ABSTRACT

The global issue of climate change is doubly detrimental for various developing countries around the world that are both climate vulnerable and economically vulnerable. This thesis explores whether green bonds, the most sophisticated instrument of green finance to date, can help one particular emerging economy Bangladesh. Bangladesh already has initiatives like the national Climate Budget, frameworks like the Bangladesh Climate Change Strategy Action Plan (BCCSAP) and funds like Bangladesh Climate Change Trust Fund (BCCTF). Through an analysis of the Climate Budget 2018-19, qualitative survey responses from United Nations Development Programme (UNDP) officials at the Ministry of Finance (MoF), and comparative case studies of India, China, Indonesia, Malaysia, Nigeria and Fiji, the paper concludes that Bangladesh should issue green bonds. This should be done by first forming institutional supports and consultations with institutions like the World Bank and drawing up of a Green Bond Guideline. Moreover, it is recommended that the bond be sovereign given the nascent state of the corporate bond market, and also be issued as an Islamic sukuk green bond given the prominence and framework of Islamic banking in Bangladesh. Mobilizing finance toward environmental projects will become increasingly important for climate-vulnerable, emerging economies over the coming years, and it is time we take forward-looking steps now that are informed by global needs.
TABLE OF CONTENTS

LIST OF FIGURES ........................................................................................................................................ v
LIST OF TABLES ........................................................................................................................................ vii
ACKNOWLEDGEMENTS ............................................................................................................................ viii

1. Introduction ............................................................................................................................................. 1
  1.1 The Global Crisis of Climate Change ................................................................................................. 2
  1.2 Green Finance and the Case of Bangladesh ....................................................................................... 2
    1.2.1 Bangladesh Climate Change Strategy Action Plan (BCCSAP) .................................................... 6
    1.2.2 Bangladesh Climate Change Trust Fund (BCCTF) ..................................................................... 7
    1.2.3 Bangladesh Climate Change Resilience Fund (BCCRF) ............................................................... 7
  1.3 Green bonds ......................................................................................................................................... 7

2. Literature Review ................................................................................................................................... 12

3. Data and Methodology ........................................................................................................................... 21
  3.1 Analysis of Climate Budget 2018 ......................................................................................................... 21
  3.2 Comparative Case studies: Green Bond Development in Emerging Economies versus Bangladesh .................................................................................................................................. 31
    3.2.1 China ............................................................................................................................................... 33
    3.2.2 India ............................................................................................................................................... 34
    3.2.3 Malaysia ......................................................................................................................................... 37
    3.2.4 Indonesia ....................................................................................................................................... 39
    3.2.5 Nigeria .......................................................................................................................................... 41
    3.2.6 Fiji ................................................................................................................................................. 43

3.3 Analysis of Climate Questionnaire Responses ..................................................................................... 46
  3.3.1 Project Screening and Monitoring ................................................................................................. 46
  3.3.2 Financial Requirements and Prioritization ..................................................................................... 47
  3.3.3 Updating of the BCCSAP .............................................................................................................. 48
  3.3.4 Climate Allocation to Ministry of Women and Children’s Affairs ............................................... 50
  3.3.5 Climate Allocation to Local Government ...................................................................................... 50
  3.3.6 Climate Allocation for Research and Development ..................................................................... 51
  3.3.7 Lack of Financing Issue ................................................................................................................ 52
  3.3.8 Institutional Coordination Issue .................................................................................................... 52
  3.3.9 Accountability and Transparency Issue ........................................................................................ 54
  3.3.10 Viability of Green Bonds ............................................................................................................ 55
  3.3.11 Progress of Bangladesh .............................................................................................................. 56
4. Conclusion ........................................................................................................................................... 58
Appendix ................................................................................................................................................... 60
   Acronyms and Abbreviations .............................................................................................................. 60
BIBLIOGRAPHY ....................................................................................................................................... 64
LIST OF FIGURES

Figure 1: Five Approaches to Aligning the Financial System to Sustainable Development.........................................................................................................5

Figure 2: 2018 Green Bond Issuances-Top 15 Countries.........................................................................................................................................................9

Figure 3: Annual Green Bond Issuance by Issuer/Bond Type............................................................................................................................................... 9

Figure 4: Self-Assessment and Planning Matrix for Developing Green Bond Markets.................................................................................................14

Figure 5: Roadmap with Common Milestones for Developing Green Bond Markets..............................................................................................................15

Figure 6: Total Economic Losses Due to Major Weather-Related Events (Insured and Uninsured), USD Inflation Adjusted, 1970-2017..............................................................................................................................................17

Figure 7: Bangladesh’s Credit Rating Coming under Pressure Sustained Rice Production Declines..........................................................................................17

Figure 8: Growth in Climate Relevant Allocation (%).........................................................................................................................................................22

Figure 9: Climate Allocation as Share of GDP (%)............................................................................................................................................................... 22

Figure 10: Climate Allocation as Share of Total Budget (%)...................................................................................................................................................... 23

Figure 11: Climate Allocation as Share of Ministry Budget (%).............................................................................................................................................. 23

Figure 12: Total Allocation Budget Growth versus Climate Budget Allocation Growth (%).............................................................................................................24

Figure 13: Allocation in BCCSAP Thematic Areas in Selected Ministry Budget (in Taka Crore)..................................................................................................................25

Figure 14: BCCSAP Thematic Allocation as Share of Total Climate Change Relevant Allocation..................................................................................................26

Figure 15: Climate Relevant Allocation across BCCSAP Thematic Areas for FY 2018-19 (%) .................................................................................................................................................27
Figure 16: Climate Relevant Budget Allocation for Top Five Allocating Ministries for FY 2014-15 to FY 2018-19 (in Taka Crore)…………………………………………………………………………………………………….. 28

Figure 17: Climate Allocation as Share (%) of Ministry Budget for FY 2014-15 to FY 2018-19 …………………………………………………………………………………………………..29

Figure 18: Share in Estimated Allocation for FY 2018-19…………………………………………………………………………………………………………………………… 30

Figure 19: Approved Project Implementation of BCCTF across Ministries Rate (%)…………………………………………………………………………………………… 31
LIST OF TABLES

Table 1: Selection Attributes of Countries in Case Study........................................ 32
Table 2: South Asia’s Bonds, Equities and Banking Assets (2006)......................... 29
ACKNOWLEDGEMENTS

I would like to thank Dr. Christoph Hinkelmann for his continuous support and guidance throughout the entire thesis development process. He was invaluable in providing encouragement, and helped immensely in conceptualizing and framing my ideas and their implementation along the way.

I would also like to thank Dr. Brian Davis for his contagious enthusiasm and out-of-the-box thinking that helped me feel confident in my ideas. He has been an amazing mentor throughout my undergraduate career as a whole and I cannot thank him enough for all his inspiration and reassurance throughout the thesis process and in helping me envision my future endeavors.

I would also like to thank Center for Policy Dialogue for the resources in my analysis of the Climate Budget and the UNDP officials who offered their time and effort in responding to my questionnaires.

Lastly, I would like to thank my parents, who were an inexhaustible source of support, ideas and helped me make key connections.
1. Introduction

Climate change has been pushed to the frontier of global issues facing us today, with many developing countries being disproportionately affected by its effects. I believe the real goal of finance is beyond just the accumulation of wealth; it is rather a way of moving wealth sustainably and inclusively toward the interconnected web of social and environmental outcomes that make up our lives. This goal is more relevant than ever; as is the question of where and with what incentives and structures we move money. As such, green finance, which is finance mobilized toward environmental ends is a crucial instrument. Green finance has been on the rise and is projected to diversify and increase in volume worldwide. It has been evolving over the last decade, with growth in areas of public finance, green bonds, green banking and equity financing. This paper is concerned with green bonds specifically, which are, as of now, the most sophisticated class of green finance. However, there is not a lot of literature discussing how specific climate-vulnerable, emerging economies can rise to the risk of climate change and environmental factors through green bonds. That is why this paper will examine the case of one such country, Bangladesh, and look into whether it should issue green bonds to supplement its current initiatives and frameworks in green finance. Bangladesh’s case is crucial because it is a developing country that’s one of the most-climate vulnerable in the world. Moreover, not much research has been done in this area for Bangladesh, although in recent years the country is taking on the path to not only GDP (Gross Domestic Product) growth, but growth that is sustainable and inclusive through projects like Inclusive Budgeting and Financing for Climate Change (IBFCR), whose intention is to strengthen, build and promote the use of country systems to identify sources of climate finance (domestic and international) and manage climate response in
Bangladesh in a transparent and effective way (UNDP Bangladesh). This paper deals with whether green bonds are a viable option for Bangladesh through three lenses. Firstly, the paper takes into account the current green finance mechanisms already in place through the Government of Bangladesh (GoB) in the Climate Budget. Secondly, the paper analyses comparative case studies of other emerging economies’ example with usage of green bonds. Lastly, the paper takes into account expert opinions of UNDP officials who worked in IBFCR.

1.1 The Global Crisis of Climate Change

Climate change is arguably one of the biggest global issues facing the world today: 97 per cent of actively publishing climate scientists agreeing that climate-warming trends over the past century extremely likely human-induced (NASA). While it is certainly a global issue, there is a mismatch in that the largest contributors and victims of climate change effects are not evenly spread out. Research finds that 20 of the 36 highest emitting countries are among the least vulnerable to negative impacts of future climate change. On the other hand, 11 of the 17 countries with low or moderate greenhouse gas (GHS) emissions are acutely vulnerable (Watson, Fuller and Author). In context of this issue, climate finance is a crucially emerging topic. This emphasis is already made in the Paris Agreement, which stipulates, “Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development” (United Nations). With regard to developing country needs, it says that developed country parties should provide financial resources to developing country parties for climate change adaptation and mitigation, taking into account country-driven strategies, priorities and needs (United Nations Framework Convention on Climate Change).

