

# *Financing Sustainability: Potential and Challenges of Green Finance*

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## FOREWORD

Today, non-renewable energy sources (i.e., fossil fuels) make up around 90% of the global energy consumption<sup>1</sup>. Due to their high carbon content, fossil fuels, during their unearthing, processing, and consumption phases, emit harmful air pollutants, generate enormous volumes of wastewater, and strip vast stretches of lands. Meanwhile, every year, 2 billion tons of solid wastes are dumped on land<sup>2</sup> and over 700 million tons of sewage, industrial, and agricultural waste dumped into water<sup>3</sup>. From 1990 to 2016, the world lost 1.3 million square kilometers of forest<sup>4</sup>, an area larger than South Africa. Overpopulation, rapid urbanization, industrialization, and disregard for environmental consequences have already started to take a heavy toll through global warming, arctic ice melting, rising sea levels, extreme weather, shrinking biodiversity, and worsening human health.

To protect our planet from further degradation, the 2030 Agenda for Sustainable Development<sup>5</sup> and 2015 Paris Agreement<sup>6</sup> have pledged to ensure sustainable production, sustainable management of natural resources, and actions on climate change. Moreover, to fulfill the pledge, United Nations Framework Convention on Climate Change, International Finance Corporation, G20 Forum, Asian Development Bank, and many leading financial institutions and corporations have started raising necessary capital for investment, under the umbrella of “Green Finance.” It has been estimated that around \$600 billion per year is required to conserve land, water, and forests<sup>7</sup>. Another \$350 billion per year is needed to finance green projects, such as renewable energy and energy efficiency.

The interlocuters of Green Finance still reside within the finance space. Even for the experts and the environmental professionals, an overview on Green Finance is hard to find in the repository of relevant literature. The Center for Enterprise and Society (CES), a leading research center at ULAB, aims to fill this gap through this article. The article provides a comprehensive understanding of the concept and scope of Green Finance, its importance and history, various types of Green Finance products, the status of Green Finance in Bangladesh, the impediments of Green Finance in Bangladesh, and some policy recommendations.

## Green Finance: Concept and Scope

Green Finance refers to financing of both public and private investments that promote environmental sustainability. “Green” typically symbolizes nature, life, freshness, fertility, and growth and, therefore, green financing may also suggest a literal meaning of investments for a healthy lifestyle. It includes financial instruments such as debt, equity, and risk management tools, financial institutions and their institutional arrangements and strategies, regulatory frameworks and public policies that all aim to deliver positive environmental externalities<sup>8</sup>. The goals of Green Finance are

- To promote environmentally responsible investments such as renewable energy and energy-efficient projects and technologies that reduce harmful greenhouse gas (GHG) emissions
- To reduce deforestation, transportation and industrial pollution, and carbon footprint by stimulating low-carbon technologies
- To promote clean energy, natural resources conservation, biodiversity, and waste-management programs
- To direct financial flows to industries, businesses, projects, and technologies that support the delivery of the Sustainable Development Goals

In essence, Green Finance aims to boost economic growth and development in a sustainable manner by generating activities with positive and durable externalities and mitigating environmental damage and risks. Thus, environmentally responsible investments that fall under the scope of Green Finance aiming to realize a sustainable environment, lowering carbon footprint, and support Sustainable Development Goals may span a host of enterprise and projects as follows:

- |                                      |  |
|--------------------------------------|--|
| • <b>Renewable Energy</b>            | Wind power; hydroelectricity; solar rooftop, solar home system, solar irrigation; biomass, biogas; geothermal energy; replacement of “coal-based” power generation, etc. |
| • <b>Energy Efficient Technology</b> | Smart Power Strips; wireless energy monitor; geothermal heat pump; eco-friendly smart appliances; LED lighting, etc.   |
| • <b>Waste Management</b>            | Sewage treatment plants; industrial wastewater treatment plants; solid waste treatment plant, etc.   |
| • <b>Recycling</b>                   | Recycling consumer waste; recycling industrial waste; Effluent Treatment Plant (ETP), etc.   |
| • <b>Green Buildings</b>             | Photovoltaic generation; automated ventilation control; daylight-controlled lighting systems; occupancy sensors; rainwater utilization systems, etc.                     |
| • <b>Green Brick Manufacturing</b>   | Vertical Shaft Brick Kiln (VSBK), Hybrid Hoffman Kiln (HHK), Tunnel Kiln, etc.   |
| • <b>Green Transports</b>            | Electric Vehicles; biofuel vehicles; compressed-air vehicles; hydrogen and fuel-cell vehicles, etc.  |
| • <b>Biodiversity conservation</b>   | Maintenance and regeneration of forests; regeneration of grass field; production of bio-fertilizers, etc.  |

- **Sustainable manufacturing**

Using energy and ecology efficient machines, equipments, and technologies; manufacturing of eco-efficient and recyclable products; pollution prevention and control; ensuring safety and work environment of factories, etc.

