangladesh Bank

Quarterly Review Report on Green Banking Activities of Banks & Financial Institutions and Green Refinance Activities of Bangladesh Bank, April-June, 2015, Sustainable Finance Department, Bangladesh Bank

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