1.2 Green Finance and the Case of Bangladesh

One particularly vulnerable country is Bangladesh, at grave risk because of not only its
geographical location on a delta and its low-lying landscape, but also due to social and economic issues like population density, illiteracy, poverty, lack of institutional setup etc. According to Global Risk Index 2018, Bangladesh was one of the 10 most affected countries from 1997 to 2016, along with other nations like Honduras, Haiti and Myanmar (Eckstein, Künzel and Schäfer). For this paper Bangladesh was chosen because one, that is my home country, and two, time and time again it had become clear how the nation is becoming increasingly prone to natural disasters and other climate-related issues. This has various environmental, economic and social implications like the incidence of climate refugees. One thing to keep in mind is that the effects are not in the far-off future; despite being a long-term process, they’re an immediate reality in many places around the world today.

As such, Bangladesh has a crucial need to mobilize green finance. According the United Nations Environment Program (UNEP), green financing is “to increase level of financial flows (from banking, micro-credit, insurance and investment) from the public, private and not-for-profit sectors to sustainable development priorities”. A key part of this is to better manage environmental and social risks, take up opportunities that bring both a decent rate of return and environmental benefit and deliver greater accountability. According to the UNEP, the program mainly focuses on three areas (UNEP):

1. Supporting public sector on creating enabling environment
   - Guidelines and case studies
   - Interactive dialogue between private and public sector

2. Financing mechanisms
   - Green bonds
- Green insurance

3. Micro-credit for sustainable development

- Community enterprises

- Pilot projects

The UNEP enquiry of Green Financing in the Asia Pacific also looks at five approaches to aligning the financial system to sustainable development, as shown in Figure 1 below (UNEP).
Bangladesh has been a pioneer in green finance, and the initiatives have largely been by the Government of Bangladesh (GoB) and the Bangladesh Bank (Central Bank of Bangladesh). This paper will primarily analyze the work done by the GoB: the Bangladesh Climate Change Strategy Action Plan (BCCSAP), the Bangladesh Climate Change Trust Fund (BCCTF), the Bangladesh Climate Change Resilience Fund (BCCRF), as well as the Climate Budget as part of the annual national budget.
Due to the nature of environmental issues Bangladesh faces, the nation is a leader in climate change adaptation strategies, particularly in flood protection systems, disaster management schemes and irrigation programs. Contrary to what might be expected, the Climate Public Expenditure and Institutional Review (CPEIR) launched in 2012 revealed that three quarters of climate funds come directly from the GoB while only one-quarter comes from international donors. Moreover, climate funding is multi-dimensional across numerous government departments. Overall, Bangladesh had been spending USD 1 billion a year- 6-7 per cent of its annual budget, which is already annually almost one fifth of World Bank’s estimation that it will need USD 5.7 billion a year by 2050 (United Nations Development Programme).

1.2.1 Bangladesh Climate Change Strategy Action Plan (BCCSAP)

BCCSAP is a knowledge strategy published by the Ministry of Environment, Forest and Climate Change (MoEFCC) that sets out 44 programs to be taken out over the short, medium and long term in six key areas:

- Food security, social protection and health
- Comprehensive disaster management
- Infrastructure
- Research and knowledge management
- Mitigation and low carbon development
- Capacity building and institutional strengthening

In all of these strategic areas, the focus is on the poor and vulnerable; in particular, women and children. All programs are expected to provide synergies with the government’s Vision 2021, which is a political manifesto of development goals (LSE).
1.2.2 Bangladesh Climate Change Trust Fund (BCCTF)

The BCCTF has been operational since 2010, and funds programs and projects from the national budget to help communities recover and become resilient to climate change impacts. It is in fact the first ever national climate fund established by a Least Developed Country (LDC) and is exemplary to other countries for institutionalizing national climate finance (UNDP).

1.2.3 Bangladesh Climate Change Resilience Fund (BCCRF)

This fund was established in 2010 with a partnership between the GoB, development partners and the World Bank. It has mobilized funds from development partners like Denmark (USD 1.2 million), the European Union (USD 37 million), Sweden (USD 13 million), and the United Kingdom (USD 95 million), Switzerland (USD 3.4 million), AusAID (USD 7 million) and USAID (USD 13 million). Moreover, it is planned that 84.6% will be funded by government institutions, 10% by NGOs (Non-Government Organizations) and other civil society organizations under the community-based program, and 2% by the World Bank to provide analytical work and technical assistance. For this, the World Bank charges, in total, 3.4% for overall trust fund and project management (World Bank).

1.3 Green bonds

Bangladesh is currently looking into green bonds as a green financing option. Green bonds are similar to traditional bonds, which are tradable securities with repayment terms that are contractually set at issuance. Their emergence has been recognized by the United Nations as “one of the most significant developments in the financing of low-carbon, climate-resilient investment opportunities”. The green aspect of the bond means that it’s aimed at financing investments with an environmental benefit or reducing vulnerability to extreme environmental
changes. This also means that green bonds are subject to a monitoring system that tracks whether the projects are in fact “green”. They can be issued by governments, banks, municipalities or corporations and can be applied to various debt formats like private placement, securitization, covered bond and sukuk.

In 2018, as Figure 2 shows, USA and China led once again in terms of green bond issuance (Climate Bonds). Figure 3 shows that while corporates have dominated the green bond scene across the years, we are seeing sovereign bonds come up recently, as well as solid issuances from financials. It also shows the overall steeply increasing growth of green bond issuance, although issuance fell overall in 2018 after a very sharp increase in 2017 (Bloomberg NEF).
Figure 2: 2018 Green Bond Issuances - Top 15 Countries

Source: Climate Bonds Initiative, 2019

Figure 3: Annual Green Bond Issuance by Issuer/Bond Type

Source: Bloomberg NEF, 2019
The plethora of benefits and opportunities that green bonds provide includes but is not limited to:

1. **An additional source of green financing:** As there are huge green investment needs worldwide, new means of financing are needed that can leverage a bigger investor base that include institutional investors like insurance companies and sovereign wealth funds.

2. **Opportunity for greater long-term green financing by addressing maturity mismatch:**
   In many countries, particularly developing ones, banks are constrained from providing long-term green loans because of the short-term maturity of their liabilities and a dearth of instruments that provide risk-hedging. Moreover, corporates that also can only access short term bank credit face refinancing risks for long-term green projects, and these restrictions can be overcome with medium-term and long-term green bonds.

3. **May offer cost advantages:** As the green bond market grows over time and attracts a wider investor base, with sustained demand, there may emerge a better pricing for green bonds versus traditional bonds. To reduce funding costs, many countries are considering government incentives like taxing reduction, subsidies etc.

4. **Transitioning from traditionally “brown” to “green” sectors:** Materializing the benefits of green bonds can help transition issuers in less environmentally friendly sectors to participate in the green bond market.

5. **Catering to responsible, long-term investors through new green financial products:**
   Institutional investors generally have a preference for long-term, sustainable investments, and green bonds allow them to do that and diversify portfolios; also, the green labels reduce the “search cost” for seeking out such investment.

Some commonly cited disadvantages of green bonds by investors and issuers include:
1. **For investors**: The green bond market is still small, emerging, and potentially illiquid, with a lack of unified standards that can pose reputational risk. The limited scope in legally ensuring green integrity and lack of standardization that can cause complexities as well

2. **For issuers**: There are up front and ongoing transaction costs like labeling, administrative, certification etc. as well as reputational risk if the green credentials are under suspicion (UNEP)
2. Literature Review

In general, research in the area of green finance for developing countries shows similar findings throughout, including challenges that include setting up national strategies in the context of international measures, as well as the need for training and capacity building for regulators, issuers, investors and verifiers. In case of Bangladesh, spillover financial effects of economic losses of climate change may include a worsening credit rating, domestic inflation and trade balance. In issuing green bonds in Bangladesh, there are various issues like demand side risks such as low investment demand for green projects and a lack of skills in assessing financial implications of environmental risks. That said, such challenges present opportunities for improvement, particularly before setting up the frameworks and assessing the market for a green bond issuance. However, studies

In context of green finance from developing countries’ experiences, UNEP finds that one of the main concerns include the need to develop an integrated approach that links economic and social priorities. Moreover, international measures should not hamper developing countries’ competitiveness, equity, development and financial inclusion, and developments in international financial systems and for G20 country deliberations affect developing countries both positively and negatively. In addition, national strategies, policies, regulations and standards are critical that involve both public and private actors, and new business models and technologies can push for inclusive, green financial market developments. UNEP also identifies specific needs of developing countries, namely the challenge of supporting long-term green finance through developing mature, local bond markets, the need to contribute to international debate and practice, as well as cooperating in international knowledge sharing through existing platforms and initiatives (UNEP). Such insight is very important for Bangladesh as it faces similar
challenges in the way of issuing green bonds, which can be targeted in preparation for potential issuance.