## The Case for Green Finance

Green Finance is directly linked with the fulfillment of a number of Sustainable Development Goals such as good health and well-being, clean water and sanitation, affordable and clean energy, sustainable cities and communities, responsible consumption and production, climate action, life below water, and life on land<sup>9</sup>. The expansion of Green Finance is also essential in order to realize the central aim of the Paris Agreement, which constitutes a consensus among all nations to contain the global temperature well below two degrees celsius. The following sections explain why it is crucial to exert a full-fledged effort to flourish Green Finance in today's world.

**Climate Change and Energy Security:** The consumption of conventional energy resources (i.e. oil, gas, and coal) results in greenhouse gas (GHG) emission that contributes to global warming<sup>10</sup> which, if unchecked, would increase average global temperatures by four to six degrees Celsius higher than pre-industrial levels. Foreseeably, the consequence would be disastrous for agriculture, biodiversity, human health, and, ultimately, human survival. To combat the global warming and climate change, which is the main agenda in the Sustainable Development Goals (SDGs) and the Paris Climate Agreement 2015, governments have agreed to divert away from the current environmentally destructive strategies for economic growth and focus more on sustainable energy investments. Moreover, over-reliance on fossil fuels, a finite and exhaustible energy source, threatens energy security due to unpredictable price fluctuation and supply-chain disruptions. Without diversifying the energy resources in a sustainable manner, macroeconomic stability and growth can hardly be maintained. Therefore, to contain the impact of climate change and to ensure energy security, investments in renewable energy are crucial.

**Sustainable Waste Management:** The current trend of indiscriminate and thoughtless dumping of household and industrial waste into landfills is hazardous for environment by all accounts. Landfill wastes are damaging to soil and ground water as the toxic chemicals seep into the water resources and cause waterborne diseases<sup>11</sup>. Rotting garbage produces foul and toxic gases, while incineration of landfills is a direct cause of air pollution. Garbage landfills are the ideal place for breeding rodents and pests. In addition to posing direct threat to the health of surrounding communities, landfill also depresses the property values in the neighboring areas. Dumping industrial wastes, both solid and liquid, into water is extremely damaging to aquatic ecosystems. Therefore, to save the environment, investments and growth in sustainable waste management, e.g., recycling system and plant, effluent treatment plant (ETP), industrial waste treatment plants etc., is vital.

**Green Transportation:** The traditional fossil fuel-based transportation is responsible for 23% of all global greenhouse gas emissions and 75% of fossil fuel related emission comes from road transport<sup>12</sup>. Thus, the traditional mode of transportation is one of the major contributors to global warming. Carbon dioxide, Carbon monoxide and other toxic air

pollutants, emitting from transports, may cause cancer, and cardiovascular, respiratory, and neurological diseases. Also, sulfur dioxide and nitrogen oxides, when mixed in cloud water in the atmosphere, produce acid rain which is severely damaging to agriculture and forests. The eco-friendly green transports, such as electric bike, electric car, electric bus or electric train or vehicles fueled by alternative energy resources like compressed-air or hydrogen cell, can minimize the GHG emission significantly. Therefore, investment in the green transportation sector must be emphasized for a sustainable future.

**Sustainable Manufacturing:** Durable technology, machinery, and equipments in the traditional manufacturing process, in many cases, lack efficiency, generate excessive industrial waste, and cause environmental pollution. Sustainable manufacturing, on the other hand, aims to increase operational efficiency, cost effectiveness, conservation of energy, reduction of waste, and environmental protection. The eco-efficient practices and new environmental technologies that need financing to build sustainable manufacturing include retrofitting manufacturing plants to save energy, installation of efficient boiler, compressor, and resource preserving filter, production of bio-based chemicals and bio-fuels, promotion of environment-friendly brick kiln etc.

## The History of Green Finance

**2003:** The origin of Green Finance can be traced back to 2003 when the Equator Principles, a risk management framework for assessing environmental and social risk in project, was launched<sup>13</sup>. Initially, it was adopted by some leading global banks, such as Citigroup Inc, the Royal Bank of Scotland; today, there are 97 member financial institutions in 37 countries that officially practice Equator Principles.