A different study by Climate Bonds Initiative (CBI) and International Financial Corporation (IFC) studying green bond issuance in developing countries finds that national guidance has been vital for developing countries in aligning local green bond issuance with national targets and for maintaining high standards of transparency, independent reviews etc. It has also been important to determine what type of projects qualify as “green”, as well as scaling green finance markets through reducing transaction costs. The study also finds that for countries with no green bond issuance, the biggest challenge is the lack of frameworks. Whereas in emerging economies, training and capacity building for regulators, issuers, investors and verifiers are the biggest issues. The report also reviewed different green bond frameworks around the world developed through regulations by financial services authorities, green bond listing instructions by stock exchanges and voluntary initiatives by financial sector industry associations. It goes on to provide a 3-phase 4-step self-assessment and planning matrix for green bond markets, as well as a roadmap with common milestones presented in Figure 4 and Figure 5 below (IFC; Climate Bonds Initiative). This gives crucial insight for Bangladesh as to an overview of instructional steps it should take in developing its green bond market in phases, with lessons from other developing countries.
Figure 4: Self-Assessment and Planning Matrix for Developing Green Bond Markets

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Market infrastructure</strong></td>
<td>Review current debt capital market structure for bonds and its readiness/suitability for green bond growth</td>
<td>Develop supporting market infrastructure (index, dedicated exchange segment)</td>
<td>Organise an international investor roadshow to present the domestic green bond pipeline</td>
</tr>
<tr>
<td><strong>Guidance</strong></td>
<td>Initiate dialogue with domestic market players to consider and, if appropriate, develop national guidelines, aligned with international practices</td>
<td>Convene a Market Development Council with relevant capital market institutions to propose and consult on policy recommendations</td>
<td>Consider incentives as appropriate (grants for external reviews, tax exemptions)</td>
</tr>
<tr>
<td><strong>Issuance</strong></td>
<td>Assess readiness and opportunities for green bond issuance</td>
<td>Build demand side through engagement with local investors. Potentially deliver a Green Bond Statement from domestic investors and convene forums with selected potential issuers</td>
<td>Engineer demonstration issuances: such as sovereign, municipal, financial institution, and/or corporate bonds</td>
</tr>
<tr>
<td><strong>Capacity building</strong></td>
<td>Set up a promotional campaign to engage market professionals</td>
<td>Set up, partner and deliver training programs for issuers, investors, verifiers and regulators</td>
<td>Consider accreditation schemes for training programs, as well as dedicated training incentives for industry professionals</td>
</tr>
</tbody>
</table>

Source: IFC; Climate Bonds Initiative, 2018
Figure 5: Roadmap with Common Milestones for Developing Green Bond Markets

Source: IFC; Climate Bonds Initiative, 2018
To show the extent of the costs associated with climate change, a report by the Imperial College Business School and SOAS University of London assessed cost of capital and climate change in developing countries. It finds that climate vulnerability has already raised the average cost of debt in a sample of developing countries by 117 basis points that translate to USD 40 billion in additional interest payments over the past 10 years in government debt alone. Figure 6 below also shows a clear uptick in economic losses due to major weather-related events over the last five decades and is projected to rise. Moreover, where natural disasters impact GDP growth, it is larger for developing countries. Specifically looking at the case study for Bangladesh, the paper predicts that Bangladesh’s credit rating is likely to be affected adversely in the event of sustained rice production falls due to climate change. This may increase government borrowing, the interest payments of which is almost 20 per cent per year, increased domestic inflation in particularly food prices and worsening trade balances, which is about 5 per cent of GDP. These linkages are shown in Figure 7. The economic and social impact is projected to be detrimental because, while agriculture generates only 15 per cent of GDP, it provides employment to 42 per cent of the population. In addition, it states that historical data suggests natural hazard events in Bangladesh cost over USD 10 billion in economic losses from 2000 to 2013 but total funding available for relief, rehabilitation and reconstruction was only USD 2 billion. The paper recommends that existing natural resources be used to rebuild natural infrastructure e.g. salt-tolerant rice grains (Imperial College Business School; SOAS University of London). This gives insight into the types of climate adaptation strategies Bangladesh should focus on more from potential green bond proceeds.
In terms of looking at literature exclusive to Bangladesh, Arastoo Khan, Bushra Khan, Nasir Uddin, Galib Azim and Salma Islam conducted a study that reports on different sources of green finance available in Bangladesh and presents challenges and opportunities in that realm. The study found that although Multilateral Implementing Entities (MIEs) have helped Bangladesh access some international green finance funds, the amount is paltry compared to funding requirements. Challenges include a lack of institutional readiness and poor fiduciary governance,
although Bangladesh Bank is leading the way in green banking. For instance, the Central Bank has mandated that financial institutions under its jurisdiction set up Sustainable Finance Units (SFUs) for better green portfolio management. However, there are issues with low investment demand for green projects and a lack of skills assessing financial implications of environmental risks. Moreover, there is also significant risk with funding new green technologies and high transactions costs in disbursing green loans to small entrepreneurs with no or poor prior credit records. The study goes on to recommend greater engagement from the government in, for instance, setting up dedicated Climate Finance Unit (CFU) in the Ministry of Finance (MoF) to establish policy frameworks and improve access to international green funds. Moreover, Bangladesh Bank should ask financial institutions to publish a list of those with good green performance, award better CAMELS (Capital adequacy, Assets, Management capability, Earnings, Liquidity, Sensitivity) in a verifiable manner and also give concessions in Cash Reserve Ratio (CRR) and Statutory Liquidity Ratio (SLR) based on green banking performance (Khan, Uddin and Khan). However, the paper does not specifically go into green bonds as a financing viable financing mechanism for Bangladesh.

CEDAIR (Climate Economic Analysis for Development, Investment and Resilience) conducted a situational analysis of climate finance in Bangladesh that assessed the policy environment, institutional arrangements and government capacity. It found similar challenges as the previous report, including the need for coordination of whole-of-government strategic planning, monitoring, reporting and verification capabilities. For instance, the government had heavily relied on development partner expertise in designing projects, preparing reports etc. instead of developing government capacity. Overall, there was agreement in four priorities, including elevating climate change issues politically, strengthening leadership, improving coordination of
public sector institutions and bettering accountability and transparency of government processes. This analysis is very important because CEDAIR laid out five options for strengthening climate finance. Option 1 is to for the GoB to establish a project preparation facility with aid from development partners to improve the quality of projects developed by government ministries. Moreover, for greater competitiveness in Green Climate Fund (GCF) funding, the government should reduce reliance on MIEs by getting National Implementing Entity (NIE) accreditation within the government and should help the private sector get external financing from the GCF. Option 2 is to establish a Climate Change Commission as an apex institution to oversee all existing ministries, taking responsibility for planning, coordination, project selection and Monitoring, Reporting, and Verification (MRV) processes, as well as making sure projects align with national development priorities. Option 3 is to establish a Climate Finance Board consisting of representatives of the GoB, for instance, in setting up dedicated engagement from the government, and setting up dedicated, donors, local NGOs that would oversee a pooled donor climate fund supported by a Climate Finance Secretariat. This is different from the current BCCRF because many of the leadership roles could be given to, for example, an independent third party for MRV functions instead of government officials. Option 4 is to restructure the BCCTF as a national climate fund that would let it support public and private sector projects and it would be able to get funds from both domestic and external funding. The BCCTF had also been showing poor accountability and lower funding for government and NGO projects than before. Lastly, option 5 is to create a National Climate Foundation (NCF) to manage climate finance as an independent entity, which would make a new NCF or fund and replace the BCCTF. Financing would come from donor partners and domestic financing to fund projects by the GoB line ministries, NGOs or the private sectors (Anderson, Mack and Khan). These options should
be considered by the GoB, in particular the establishment of a Climate Change Commission to improve and refine institutional capacity and transparency.
3. Data and Methodology

For analyzing the overarching trends in government funding toward climate finance, the first part of the paper presents a graphical analysis of the Climate Budget for the fiscal year 2018-19, which comprehensively presents climate response across both the different ministries as well as through the pillars of the country's national climate change policy as set in the BCCSAP. Next, there is a comparative analysis of case studies of green bond issuance in the emerging economies of China, India, Malaysia, Indonesia, Nigeria and Fiji, drawing on the best lessons and practices while taking into account what Bangladesh may do in that regard. Lastly presented are the responses to a questionnaire about the current green finance frameworks and budgetary trends that was sent to expert UNDP officials working at the Ministry of Finance who worked on the IBFCR project.

3.1 Analysis of Climate Budget 2018

An analysis of the Climate Budget 2018 yields the following graphs, the first set of which is focused on trends in share and growth of climate relevant allocation over the years. The trends show that while growth in climate relevant allocation has fallen marginally, its share of GDP, total budget and ministry budget has actually risen. This is a very positive trend since climate change has a potent relationship with economic growth and climate relevant allocation should be integrated into various ministries as intrinsic to budget development and implementation.
Figure 8: Growth in Climate Relevant Allocation (%)

Growth in Climate Relevant Allocation (%)

Source: Climate Budget 2018-19

Figure 9: Climate Allocation as Share of GDP (%)

Climate allocation as share of GDP (%)

Source: Climate Budget 2018-19
Figure 10: Climate Allocation as Share of Total Budget (%)  
Source: Climate Budget 2018-19

Figure 11: Climate Allocation as Share of Ministry Budget (%)  
Source: Climate Budget 2018-19
The next set of charts looks into allocations in the six thematic areas within BCCSAP. These charts show that allocation in key areas like food security and climate resilient infrastructure have received consistently rising allocations. However, a cause for concern lies in the two smallest allocations, capacity building and research and knowledge management, because these are key areas for long-term and organic development, which need more prioritization. Figure 14 is very interesting because it reveals that the thematic allocations as a share of total climate relevant allocations have actually been decreasing in all areas except infrastructure. This is in context of an absolute rise in climate allocation, which means there is ample allocation outside the framework of the BCCSAP. This calls into question how rigorously the BCCSAP is actually followed and whether the revision of the BCCSAP due in 2019 will change this situation.
Figure 13: Allocation in BCCSAP Thematic Areas in Selected Ministry Budget (in Taka Crore)

Allocation in BCCSAP Thematic Areas in Selected Ministry Budget (in taka crore)

- Capacity Building and Institutional Strengthening
  - 2014-15: 634.37
  - 2015-16: 733.62
  - 2016-17: 815.80
  - 2017-18: 887.50
  - 2018-19: 1130.62

- Mitigation and Low Carbon Development
  - 2014-15: 453.00
  - 2015-16: 956.00
  - 2016-17: 835.00
  - 2017-18: 1143.00
  - 2018-19: 1252.16

- Research and Knowledge Management
  - 2014-15: 440.95
  - 2015-16: 560.25
  - 2016-17: 802.70
  - 2017-18: 961.94
  - 2018-19: 865.91

- Climate Resilient Infrastructure
  - 2014-15: 1283.84
  - 2015-16: 1552.56
  - 2016-17: 2238.96
  - 2017-18: 3670.06
  - 2018-19: 5386.23

- Comprehensive Disaster Management
  - 2014-15: 1495.35
  - 2015-16: 1510.63
  - 2016-17: 1737.26
  - 2017-18: 1581.75
  - 2018-19: 1838.16

- Food Security Social Protection and Health
  - 2014-15: 5805.88
  - 2015-16: 6121.28
  - 2016-17: 7056.63
  - 2017-18: 8144.95
  - 2018-19: 8718.80

Source: Climate Budget 2018-19
Figure 14: BCCSAP Thematic Allocation as Share of Total Climate Change Relevant Allocation

BCCASP Thematic Allocation as share of Total Climate Change relevant allocation (%)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity Building and Institutional Strengthening</td>
<td>6.27</td>
<td>4.48</td>
<td>4.36</td>
<td>4.90</td>
<td>5.00</td>
</tr>
<tr>
<td></td>
<td>6.42</td>
<td>8.36</td>
<td>4.90</td>
<td>5.82</td>
<td>6.61</td>
</tr>
<tr>
<td>Mitigation and Low Carbon Development</td>
<td>4.57</td>
<td>6.05</td>
<td>7.01</td>
<td>6.69</td>
<td>6.15</td>
</tr>
<tr>
<td></td>
<td>8.19</td>
<td>7.01</td>
<td>6.15</td>
<td>7.01</td>
<td>8.19</td>
</tr>
<tr>
<td>Research and Knowledge Management</td>
<td>4.57</td>
<td>5.82</td>
<td>5.89</td>
<td>4.90</td>
<td>4.57</td>
</tr>
<tr>
<td></td>
<td>8.19</td>
<td>7.01</td>
<td>6.15</td>
<td>7.01</td>
<td>8.19</td>
</tr>
<tr>
<td>Climate Resilient Infrastructure</td>
<td>12.69</td>
<td>13.58</td>
<td>16.22</td>
<td>22.49</td>
<td>57.41</td>
</tr>
<tr>
<td></td>
<td>22.49</td>
<td>28.43</td>
<td>26.97</td>
<td>28.43</td>
<td>28.43</td>
</tr>
<tr>
<td>Comprehensive Disaster Management</td>
<td>14.79</td>
<td>13.21</td>
<td>12.59</td>
<td>9.69</td>
<td>4.48</td>
</tr>
<tr>
<td></td>
<td>22.49</td>
<td>28.43</td>
<td>26.97</td>
<td>28.43</td>
<td>28.43</td>
</tr>
<tr>
<td>Food Security Social Protection and Health</td>
<td>57.41</td>
<td>53.53</td>
<td>49.91</td>
<td>46.01</td>
<td>50.39</td>
</tr>
</tbody>
</table>

Source: Climate Budget 2018-19
The following set of figures highlights climate relevant allocation relative to ministry budget. These figures are encouraging because allocations have been on an overall increase in the top five allocating ministries, although fisheries and livestock has seen fairly stagnant allocations. This is a cause for concern because on top of it being the smallest sector, it forms a huge part of food security, which is the biggest section in the BCCSAP.
Figure 16: Climate Relevant Budget Allocation for Top Five Allocating Ministries for FY 2014-15 to FY 2018-19 (in Taka Crore)

Climate Relevant Budget Allocation for Top Five Allocating Ministries for FY 2014-15 to FY 2018-19 (in taka crore)

Source: Climate Budget 2018-19
Figure 17: Climate Allocation as Share (%) of Ministry Budget for FY 2014-15 to FY 2018-19

Climate Allocation as share (%) of Ministry budget for FY 2014-15 to FY 2018-19

Disaster Management and Relief
- FY2014-15 Total: 20.34%
- FY2015-16 Total: 20.29%
- FY2016-17 Total: 20.59%
- FY2017-18 Total: 17.61%
- FY2018-19 Total: 22.44%

Fisheries and Livestock
- FY2014-15 Total: 19.31%
- FY2015-16 Total: 21.23%
- FY2016-17 Total: 24.24%
- FY2017-18 Total: 24.36%
- FY2018-19 Total: 23.86%

Agriculture
- FY2014-15 Total: 34.88%
- FY2015-16 Total: 35.53%
- FY2016-17 Total: 37.00%
- FY2017-18 Total: 39.12%
- FY2018-19 Total: 39.20%

Water Resources
- FY2014-15 Total: 24.56%
- FY2015-16 Total: 25.26%
- FY2016-17 Total: 31.86%
- FY2017-18 Total: 40.01%
- FY2018-19 Total: 41.31%

Environment and Forest
- FY2014-15 Total: 33.26%
- FY2015-16 Total: 40.65%
- FY2016-17 Total: 37.47%
- FY2017-18 Total: 40.65%
- FY2018-19 Total: 52.68%

Source: Climate Budget 2018-19
Lastly, these next set of graphs look at allocation across the key ministries. This shows that Ministry of Water Resources receives the highest allocation, followed by the Local Government. Although the Local government has a pivotal role to play in climate allocation since many solutions need to be localized according to needs of different regions, it has the lowest approved project implementation rate across the key ministries at only 30%, which calls into question the need for institutional strengthening and capacity building in the ministry (Finance Division).

Figure 18: Share in Estimated Allocation for FY 2018-19

<table>
<thead>
<tr>
<th>Ministry</th>
<th>Share in Estimated Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ministry of Water Resources</td>
<td>38.84%</td>
</tr>
<tr>
<td>Ministry of Local Government, Rural Development &amp; Cooperatives</td>
<td>29.78%</td>
</tr>
<tr>
<td>Ministry of Environment and Forests</td>
<td>12.04%</td>
</tr>
<tr>
<td>Ministry of Agriculture</td>
<td>4.63%</td>
</tr>
<tr>
<td>Ministry of Disaster Management and Relief</td>
<td>4.16%</td>
</tr>
<tr>
<td>Other Ministries</td>
<td>9.69%</td>
</tr>
<tr>
<td>NGO’s Projects</td>
<td>0.87%</td>
</tr>
</tbody>
</table>

Source: Climate Budget 2018-19
3.2 Comparative Case studies: Green Bond Development in Emerging Economies versus Bangladesh

This part of the methodology examines green bond issuance in six emerging economies that are in some respects similar to Bangladesh, whether it’s by geographical proximity, debt market or economic development. For this, I’ve chosen China, India, Indonesia, Malaysia, Nigeria and Fiji. The paper examines case studies of green bond issuance in these countries in turn, drawing on comparisons with Bangladesh and seeing what lessons they hold. Table 1 gives a snapshot of the
attributes of these economies that led to their selection in terms of both importance in best practices and bond structures, as well as in terms of their similarity to Bangladesh.

Table 1: Selection Attributes of Countries in Case Study

<table>
<thead>
<tr>
<th>Attributes</th>
<th>India</th>
<th>China</th>
<th>Indonesia</th>
<th>Malaysia</th>
<th>Nigeria</th>
<th>Fiji</th>
</tr>
</thead>
<tbody>
<tr>
<td>Similarity in climate change risk</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Geographical proximity</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural and bureaucratic structures</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Similarity in corporate bond market immaturity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Green bond market maturity</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Islamic banking maturity</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sovereign Bond Issuance</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
3.2.1 China

China’s green bond market was the second largest in the world in 2017, therefore it is important to examine their guidelines and best practices. In 2007, China’s Banking Regulatory Commission developed Green Credit Guidelines that gradually developed from a principle-based approach to a standardized metric-based performance assessment. In 2015, China issued its first green bond to raise USD 300 million for the wind energy firm Xinjiang Goldwin Science and Technology (Desai). Since then, growth since 2017 has been primarily driven by regulation and policies to finance green infrastructure. Within this is the very crucial initiative for green development in China’s “Belt and Road Initiative”, which is a pivotal infrastructure and economic development project that includes 69 countries/territories across Asia, Africa and Europe. This is game-changing for Bangladesh as well, since it is strategically located between the highly populated South Asia and the semi-industrialized ASEAN (Association of Southeast Asian Nations) countries and thus can benefit hugely from green infrastructure initiatives. China’s “Green Bond Endorsed Project Catalogue” specifies the different categories for green funding that includes energy saving, pollution prevention and control, resource conservation and
recycling, clean transportation, clean energy, and lastly, ecological protection and climate change adaptation. The last of these categories is most relevant for Bangladesh so it is worth noting that it includes ecological protection and management of parks and scenic spots, as well as ecological husbandry, agriculture and fishery. It also includes forestry development that involves deforestation, as well as disaster monitoring that involves monitoring of major infrastructure, transmission of disaster preparedness supplies, etc. (Banking, Green Finance Society of China Society of Finance and). Given China’s dominance in green bond issuance, Bangladesh should look into China’s guidelines and system of regulations and reviews in developing its own issuance and monitoring systems.