**2007:** Although Equator Principles initiated financing projects that had positive environmental impacts, it is generally accepted that the formal beginning of green finance took place in 2007 with the issuance of green bonds. It was European Investment Bank (EIB) which issued “Climate Awareness Bond” to finance projects to deal with climate change<sup>14</sup>. In the same year, a group of Swedish pension funds, with the help of the leading Nordic corporate bank Sandinaviska Enskilda Banken AB (SEB), initiated a connection between financial market investors and World Bank. World Bank, with its deep understanding and experience in environmental projects, offered green bonds, for the first time, to the financial investors who were seeking return as well as opportunities for a personal contribution to make a positive impact on the environment. Since 2007, the World Bank has issued more than 150 green bonds in 20 different currencies, raising US\$13 billion to finance various environmental projects around the world<sup>15</sup>.

**2010:** In 2010, the Climate Bonds Initiative<sup>16</sup>, an investor-focused not-for-profit international organization solely working for mobilizing the largest capital market for climate change solutions, launched the Climate Bond Standard and Certification Scheme. International Finance Corporation, one of the five member organizations of the World Bank Group, updated Equator Principles to include quantitative and explicit environmental and social criteria to promote and regulate green credit.

**2013:** By 2013, 78 financial institutions from 35 different countries accepted the Equator Principles to advance green credit.

**2014:** In 2014, a consortium of investment banks, issuers, and underwriters, developed the Green Bond Principles<sup>17</sup> to promote disclosure, transparency, and integrity in the green bond market. Since then, the direction and administration of green bond issues were managed by the International Capital Markets Association in Paris.

**2015:** Following the Paris Agreement, an agreement within the United Nations Framework Convention on Climate Change (UNFCCC), in December 2015, the issuance of green bonds and other green finance products accelerated. Under the agreement, developed countries affirmed their commitment to mobilize \$100 billion a year<sup>18</sup> for green investments by 2020. Part of the fund would provide financial resources to developing countries to mitigate the adverse effects of climate change and to adapt with environmental and social criteria for sustainability. As a result, the volume of green finance nearly doubled, from \$41 billion in 2015 to \$92 billion in 2016.

**2016:** In 2016 G20 China summit, Green Finance, as it was included in G20 agenda for the first time, achieved a new momentum. In the summit, G20 Finance Ministers and Central Bank Governors accepted the proposal to form G20 Green Finance Study Group (GFSG)<sup>19</sup> that would investigate the scope of encouraging private investors to increase green investments, encourage knowledge sharing, capacity building and commitment around green financial topics, and identify institutional and market barriers to green finance. Subsequently, China issued \$36 billion worth of green bond and, thus, emerged as the leading country in green financing.

**2017:** The year 2017 marked a record year for global Green Finance by an aggregate issuance of \$155.5 billion, up by 78% from the previous year. The United States, China, and France led the top 10 by accounting for 56% of the total issuance<sup>20</sup>. Many leading financial institutions and corporations such as Fannie Mae, Apple Inc., China Development Bank, Industrial and Commercial Bank of China, Credit Agricole CIB, Asian Development Bank had their remarkable contributions in the record growth of green finance.

**2018:** By 2018, accounting for \$167.3 billion total green bond issuance by 44 countries, green finance is already in the mainstream financial products of the global financial market.

## Diversity in Green Finance Market

Currently, a multitude of "green financial products," intended to generate desirable environmental benefits, are offered around the world. Different financial institutions have developed creative green financial products that complement various traditional financial products and services. Among the Retail Banking products, home mortgages (i.e., green mortgages, energy efficient mortgages), commercial building loans, home equity loans, auto loans etc. have found enthusiastic response from individuals, households, and SMEs. Corporate and Investment Banking products for corporations, NGOs, and public entities include project financing for construction and development of alternative fuel plants, securitization of asset backed securities associated with infrastructure or projects like large

scale reforestation, venture capital and private equity for water resources management, energy efficiency etc. Moreover, the asset management sector in the financial industry that typically offers mutual funds and pension funds has created “Green Fund” whose portfolio consists of clean and renewable energy investments, organic supermarket operations, and other environmentally beneficial ventures. Finally, Insurance sector allows insurance premium differential when the insured objects such as hybrid vehicles or green building reduces negative environmental externalities. Overall, green financial products are characterized by lower interest rates, no service fees, tax rebate, favorable terms and conditions, and various forms of financial benefits for individuals, households, SMEs, large corporations, or security investors. Table 1 illustrates the key characteristics and intended results of various green financial products offered by financial institutions around the world.

**Table 1 Types of Green Finance Products<sup>21</sup>**

Product	Key Product Designs	Financial Institution	Region
<b><i>Retail Product &amp; Service</i></b>			
<i>Home Mortgage</i>	Government led “green” mortgage initiative. 1% reduction on interest for loans that meet environmental criteria.	Dutch Banks	Europe
	MyCommunityMortgage™ and Smart Commute Initiative Mortgage. Available to help borrowers buy energy efficient homes.	Fannie Mae (Citigroup)	US
	10% refund on mortgage loan insurance premiums to purchase energy efficient homes or make energy efficient renovations.	CMHC (CIBC, BMO)	Canada
<i>Commercial Building Loan</i>	Green Loans for new condos that must demonstrate 25%+ energy savings over conventional designs.	TAF/Tridel®	Canada
	Provides first mortgage loans for building and refinancing LEED-certified commercial buildings.	Wells Fargo	US
<i>Auto Loan</i>	Clean Air Auto Loan with preferential rates for hybrids.	VanCity	Canada
<i>Credit Card</i>	GreenCard Visa is the world’s first credit card to offer an emissions offset program.	Tendris Holding B.V.	Europe
	BarclayBreathe Card to include discounts and low borrowing rates to users when buying “green” products.	Barclays	UK
<b><i>Corporate &amp; Investment Product</i></b>			

<i>Project Finance</i>	Investments in wind power, renewable energy, biomass, geothermal, and solar power.	JPMorgan	US
	Energy-from-waste project financing supported by waste contracts with local authorities	Bank of Ireland	Europe
<i>Securitization</i>	Eco-Securitization scheme to finance “natural infrastructure” by linking sustainable management of resources	IFC and DFID	Global
<i>Bonds</i>	Forest Bond designed to fund large-scale reforestation in Panama.	Various	Latin America
<i>Private Equity</i>	investments in wind, solar and bio-fuel through Alternative Investments’ Sustainable Development Investment Program	Citigroup	US
	Private equity focused on forest conservation and preserving biodiversity.	Bank of America	US
<b><i>Asset Management Product</i></b>			
<i>Fiscal Green Funds</i>	By purchasing shares or investing in Dutch Green Funds, customers receive an income tax discount.	Dutch Banks	Europe
<b><i>Insurance Product</i></b>			
<i>Auto Insurance</i>	10% discount for hybrid and fuel efficient vehicles.	CFS, Aviva	Europe & US
	Customer pays less for car insurance if recycled parts are used when vehicle is damaged and requires service.	Credit Suisse	Europe
<i>Home Insurance</i>	“Climate Neutral” Home Insurance Policy. First home insurance product to carry out GHG offsetting based on customer usage.	UK ETA	Europe

## Green Finance in Bangladesh

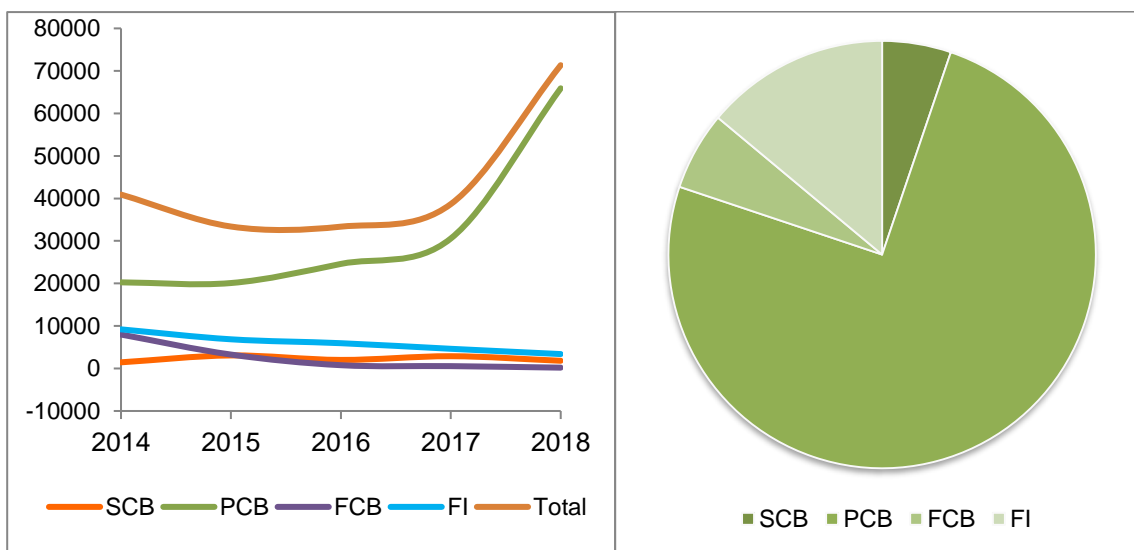
In Bangladesh, the process of financing projects to improve climate resilience began in 2009 by the formation of Bangladesh Climate Change Trust Fund (BCCTF)<sup>22</sup>, an outcome of UNFCCC guided Bangladesh Climate Change Strategy and Action Plan (BCCSAP). Between 2010 and 2012, government allocated US\$100 million every year in the national budget for Climate Change Trust Fund. The Fund thus formed was planned to invest in, among other areas, social protection and health, comprehensive disaster management, low carbon development, and climate research. Until 2017, around US\$ 400 million has been allocated to BCCTF. In addition, Bangladesh also received US\$ 110 million in grant and concessional loans from Climate Investment Funds (CIF), a multilateral climate fund formed with international donors and multilateral development banks such as Asian Development Bank, European Bank for Reconstruction and Development, Inter-American Development Bank, and World Bank Group.