3.2.2 India

India was chosen for the case study due its geographical proximity, similar climate change risks as well as similar cultural and bureaucratic institutional structures as Bangladesh, although India has a vastly more developed fixed income market. Bangladesh’s corporate bond market is very under-developed: as of December 2016, there were 8 debentures and 221 government treasury bonds but only two corporate bonds of which both are A-rated. Table 2 below outlines the nascent stage of the bond market in Bangladesh in comparison to its South Asian peers in 2006 (Hossain). In comparison, India has a much larger corporate bond market, although similar to Bangladesh, their debt market is still dominated by government bonds (Cbonds).
<table>
<thead>
<tr>
<th>Countries</th>
<th>Bonds (in billion dollars)</th>
<th>% of Total</th>
<th>Equities (in billion dollars)</th>
<th>% of Total</th>
<th>Banking Assets (in billion dollars)</th>
<th>% of Total</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>7.35</td>
<td>1.93</td>
<td>3.61</td>
<td>0.41</td>
<td>32.74</td>
<td>4.78</td>
<td>43.69</td>
<td>2.25</td>
</tr>
<tr>
<td>India</td>
<td>325.68</td>
<td>85.62</td>
<td>818.88</td>
<td>93.36</td>
<td>587.38</td>
<td>85.69</td>
<td>1731.94</td>
<td>89.14</td>
</tr>
<tr>
<td>Nepal</td>
<td>1.22</td>
<td>0.32</td>
<td>1.31</td>
<td>0.15</td>
<td>4.33</td>
<td>0.63</td>
<td>6.86</td>
<td>0.35</td>
</tr>
<tr>
<td>Pakistan</td>
<td>32.41</td>
<td>8.52</td>
<td>45.52</td>
<td>5.19</td>
<td>50.7</td>
<td>7.4</td>
<td>128.63</td>
<td>6.62</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>13.71</td>
<td>3.6</td>
<td>7.77</td>
<td>0.89</td>
<td>10.3</td>
<td>1.5</td>
<td>31.78</td>
<td>1.64</td>
</tr>
<tr>
<td>Total South-Asia</td>
<td>380.36</td>
<td>100</td>
<td>877.09</td>
<td>100</td>
<td>685.45</td>
<td>100</td>
<td>1942.90</td>
<td>100</td>
</tr>
<tr>
<td>Total East-Asia</td>
<td>2700.85</td>
<td>100</td>
<td>5942.45</td>
<td>100</td>
<td>5562.52</td>
<td>100</td>
<td>14,205.82</td>
<td>100</td>
</tr>
<tr>
<td>Total Selected OECD</td>
<td>36,181.01</td>
<td>100</td>
<td>32,355.3</td>
<td>100</td>
<td>32,583.12</td>
<td>100</td>
<td>10,119.43</td>
<td>100</td>
</tr>
</tbody>
</table>

In the backdrop of a fairly well developed corporate bond market, India entered green bonds in 2015 with the YES Bank issuing the first one for renewable and clean energy projects mainly in wind and solar. Since then, green bond issuance has entered state-owned commercial banks, public financial institutions, corporates and the banking sector, ultimately ranking them 5th across G20 countries in terms of green bond issuance as a share of overall debt market (Swati and Singh). For Bangladesh, government support in the form of policies and regulatory support would be crucial for the development of the green bond market. In India, the Securities and Exchange Board of India (SEBI) published its first green bond requirements in areas including sustainable waste management and clean transportation. In 2017, SEBI issued disclosure norms and the Reserve Bank of India (RBI) also introduced corporate bond measures. An analysis of the disclosure requirements shows an emphasis on showing proceeds utilization both internally and also by an external auditor, as well as qualitative and quantitative performance indicators showing the environmental impact of the projects (SEBI). This serves as an example for Bangladesh, outlining the need for the central bank, government and capital market regulatory support for green bond issuance.

There is however, a divergence in the type of environmental projects taken on by India and most other economies versus Bangladesh, with India doing green bond issuance on largely renewable energy projects geared toward climate change mitigation while the initiatives by Bangladesh have been mainly in climate change adaptation. This difference in priorities is clear from India’s position as the third largest global contributor in carbon emissions. On the other hand, Bangladesh is forced to adapt to the already materializing effects of climate change affecting the majority of people whose livelihood depend on the local environment. For Bangladesh, the emphasis on adaptation is reflected, among other things, in the establishment of the National
Adaptation Programme of Action (NAPA) in 2005 for developing a countrywide program to guide the coordination and implementation of adaptation projects (Ministry of Environment and Forest Government of the People’s Republic of Bangladesh).

A valuable lesson from India stands in how green bonds have emerged as an alternative way to raise capital for sustainable development-linked infrastructure. This is particularly important because India is also akin to Bangladesh in that there is an overreliance on the banking sector caused by low long-term savings, as well as an illiquid bond market and inadequate financial market depth. Thus, initiatives are being taken by India to make green bonds work in infrastructure, especially for India’s Smart Infrastructure Initiatives (Choudhury, Dhingra and Roy), which is one crucial area Bangladesh should invest in from green bond proceeds. For Bangladesh, it is estimated that increased storm surges and growth in the road network out to 2050 will lead to damages of around $239.5 million to roads, bridges, culverts, etc. and a loss of about $52.7 million in road infrastructures (Huq, Khan and Panday). Thus, green proceeds will growingly have to be geared toward green infrastructure.

3.2.3 Malaysia

Malaysia is an interesting case by having launched the first Islamic green bond- called sukuk bond- in the world in 2017. The first was launched by Tadau Energy Sdn Bhd to finance a solar power plant, which was followed by four other issues, with further renewable energy projects in the pipeline. A sukuk bond is a green Islamic bond where the proceeds are used to fund a specific environmentally sustainable infrastructure project, such as the construction of renewable energy generation facility. Malaysia was chosen for both its geographical proximity to Bangladesh and for its well-established Islamic banking sector. According to the Islamic Finance Country Index (IFCI) 2017, Malaysia ranked 1st worldwide with respect to their state of Islamic
banking and finance, and their leadership in the industry, while Bangladesh ranked 10th (Dubai Islamic Bank). Islamic banking is a banking system that is based on the principles of Islamic, or Shari'ah, law and guided by Islamic economics. The two fundamental principles of Islamic banking are the sharing of profit and loss and the prohibition of the collection and payment of interest by lenders and investors (Kenton). Bangladesh should also consider the possibility of issuing green bonds through the existing robust Islam banking framework. According to a World Bank report, there are various commonalities between green bonds and sukuk bonds including:

1. They both raise funds for a specific purpose and the asset-based structure of a sukuk complements the green bond structure because it provides certainty of use to investors
2. Sukuk bonds, like Islamic finance overall, both have values rooted in ethical and social responsibility, e.g. excluding investments in gambling, pork, alcohol and weapons, and this value-basis is behind the idea for green bonds as well
3. More specifically, the notion of environmental stewardship is itself intrinsic to Islamic Shari'ah principles thus has that focus on sustainability (World Bank)

Prior to the issuance, the Securities Commission Malaysia released the Sustainable and Responsible Investment (SRI) Sukuk Framework in 2014. The framework holds takeaways for Bangladesh and other countries with a well-established Islamic banking base to facilitate sustainable investment initiatives by converging the highly compatible areas of Islamic finance and sustainable investment. The SRI Sukuk Framework comprises of projects in the areas of natural resources (water infrastructure, waste management etc.), renewable energy and energy efficiency, community and economic development (sustainable building projects, public educational services etc.) and waqf properties (charitable endowment under Islamic law) (Security Commission).
In this development, the Central Bank of Malaysia formed a technical working group with the World Bank to explore options in encouraging sustainable investment through Islamic finance, and this need for external institutional support would be crucial for Bangladesh’s case as well. In green bond issuance, a supporting aspect seen in markets is the public sector offering subsidies and other incentives to soften the initial cost impact and encourage growth. Initial costs and administrative hurdles include, for instance, new types of monitoring, external review and disclosures, as well as institutional effort. In this arena, Malaysia has done well by introducing tax incentives and grants to spur more issuances of the SRI sukuk. In 2017, the Securities Commission Malaysia established a RMB 6 million (USD 1.5 million) Green SRI Sukuk Grant Scheme, which is administered by Capital Markets Malaysia, to support external review costs incurred by sukuk issuers.

### 3.2.4 Indonesia

Indonesia is another important case, being similar to Malaysia with a well-developed Islamic financial system that supported the issuance of the world’s first sovereign green sukuk bond in February 2018 by the Government of Indonesia. Sovereign green bonds are similar to traditional government bonds but with proceeds going toward environmental projects and with the pricing of the bond determined by the sovereign risk/rating (International Finance Corporation). Indonesia ranked 7th in the IFCI (Dubai Islamic Bank) and is actually one of the top 10 highest GHS emitters according to CAIT Climate Data Explorer (CAIT Climate Data Explorer). Following the Indonesian sovereign issue, the first Asian corporate sustainability bond was also issued in Indonesia for sustainable rubber plantation, followed by another corporate bond financing geothermal energy from Star Energy. In addition, two more issues have been made since then: one by a state-owned non-financial institution with support from the World Bank, and
another by the public financial institution OCBC NISP which was to the IFC as the only investor (IFC; Climate Bonds Initiative). While most public financial institutions in Bangladesh have been struggling and are not likely to be able support green bond issues in the immediate future, the GoB has more of the technological infrastructure and the resources to be able to issue a sovereign green bond with support from global financial institutions like the IFC and the World Bank. Moreover, the Bangladesh Bank should play a proactive role in managing aspects of the issuance like setting the guidelines and may supplement its existing green banking initiatives and work with Islamic banks to issue a green sukuk.

In Malaysia, the guidelines, called the Requirements for Green Bonds, were issued by the Indonesia Financial Services Authority, which aligned with the Green Bond Principles (GBP) and ASEAN Green Bond Standards. Here again, similar to Malaysia, the Indonesian Ministry of Finance and the World Bank held a technical workshop on green bonds that explored the regulatory framework and guidelines relative to regional and global standards. This again underlines the importance of public and stakeholder consultations coupled with studying best practices and lessons from other countries. The guidelines specify that proceeds can go to 11 types of eligible projects that include for example, clean transportation and climate change adaptation. Interestingly, it stipulates that a minimum of 70 per cent of proceeds must go toward the green projects and there has to be performance verification by an independent third party (EY). Given the nascent state of the corporate bond market in Bangladesh, the dominance of government bonds and the government’s influence in development projects, e a sovereign green bond should be the most realistic move.