**Table 2 Green Finance in Bangladesh (in million BDT)**

Types of Banks	2018	2017	2016	2015	2014	Total
SCB	1815	2884	2014	3067	1450	11230
PCB	65904	30579	24597	20099	20261	161440
FCB	193	551	769	3273	7984	12770
FI	3390	4633	5948	6864	9200	30035
<b>Total</b>	<b>71347</b>	<b>38666</b>	<b>33358</b>	<b>33390</b>	<b>40909</b>	<b>217670</b>

Source: Sustainable Finance Department, Bangladesh Bank

Fig 1: Trend in Green Finance in Bangladesh Fig 2: Green Financing by Bank Types



To stimulate green finance in Bangladesh, the Bangladesh Bank published “Green Banking Policy Guideline<sup>23</sup>,” the first comprehensive document to operationalize environmental policies in lending practices by commercial banks, in 2011. The policy guideline, consisting of three phases, covers almost all critical areas such as inclusion of environmental risks in credit decisions, establishment of a new department for green banking, criteria for supervision, minimum allocation in the budget for green finance, lending policies for environmentally sensitive sectors, public disclosure of green banking activities, and promotion of research and innovation in green finance. In 2013, Bangladesh issued a similar “Green lending policy guidelines”<sup>24</sup> for Non-Bank Financial Institutions to include environmental considerations and risks in SME finance, rural finance, lease finance, real estate finance, bridge finance, syndicated finance etc. Also, the policy document was updated to strengthen the green financing efforts in various operations like marketing, training and skill development, generation of climate related fund, and building public awareness through quarterly disclosure of all green financing activities.

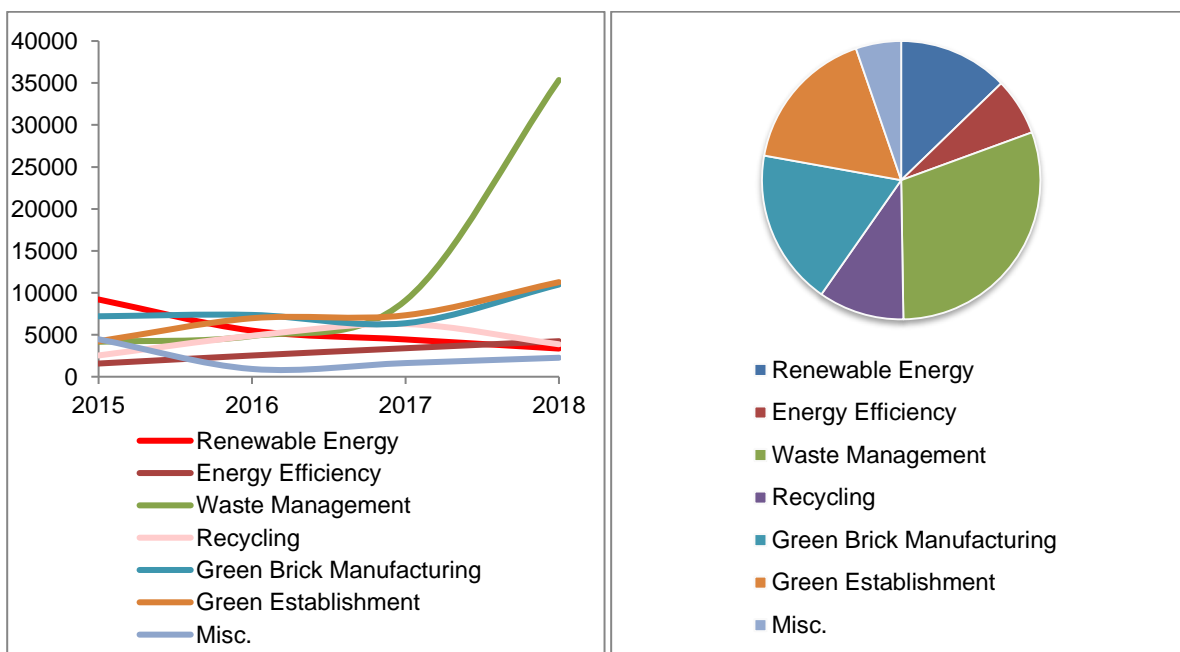


**Table 3 Green Finance Among Different Categories**  
(in million BDT)

Category	2018	2017	2016	2015	Total
Renewable Energy	3356	4444	5496	9201	22496
Energy Efficiency	4237	3398	2530	1574	11740
Alternative Energy	9	133	334	17	493
Waste Management	35357	9085	4850	4160	53451
Recycling	3867	6276	4877	2537	17558
Green Brick Manufacturing	10989	6379	7368	7203	31939
Green Establishment	11270	7325	6973	4232	29800
Misc.	2263	1627	930	4465	9284
<b>Total</b>	<b>71347</b>	<b>38666</b>	<b>33358</b>	<b>33390</b>	<b>176761</b>

Source: Sustainable Finance Department, Bangladesh Bank

Fig 3: Category-wise Trend in Green Finance Fig 4: Category-wise Share in Green Finance



To expedite green finance further, the Bangladesh Bank encouraged all banks and non-bank financial institutions in 2016 to allocate a minimum of 5% of total loan portfolio to green projects. In addition, they should mandatorily put aside 10% of their Corporate Social Responsibility fund to form a Climate Risk Fund for financing relevant projects with a lower interest rate.

The Bangladesh Bank also issued a separate Environmental Risk Management Guidelines (ERM)<sup>25</sup> in 2011 for all Banks and Financial Institutions for the use of the environmental impact assessment of projects during lending process. The guidelines also included a “General Environmental Due Diligence Checklist” for environmental risk assessment against every loan application and a “Sector-specific Environmental Due Diligence Checklists” for highly environmentally-sensitive sectors like cement, chemicals, leather processing, steel, textiles, ship-breaking, etc. In 2013, two years after the promulgation of ERM guidelines, Bangladesh Bank, jointly with International Financial Corporation, studied how Banks and Financial Institutions exercised such guidelines and, as an outcome of the study, recommended that guideline should be upgraded by incorporating social issues alongside environmental ones in lending decisions. Thus, the upgraded version titled Environmental and Social Risk Management (ESRM)<sup>26</sup> was published in 2017 by Bangladesh Bank.

The Government of Bangladesh affirmed its commitment to tackle the effects of climate change in a series of strategic papers. The 2008 National Sustainable Development Strategy (NSDS), the Seventh Five-Year Plan (2015–2020), and the Perspective Plan Bangladesh (2010–2021) are among those strategy documents that recognized the gravity of reducing negative environmental externalities. Tax incentives for investments in renewable energy sectors, arrangements for micro-credit to purchase renewable energy equipment, and enhancement of public expenditure and fiscal allocation on green development activities were some of the strategies to achieve the goal of green transformation of the economy.

Between 2014 and 2018, a total of 217 billion taka has been invested in green projects by various financial institutions, such as state-owned commercial banks (SCB), private commercial banks (PCB), foreign commercial banks (FCB), and non-bank financial institutions (NBFI) in Bangladesh (Table 2). Among them, the contribution of Private Commercial Banks in Green Finance is significantly higher, specially in the recent years, than its peers. Historically, SCB, FCB, and FI have not prioritized green projects in their investment portfolio which is quite evident from their “zero-growth” policy in Green Finance. Among the green projects, there is a notable surge in the waste management investment, primarily attributable to PCB, in 2018 (Table 3). Financing energy efficient technology, green brick manufacturing, and green building, though much lower than the desired level, has been gradually increasing.

## Constraints to Green Finance in Bangladesh

**Long Payback Period:** One of the biggest challenges why both the private investors and financial institutions back away from green projects is the long payback period. High Initial Capital Outlays for industrial green projects discourage the investors since they cannot expect a quick recovery of their initial cost. Investors and lenders hesitate further when they find that the riskiness of green projects is higher than those of the competing projects. The uncertainty due to new technology in an unexplored market along with higher operational risk and a fear of unpredictable change in governmental policy expose green projects to high risk. Only stable corporations with enough financial strength may qualify for bank credit.

**Absence of Penalty and compensation:** Due to the absence of legal framework and appropriate law enforcement mechanism, the victims of negative environmental externalities, emanating from polluting industries, neither sue responsible agents for causing environmental degradation, nor demand compensations for the damage on their health or living standards. Absence of compensation or penalties sustains the unbridled growth of harmful industries. Without a robust environmental regulatory system that ensures taking responsibilities for environmental damage, green projects are unlikely to be prioritized by financiers.