The financial system of both countries are also structured similarly in that there is a wide-ranging network of publicly owned banks and a practice of more short-term lending that makes long-term
financing of sustainable investment difficult. In light of this, while public institutions can thus be more proactive with introducing sustainable investment, there is a crucial need to strengthen corporate governance through tighter internal and external auditing, better accounting practices and risk management (UNEP). This is particularly needed in Bangladesh before green bonds can be introduced because of the poor management and liquidity issues at public financial institutions that result in issues like a high degree of default loans.

3.2.5 Nigeria

In context of this trend in sovereign green bonds, the first African country to issue one was Nigeria in December 2017. Following this, the Securities and Exchange Commission (SEC) is developing green bond regulation. The proposed rule on green bonds include project qualification in the areas of renewable and sustainable energy, clean transportation, sustainable water management, climate change adaptation, energy efficiency, sustainable waste management, sustainable land use, biodiversity conservation or any other categories as approved by the Commission. In addition, there are various conditions for approval; for instance, a feasibility study and report stating the measurable benefits of the green projects, as well as disclosure requirements and independent assessment. There are also further extensive rules on management of proceeds, reporting, refinancing and confidentiality and transparency (Securities and Exchange Commission, Nigeria).

Similar to the needs in Bangladesh, the primary driver for green bond issuance was the need for a tool to finance the huge infrastructure gap in a climate aware manner. Bangladesh also has a major infrastructure gap, and with the mammoth climate risks it faces, it needs to finance infrastructure that is climate resilient and sustainable, particularly in high-risk coastal areas. Moreover, Northern Nigeria classified as ‘extreme risk’ and Southern Nigeria as ‘high risk’ in
the 2016 Climate Change Vulnerability Index, and 70% of Nigeria’s workforce is employed by climate-sensitive resources, while it is also expected to experience water scarcity by 2025 (Itua), which are all risks and phenomena similar to Bangladesh’s.

As such, lessons in best practices from Nigeria in green bond issuance include their consultation with both the Capital Markets Committee and Ministry of Finance in developing the rules, which delineates the pivotal role the Ministry of Finance in Bangladesh would have to play in a sovereign green bond issuance. Nigeria is furthermore an exemplary case to look at because it also has an underdeveloped corporate bond market, with only three corporate entities accessing it in 2017 (Premium Times), which is why a sovereign issue was more favorable.

It also by and large faces the same challenges as Bangladesh, which include the need for education and general awareness, as well as a lack of capacity within the regulatory agency SEC itself, which was why collaboration with external experts and utilizing existing guidelines to adapt them to the national context was an important milestone. For this they engaged with institutions like the IFC, United Nations Environment Programme (UNEP) and CBI (IFC; Climate Bonds Initiative), which sets an example for the range of institutions Bangladesh would also need support for to develop green bond regulation and requirements.

An UNDP webinar on green bonds following the issuance goes further into the selection process for eligible green expenditures, which can set an example for Bangladesh. First, the Nigerian Government Budget screens the projects based on budget document and Ministry of Environment Green Bond Guidelines, and then Green Bond Technical Advisory Team assesses potential green bond projects. The supervisory agencies throughout are Ministry of Finance, Ministry of Environment and Ministry of Power. In particular, since Bangladesh focuses more on adaptation, their project eligibility rules for adaptation through sustainable forest management is
exemplary. In addition, future model goals pertinent to Bangladesh include (Itua):

i. Strengthening capacity within the Federal Ministry for monitoring

ii. Strengthening dialogue across Ministries, Departments and Agencies (MDAs) to identify and redirect resources

iii. Linking nation’s development objectives with Sustainable Development Goals (SDGs) etc.

iv. Make green bonds part of annual borrowing plan as long as projects within MDAs meet criteria

v. Give more premium to green bonds than regular bonds

vi. Strengthen relevant internal capacities to monitor performance for reporting back to investors and the United Nations Framework Convention on Climate Change (UNFCCC)

3.2.6 Fiji

My last case study looks at the very first emerging market to issue a sovereign green bond in October 2017- Fiji. What stands out about Fiji is their sharp focus on adaption since it has 300 volcanic islands that have low-lying atolls, which are very vulnerable to cyclones and floods. Moreover, Fiji is also very susceptible to climate change impacts, with studies showing that nearly 20 per cent of the region’s 100 million people may be displaced due to climate change by 2050. Bangladesh’s population is also highly vulnerable to such effects of climate change, so Fiji’s is an exemplary case to consider.

The World Bank and IFC provided technical assistance to the Government of Fiji at the request
of the Reserve Bank of Fiji and the collaboration played out under a broader three-year Capital Markets Development Project that is supported by the Australian Government (World Bank). The bond will finance projects focusing mainly on climate change adaptation, which does indicate that such bonds can heavily focus on adaptation though most financing from green bonds globally goes toward mitigation projects. Fiji’s Green Bond Framework identifies seven eligible sectors for the use of proceeds (The Republic of Fiji):

• Renewable energy and energy efficiency

• Resilience to climate change for highly vulnerable areas and sector

• Clean and Resilient Transport

• Reducing Pollution and Greenhouse Gas Emissions

• Water Efficiency and Wastewater Management

• Sustainable Management of Natural Resources

• Eco-efficiency

Sustainalytics US (Sustainalytics), a provider of environmental, social and governance research and analysis, assessed the green bond transaction and its alignment with the Green Bond Principles. Among Sustainalytics assessment particulars is that proceeds from the green bond will improve Fiji’s resilience to weather-related events and reduce vulnerabilities through climate change adaptation, achieve the Paris Agreement commitments for mitigation, achieve their Green Growth Framework and National Development Plan and fulfill the UN SDGs.
Project evaluation and selection is through a Green Bond Steering Committee chaired by the Director of Climate Change within Fiji’s Ministry of Economy although there is a cross-ministries collaborative approach to confirming eligibility. However, Sustainalytics recommended that Fiji should specify a minimum performance improvement threshold to ensure meaningful impacts and also that the Government implement a granular impact reporting framework that that specifies impact indicators and define them beforehand. With regard to the impact of financing, Sustainalytics believes that proceeds will have great impact in vulnerable sectors like agriculture protection and water management, including flood protection mechanisms. Such initiatives set a great example for Bangladesh as well, which encounters vulnerabilities in these same areas. The labor market is also similar to Bangladesh since over 70 per cent of Fiji’s labor force is directly involved in agricultural activities. Further exemplary adaptation projects include their proposed afforestation projects, wastewater management projects and clean and resilient transport projects. Furthermore, programs include investment in capacity building programs like adaptation research related to sea-level rise and agriculture, as well as resilient reconstruction and Disaster Risk Management (DRM) through resilient shelter designs, backup power supplies etc. (Sustainalytics). Given the focus on climate change adaptation and similar climate risks facing Fiji and Bangladesh, I believe Fiji is most exemplary in terms of the type of projects Bangladesh should finance with green bonds and the guidelines it should create.
3.3 Analysis of Climate Questionnaire Responses

In order to get a more comprehensive picture of expert insights into some of the issues posed in Section 3.1, as well as broader issues in the context of the Climate Budget and green bond issuance, next is presented a compilation of four responses across 11 interrelated points of interest. These are from questionnaires sent out to UNDP officials who work at the MoF in Bangladesh. They have all served as project managers and worked on the IBFCR project. The idea is to critically evaluate existing green finance systems and frameworks to identify issues before green bonds can be considered.

3.3.1 Project Screening and Monitoring

Regarding screening of the projects, one respondent said the projects undertaken are merely business as usual. Sometimes, when funds to implement general projects are not available, funds from BCCTF were accessed somehow, thus misinterpreting the climate framework established for project selection. This was further exploited as there were no formal evaluation and government audits at the end of the projects. Only recently, one of the BCCTF project was undertaken for climate performance audit with a number of observations, which can only be made public after it is presented before the parliament. Another respondent said that as these projects remain outside the ADP and they do not come under the surveillance of monitoring by the IMED, which is an apex that monitors outfit of the government. Another respondent emphasized that strong mechanism should be developed to differentiate climate project and development project. She also recommended that more transparency and accountability should be maintained through proper governance and technical capacity should be increased of the relevant officials.
3.3.2 Financial Requirements and Prioritization

The first point of interest was how the government sets financial requirements and prioritizes different climate change projects. Respondents concurred that none of the project selection criteria listed in the project preparation manual is set to prioritize the climate related projects. It’s very limited because the criteria are only set to confirm that implementation of any certain project will not cause any new vulnerabilities and climatic risks. Moreover, impacts of projects from the BCCTF are quite unknown as these projects are taken outside the Annual Development Plan (ADP) and Implementation Monitoring and Evaluation Division (IMED); and the Comptroller and Auditor General (CAG) is reluctant to undertake ex-post evaluations and performance audits on these projects. One respondent said that the situation can be improved if a new climate criterion is included in the set of project selection criteria.

A respondent said that development planning is led by a rolling planning process set by the Ministry of Planning through the 7th five-year plan that states, “incorporating environment, climate change and disaster risk reduction issues in the project formulation, budget allocation and implementation process” and “preparing a Country Investment Plan (CIP) to identify the priorities in environment, forest and climate change sector and estimating investment need and financing gap”. She also said the Planning Commission has been working on the revision of the DPP (Development Project Proposal) for some years and produced a new guideline in late 2016. In this guideline, the analysis of the impact on environment and climate has been specifically mentioned. In this DPP, the effect on climate change and closely related issues has been incorporated. But the new DPP format still lacks some features of integrating climate finance in it.

Another respondent said that the government generally prioritizes projects based on whether the
project being proposed is in line with the broad objectives of overarching national plan, whether it is going to be fully or partly funded from the external sources, whether it is needed to support the results of an earlier intervention and whether there is a risk that any hiatus in intervention may jeopardize the momentum already gathered. He said that in terms of project screening, for the BCCTF, a technical sub-committee scrutinizes the project proposals and their feedback ultimately influences the nod of the trustee board. Laying out a clear financing strategy to be as realistic as possible is thus recommended.