**Non-compliance of risk assessments requirements:** Although there are Environmental and Social Risk Management (ESRM) guideline and Sustainability Reporting Framework that, according to the requirement of Bangladesh Bank, all financiers must comply with during the lending process and annual reporting, the effective application of such guideline and reporting results ‘brown’ and environmentally-polluting projects to take away lion share of loan portfolio depriving the green ones. Moreover, gap in the knowledge and skills to estimate environmental costs and environmental benefits is a major drawback to assess the real worth of any project. Lender’s tendency to rely only on tangible costs and benefits and, thus, ignoring intangible, complex, and distant costs and benefits that are typical in environmental projects impede the promotion of green finance.

**Poor demand from consumers:** Although the exposure and impact of global climate change in Bangladesh is more profound than in western countries, the consumers in Bangladesh are less concerned about the dire consequences in the offing. Various activities such as public awareness campaigns, demonstrations, rally, seminars and symposiums that are regularly organized in the western world to persuade government, producers, investors, and consumers to adopt green policies and lifestyle, is non-existent in Bangladesh. Unlike his or her western counterparts, a Bangladeshi consumer appears to have limited demand for green products. Therefore, implementers of green system do not feel strong a urge to undertake green investments.

**Insufficient subject-matter expertise in Development Sector:** In Bangladesh, there is a plethora of multilateral development banks and donor organizations, such as World Bank, Asian Development Bank, UNFCCC, JICA, and DFID, which are offering donations, grants, and concessional loans to developing countries to finance projects with green purposes. However, a lack of understanding of financing arrangements, record of poor fiduciary and governance in project implementation, and poor capacity to prepare high quality project proposals are the reasons why Bangladesh is significantly lagging behind in availing enough fund. Securing funds for green climate is becoming more competitive among developing countries and inadequate capacity in project management or procrastination in implementation hinders the expansion of green financing.

**Outdated Green Finance policies:** Green finance policy guidelines, stipulated by Bangladesh Bank, require commercial banks to allocate 5% of total loan portfolio across 50 eligible green sectors. However, there are other sectors, such as wind power, solar cooker, solar water heater, solid waste management, and non-fire block brick manufacturing, that have positive environmental impacts but not yet included in the eligibility list. Lack of regular revision and updates to the green banking policy guideline according to new developments in

global invention and deployment of technology and knowledge, holds back the progress of green financing.

## Proposals to advance Green Finance in Bangladesh

**Solving maturity mismatch problem:** Since the payback period of green projects is relatively longer, the financial institutions that hold long term fund can be encouraged to finance green projects. Insurance companies and pension funds, both of which are the holders of long-term fund, are suitable financial institutions that can provide the necessary capital for green projects.

**Financial incentives:** Policy makers and regulators can design various types of financial incentives for generating and promoting green fund. Concessions on Cash Reserve Ratio (CRR), Statutory Liquidity Ratio (SLR), Call Money Rate, and Bank Rate for those Commercial Banks who achieve a satisfactory level of green financing can surely be a game changing strategy. Tax holiday for green projects and green industries can be inspiring for investors and entrepreneurs. Banks and Financial Institutions can develop Deposits and Savings Schemes solely for generating green funds and National Board of Revenue (NBR) may allow tax rebates for the investment on such Savings Schemes. NBR may also allow tax rebates for grants and donations to green funds. Thus, the use of both monetary and fiscal tools can play a great role in fostering green finance in Bangladesh.

**Partnership in green projects:** Syndicated loan and collective ownership of mega green projects can diversify the risk concentration which would play a role in removing the hurdles from undertaking the projects. Such collectiveness can also be applied for encouraging novice entrepreneurs to partner with senior and experienced investors. Investors who share the same green purpose but have limited capital can come together to exert a bigger effort.

**Establishment of Green Bond market:** In Bangladesh, even the market for the traditional corporate bond is almost non-existent, let alone green bond. Corporations, investment banks, regulators and other appropriate policy makers should tap on the huge demand for green bonds. Corporations with steady cash flows can finance their long-term green projects by issuing green bonds. Policy makers, in association with major financial institutions, should decide on the criteria and disclosure requirements for green bonds in line with international standards. A separate green bond index, as well as bond rating according to their environmental and social impacts, may work as catalysts to enhance bond performance. Besides, the market should be open for foreign investors specially for those who are very much willing to invest for a green cause. In fact, to attract foreign investors, additional renovation might be necessary in the financial markets, such as promoting investment friendly cross-border capital flow, rescheduling trading hours, introducing foreign exchange hedge instruments, and establishing standard and internationally acceptable due diligence reporting.

**Change in laws and regulations pertinent to environment:** A change in environmental regulations and effective enforcement is necessary that not only prevents the escalating degradation of environment, but also enables the victims to get compensation from the responsible agents.

**Preventing Green-wash:** There is a term called “green-wash” that indicates the cases where concessional green loans, grants, and donations go to those who use the fund for anything but green purposes. Apparently, the fund application maintains the eligibility requirements for green loans and later invests the fund elsewhere. Such incident may happen for the unscrupulousness of the borrower on one hand and the negligence in monitoring of the projects by lenders on the other. Strict monitoring and stringent disclosure requirements can prevent the incidence of green-washing.

**Green Rating:** As per the volume of green financing and proper monitoring of fund utilization, Banks and Financial Institutions can be rated. The standard CAMELS rating should be integrated with the sustainability aspect. In this regard, ESG rating, or a more comprehensive rating scale, can be used as a tool for integration. A symbol that represents the level of sustainable practice exercised by the financial institutions (such as “green smiley”) can be displayed at the reception area to express to the clients and other visitors how green the institutions are.

**Updating green finance policy:** The existing Green Finance Policy Guidelines should be revised and updated for including new developments, both local and international, in the financial markets. The gaps and incoherence in the policy guidelines resulting from the lack of inter-ministerial coordination and goal alignment should be eliminated. The updated guideline should also include the revised eligibility criteria for green fund, environmental and other risk assessment standard, disclosure requirements, ESG and due diligence reporting.

**Awareness building:** The trajectory of green financing in Bangladesh evince that it is the central bank that pushes Banks and Financial Institutions to generate green loans to industries. The central bank, being a signatory to several global climate change agreements, is reasonably aware of the necessity to overhaul the economic system towards sustainable pathway, but, so far, there is no mention-worthy market demand from consumers for green products and lifestyles in Bangladesh. Ordinary people have yet to realize the significance of climate change movements and global initiatives to contain environmental degradation. Therefore, to reverse the current trajectory, public awareness building should be programmed and implemented to make consumers demand for the green products and services. Appropriate mechanisms for awareness building should be orchestrated with cooperation of government, media, interest groups, and other social organizations.

**Education and Research:** Green financing in Bangladesh is still at a nascent stage and the practitioners, as well as, academics have yet to catch up with its global progress. At this stage, it is beneficial for Bangladesh to stay at international knowledge sharing platform. Green Finance Study Group (GFSG) is one of such platforms that was launched under China’s Presidency of the G20 in 2016. Besides, a good number of international organizations regularly conduct research on green financing who welcome academics from developing countries. Bangladesh Institute of Bank Management (BIBM) and other training institutes can contribute in the necessary skill development programs. Green financing, climate change, and other sustainability issues can be included in the Business School curricula to develop the future practitioners with academic understanding.

**Financial Innovation:** There are specialized financial institutions solely dedicated for green financing in Bangladesh. IDCOL<sup>27</sup> is a prime example of such institutions whose investment

portfolio is composed of renewable energy projects, energy efficient projects, environmental services and the like. Initiatives should be taken to build up more specialized institutions like IDCOL. To bring rural areas under the coverage of small and medium scale green projects (such as Solar Home System or Domestic Biogas production), community-based cooperative fund can be created. Commercial bank can also reach the rural community through agent banking for financing small size green projects. Besides, seed funding, crowd funding and other fruits of financial innovations can also be used for promoting environmentally sustainability. In China, academics and industry leaders have already started the process of applying Financial Technology (Fintech) for the promotion of Green Finance.

## Conclusion:

Our future generations face severe risks, as has been reported by media outlets several times over, if urgent actions are not taken to protect the environment. Every year, people die, in millions, from causes related to air and water pollution<sup>28</sup>. Rapid industrialization and urbanization in the traditional linear economic model result excessive greenhouse gas (GHG) emission, global warming, landfills, depletion of resources, and degeneration of habitats and ecosystems. Finance, being the engine for economic growth, has a role to play to alter such dreadful conditions. To reverse the trajectory of economic development that is self-destructive, Green Finance should steer the economic activities towards sustainable directions. Technologies required to prevent or in some cases, reverse environmental damage exist in droves, relative to what has been deployed. The financial can play an important role in paving the way for application of such technologies. Internationally, Green Finance has advanced to a great extent as is evident from the operations of International Finance Corporation (IFC), United Nations Framework Convention on Climate Change (UNFCCC), G20 Green Finance Study Group (GFSG), and several development financial institutions. In Bangladesh, Green Finance is yet to gain momentum. Absence of updated financial policies, lack of environmental laws, lack of effective law enforcement mechanism, deficiency in environmental risk assessment tools, and a lack of awareness among people are some of the binding constraints to the advancement of Green Finance. More research and policy advocacy is required to enable such advancement, to build on, and if required, challenge the policy recommendations set forth herewith.

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