3.3.3 Updating of the BCCSAP

The BCCSAP is also set to be updated at the end of 2019, and one respondent provided a broad set of recommendations that were officially proposed:

a. **Costing:** A detailed costing exercise using appropriate cost drivers to work out the estimated cost of a programme

b. **Monitoring Framework:** A clear framework for monitoring the progress of implementation of the strategy should be worked out together with relevant indicators

c. **Establishing dedicated outfit for monitoring:** A provision should be made for establishing a dedicated outfit within the MoEFCC centrally and similar outfits in other relevant line ministries with required manpower and logistics

d. **Linkage with SDG, CIP-EFCC, NDC, Delta Plan and Five-Year Plans:** Since BCCSAP is an important roadmap for undertaking multiple interventions to address the adversities of climate change in Bangladesh, it is important to establish its link with other existing strategic documents like SDG, CIP-EFCC and Delta Plan and Five-year Plans which were not in place during the development of BCCSAP in 2008 as well as during its revision in 2009. These documents succinctly recognize the implications of climate
change in the lives and livelihoods of the people of Bangladesh

e. **Mid-term Evaluation**: The updated version should make a provision for mid-term evaluation which would allow any course correction required to meet (i) the exigencies on the ground and (ii) the realities in the fast-evolving context during implementation.

f. **Localization of BCCSAP**: The updated version of BCCSAP should leave an indication as to how this strategy should be translated into the planning and budgeting exercise of the local government institutions at the lowest tiers to address the vulnerabilities of the most affected communities like women, children, ethnic minorities and people with disabilities. Otherwise, the impact of the programmes set out in the strategy will remain limited to the domain of national government.

Another respondent laid out the following issues in updating the BCCSAP:

a. **Costing**: A detailed costing exercise should be carried out using appropriate cost drivers to work out the estimated cost of a programme. MoEFCC, in this regard, may consult the SDG Financing Strategy published by General Economics Division (GED) and the analyses presented in the document. A methodological note should be developed to support the premise of this exercise.

b. **Financing Strategy**: In the existing BCCSAP, there is no well-laid out financing strategy indicating the sources from which the resources will come and the share of each source in meeting the total financing requirement.

He recommends these following strategies:

a. **Well-laid out Strategy**: Once the cost exercise is done and the financing requirements are established, there is a need to develop a well-laid out strategy to meet such
requirements. While laying out the strategy, the focus should be on the additional financing requirements as some of the costs are already subsumed in the business as usual financing of public investment programmes included in development budget.

b. **Estimates**: A year-wise estimate of financing requirements should be worked out to understand the fiscal implications of programme interventions each year and create adequate fiscal space to accommodate the demands for climate investment.

c. **Linkages**: While drawing out the financing strategy, the Climate Fiscal Framework (CFF) adopted by the ministry of finance should be consulted to establish a link between the BCCSAP and the fiscal space available for implementation of programmes set out in the strategy.

### 3.3.4 Climate Allocation to Ministry of Women and Children’s Affairs

One issue very pertinent to Bangladesh is looking at particularly vulnerable groups like women and children, especially considering that the allocation of climate financing to Ministry of Women and Children’s Affairs has seen a fall in the past year. Respondents said that more so than allocation, the problem lies with the number and size of the projects that the ministry undertakes and implements. Also, the capacity of the ministry in implementing medium or large sized donor funded projects with high fiduciary reporting standards is always in question. Other respondents found the allocation to the Ministry of Women and Children’s Affairs adequate and said that it is not possible to practice any specific common minimum modalities in the process of project selection for gender mainstreaming in the short term.

### 3.3.5 Climate Allocation to Local Government

It is known that the Local Government receives the second biggest allocation in the BCCTF since 2010 and the highest number of approved projects overall, but it has implemented only
30% of the approved projects so far. Regarding this phenomenon, a respondent said that climate change projects at the local government level are very important because these activities will make the local communities resilient and improve their climate adaptive livelihood. However, inefficiencies are involved in implementation because of delay and cost escalation caused by issues like faulty project design, delays in procurement, cumbersome process of land acquisition and inadequate funding. Another respondent said climate-related activities at the local level in coastal areas are crucial since climate impacts are felt most heavily there. The major factors inhibiting local projects’ implementation include a want of practical knowledge, technical capacity of the relevant officials and local level elected representatives.

3.3.6 Climate Allocation for Research and Development

For climate change, there is a strong need for more research and development efforts for long-term benefits, particularly in agriculture and within the Bangladesh Forest Research Institute. There had been a decrease in allocation for fiscal year 2018-19. A respondent said that the question is whether allocation increasing as share of the total budget and actual figure and if this rate of increase is enough to sustain the innovation, efficiency and quality of huge investment budget. He believes that the share should be increased and increased in a much faster rate through the years. Another respondent believes that proper research can estimate the likely scale and timing of climate change impacts on different sectors of the economy to inform planning of future investment, and that budget allocation to research and knowledge management thematic area should be increased. Research institutions like Institute of Nuclear Agriculture, Bangladesh Rice Research Institute, Bangladesh Agricultural Research Institute, and Bangladesh Forest Research Institute can be identified for different research to address the impact of climate change.
3.3.7 Lack of Financing Issue

The 7th Five Year Plan says that the BCCSAP requires an outlay of $10 billion for the 10-year period but a lack of financing has been detrimental to implementation. A respondent said that Bangladesh started to access GCF through the MIEs until the NIEs are accredited although there is immense challenge to meet the fiduciary standards set by the GCF secretariat. So far 3 projects are known to have been approved by the GCF board with more to come in the coming years. Moreover, negotiation skills are one of the areas where the country has to improve heavily to expedite the national (bi-lateral donor) and international/global funds. One respondent cited accessing criteria as a major problem in getting international funding, for example: after several years of persistent efforts, Bangladesh could mobilize only USD 85.2 million from the GCF for three projects. Thus, as a less blameworthy victim of climate change, Bangladesh should raise its voice in international forums like Conference of the Parties (COP) by asking flexibility in the accessing criteria. A major risk in using such external sources is the fiduciary performance of the public sector in utilizing the resources together with its absorptive capacity. Moreover, close interaction with development partners is a primary requirement for faster release of funds while better fund management is important for better fund management capacity enhancement of the spenders.

3.3.8 Institutional Coordination Issue

Institutional coordination is another major hindrance to better climate programming and no organization or entity is currently charged with coordinating financial performance among the array of institutions. One respondent said coordination is a big challenge in undertaking a multi-sector comprehensive programme for climate change. Therefore, ministries are often undertaking projects for their own sectors without considering possible linkages and synergies to other
sectors of concern. He said although people consider the Planning Commission as the coordinating body, he merely sees their function as a project approver. Another respondent said that to improve the situation, an outfit within the Finance Division equipped with adequate logistics and staffing support can forge coordination and ensure harmonization. At the institutional level, there needs to be an establishment of well-functioning outfits and designing relevant regulatory framework; at the individual level, both material and non-material incentives should be provided; and at the systemic level, bringing in relevant reforms can make a real difference.

Another respondent went into three broad areas if roles regarding the institutional coordination of climate response:

a. **Financial Planning and Performance Co-ordination:** This role lies with the Finance Division and is implemented via the MTBF (Medium Term Budget Framework), which acts as a governance and performance management mechanism as well as matching resources to policy. Also, if the proliferation of funding sources is taken into account – at least five were identified – then the Finance Division has a crucial role in the coordination of funding, budgeting and enabling performance management and expenditure.

b. **Policy and Planning Co-ordination:** This involves the achievement of balanced influence between sector policy and plans, climate change strategy and action plans and other policy/planning areas given the evident level of integration of climate change and climate policy/planning in the delivery of services. Both sector policy-plans and national climate change strategy and action plans have influence and thus must be adequately balanced. The Planning Commission in coordination with relevant ministries and the
MoEFCC play this role.

c. **Technical Co-ordination:** This role lies with the Ministry of Environment, Forests and Climate Change. Large elements of the climate sensitive activity in Bangladesh relate to adaptation strategies ranging from infrastructure to social protection programs as well as a strong link to Disaster Risk Reduction (DRR). Ministries related to local government, agriculture and disaster risk management are the highest spending institutions with most of the spend relating to adaptation and a significant element of capital works and social protection programs.

### 3.3.9 Accountability and Transparency Issue

Regarding ensuring accountability and transparency in climate change programming, one respondent recommended that there be introduction of climate performance audit, evaluation framework for climate related projects in IMED and realistic selection and prioritization criteria for climate projects. Within this, there is of course a need for monitoring and evaluating its strategies and policies. A respondent said that none of the plans and strategies contain any effective Monitoring & Evaluation (M&E) plan and reporting formalities so that government is accountable for progress or lack thereof. He believes that the new plans will include such M&E component with Key Performance Indicators (KPIs) linked with Annual Performance Assessment (APA) process of the ministries concerned. Another respondent said that strong oversight functions exercised by the Office of Comptroller and Auditor General (OCAG), media, Civil Society Organizations (CSOs) and the designated parliamentary committee like Public Accounts Committee (PAC) can be put in place. Meanwhile, the OCAG with support from IBFCR project has introduced climate performance audit in its audit protocol and issued two guidelines for the auditors on the steps and procedures to be followed to conduct such audit.
Another respondent said that the accountable use of climate finance is crucial both in terms of utilization of funds as well as ensuring that resources reach the communities most vulnerable to climate change. The role of Parliament and its oversight committees is most relevant as it approves the national budget. The government executives play a vital role in monitoring and evaluation. The OCAG as Supreme Audit Institutions (SAI) ensures that money is being spent for the purpose for which it is allocated. It also ensures that money is spent with regularity, legality and the spending achieves the best value for money. The Anti-Corruption Commission ensures that leakage and rent seeking is minimized in the utilization of funds. Civil society organizations, NGOs and the media (non-state actors) have an important role in ensuring the accountable and transparent use of resources as well as in working with communities to encourage their involvement in holding government to account. Different state and non-state actors collectively ensure accountability and efficient and effective use of climate finance through monitoring, evaluation and oversight. Moreover, monitoring and evaluation of climate finance primarily rests on the following state-actors:

- Planning Division, Ministry of Planning
- Implementation, Monitoring and Evaluation Division
- Line Ministries/Divisions/Departments/Project-implementing Entities

3.3.10 Viability of Green Bonds

With regard to the possibility of issuing green bonds in Bangladesh, respondents said that there is a need to align innovative financial practices like green bonds, with the respective countries’ institutional, social and economic settings. They concur that while revising the existing debt strategy, climate bond could be included as a promising financing window for mobilizing finance
for climate investment.

### 3.3.11 Progress of Bangladesh

That said, respondents said that Bangladesh has been performing exemplarily well, being one of the global firsts to adopt a climate fiscal framework in 2014, while the climate budget report introduced in FY 2017-18 is one of the firsts in the world and the first in the region. Moreover, Bangladesh has established the BCCTF from its own resources. Another interesting input regarding the value of mitigation versus adaptation projects revealed one respondent saying that there is a lack of understanding of mitigation projects, which are only understood as solar/alternate energy projects. The other issue is Bangladesh was not mandated to implement any mitigation projects until it approves the NDC 2015 committing that it will voluntarily reduce 5% carbon by 2030 from baseline value. Regarding adaptation, Bangladesh possibly understands adaptation better than any nation in the world but struggles to understand the difference between an adaptation project and a Bangladesh Agricultural University (BAU) development project. Another respondent said strong political commitment is the key driver which pushes Bangladesh ahead and the senior management within bureaucracy demonstrate their readiness to champion reforms when they are desirable. He also said while Bangladesh is a low carbon emitting country, still its commitment to low carbon development is indeed noteworthy. Bangladesh committed to reducing GHG emissions in the power, industry and transport sectors by 5% below ‘business-as-usual’ GHG emissions by 2030 using only domestic resources, or by 15% below ‘business-as-usual’ GHG emissions by 2030 if sufficient and appropriate support is received from developed countries. However, weaknesses in terms of low research investment, inadequate institutional coordination and less cohesion should not be lost sight of. One challenge in particular is that as Bangladesh is growing faster, there is a mad rush for building infrastructure,
which is not always supportive of greening growth. He recommends ‘a whole of the society’
approach that harnesses the potential of all sources such as private sector, NGOs and external
sources in mobilizing climate finance (Sumon, Ahmed and Chakraborty).
4. Conclusion

Given the analysis, findings and insights gleaned from this paper, issuing green bonds appears to be the next logical step in diversifying green finance sources for Bangladesh. Since the corporate bond market is nascent, it would be wise to issue a sovereign green bond, with the targeted buyers of the bonds being institutional investors like pension funds, often with either a ESG (environment, social and government) mandate or environmental focus, as well as investment managers and governments on an international scale. Secondly, given the prominence of Islamic banking in Bangladesh and the central banks’ linkages with Islamic banking when it comes to green banking, issuing an Islamic green sukuk bond is a practical option, especially since Bangladesh can incorporate green sukuk frameworks of Malaysia and Indonesia in that respect.

Lastly, even though green bonds are generally issued toward mitigation projects, that should not deter Bangladesh since there are still numerous instances of usage for adaptation, especially the case of Fiji. The GoB is already in talks about the viability of issuing green bonds, so hopefully we can see progress in the next few years. As for now, further work would need to be done before green bonds can be issued, including consultations with institutions like the World Bank and Climate Bonds Initiative, assessing the market for green bonds, setting up incentives to promote it, drafting of a Green Bonds Guideline, creating institutional frameworks like a green finance arm within the MoEFCC and setting up ways to evaluate and monitor the flow of funds and effectiveness of projects.

Due to time constraints and unavailability of more in-depth information, I was unable to tie in an analysis of the existing green banking initiatives undertaken by Bangladesh Bank. I was also unable to incorporate a report on the government’s assessment of potential green bonds that had
not been published at the time of submission. Further research should be done in this area for Bangladesh by incorporating these components. Research should also be done for other developing countries, although it is likely to be a case-by-case basis due to unique needs and development trajectories of each nation. Mobilizing finance toward environmental projects will become increasingly important for climate-vulnerable, emerging economies over the coming years, and it is time policymakers start taking forward-looking steps now that are informed by global needs, with a spirit of seeing these evolving problems as opportunities for change.
## Appendix

### Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADP</td>
<td>Annual Development Plan</td>
</tr>
<tr>
<td>APA</td>
<td>Annual Performance Assessment</td>
</tr>
<tr>
<td>ASEAN</td>
<td>Association of Southeast Asian Nations</td>
</tr>
<tr>
<td>BAU</td>
<td>Bangladesh Agricultural University</td>
</tr>
<tr>
<td>BCCRF</td>
<td>Bangladesh Climate Change Resilience Fund</td>
</tr>
<tr>
<td>BCCSAP</td>
<td>Bangladesh Climate Change Strategy Action Plan</td>
</tr>
<tr>
<td>BCCTF</td>
<td>Bangladesh Climate Change Trust Fund</td>
</tr>
<tr>
<td>CAG</td>
<td>Comptroller and Auditor General</td>
</tr>
<tr>
<td>CAMELS</td>
<td>Capital adequacy, Assets, Management capability, Earnings, Liquidity, Sensitivity</td>
</tr>
<tr>
<td>CBI</td>
<td>Climate Bonds Initiative</td>
</tr>
<tr>
<td>CEDAIR</td>
<td>Climate Economic Analysis for Development, Investment and Resilience</td>
</tr>
<tr>
<td>CFF</td>
<td>Climate Fiscal Framework</td>
</tr>
<tr>
<td>CFU</td>
<td>Climate Finance Unit</td>
</tr>
<tr>
<td>CIP</td>
<td>Country Investment Plan</td>
</tr>
<tr>
<td>COP</td>
<td>Conference of the Parties</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------</td>
</tr>
<tr>
<td>CPEIR</td>
<td>Climate Public Expenditure and Institutional Review</td>
</tr>
<tr>
<td>CRR</td>
<td>Cash Reserve Ratio</td>
</tr>
<tr>
<td>CSO</td>
<td>Civil Society Organizations</td>
</tr>
<tr>
<td>DPP</td>
<td>Development Project Proposal</td>
</tr>
<tr>
<td>DRM</td>
<td>Disaster Risk Management</td>
</tr>
<tr>
<td>ESG</td>
<td>Environment, Social and Government</td>
</tr>
<tr>
<td>GBP</td>
<td>Green Bond Principles</td>
</tr>
<tr>
<td>GCF</td>
<td>Green Climate Fund</td>
</tr>
<tr>
<td>GED</td>
<td>General Economics Division</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GHG</td>
<td>Greenhouse Gas</td>
</tr>
<tr>
<td>GOB</td>
<td>Government of Bangladesh</td>
</tr>
<tr>
<td>IBFCR</td>
<td>Inclusive Budgeting and Financing for Climate Resilience</td>
</tr>
<tr>
<td>IFC</td>
<td>International Finance Corporation</td>
</tr>
<tr>
<td>IFCI</td>
<td>Islamic Finance Country Index</td>
</tr>
<tr>
<td>IMED</td>
<td>Implementation Monitoring and Evaluation Division</td>
</tr>
<tr>
<td>KPI</td>
<td>Key Performance Indicators</td>
</tr>
<tr>
<td>LDC</td>
<td>Least Developed Country</td>
</tr>
<tr>
<td>Acronym</td>
<td>Full Form</td>
</tr>
<tr>
<td>----------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>MDA</td>
<td>Ministries, Departments and Agencies</td>
</tr>
<tr>
<td>M&amp;E</td>
<td>Monitoring and Evaluation</td>
</tr>
<tr>
<td>MIE</td>
<td>Multilateral Implementing Entities</td>
</tr>
<tr>
<td>MOEFCC</td>
<td>Ministry of Environment, Forest and Climate Change</td>
</tr>
<tr>
<td>MoF</td>
<td>Ministry of Finance</td>
</tr>
<tr>
<td>MRV</td>
<td>Monitoring, Reporting, and Verification</td>
</tr>
<tr>
<td>MTBF</td>
<td>Medium Term Budget Framework</td>
</tr>
<tr>
<td>NAPA</td>
<td>National Adaptation Programme of Action</td>
</tr>
<tr>
<td>NCF</td>
<td>National Climate Foundation</td>
</tr>
<tr>
<td>NIE</td>
<td>National Implementing Agency</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Government Organization</td>
</tr>
<tr>
<td>OCAG</td>
<td>Office of Comptroller and Auditor General</td>
</tr>
<tr>
<td>PAC</td>
<td>Public Accounts Committee</td>
</tr>
<tr>
<td>RBI</td>
<td>Reserve Bank of India</td>
</tr>
<tr>
<td>SAI</td>
<td>Supreme Audit Institution</td>
</tr>
<tr>
<td>SDG</td>
<td>Sustainable Development Goal</td>
</tr>
<tr>
<td>SEBI</td>
<td>Securities and Exchange Board of India</td>
</tr>
<tr>
<td>SEC</td>
<td>Securities and Exchange Commission</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>SFU</td>
<td>Sustainable Finance Units</td>
</tr>
<tr>
<td>SLR</td>
<td>Statutory Liquidity Ratio</td>
</tr>
<tr>
<td>SRI</td>
<td>Sustainable and Responsible Investment</td>
</tr>
<tr>
<td>UNDP</td>
<td>United Nations Development Program</td>
</tr>
<tr>
<td>UNEP</td>
<td>United Nations Environment Program</td>
</tr>
</tbody>
</table>
BIBLIOGRAPHY


UNDP. Bangladesh Climate Change Trust Fund.


UNEP. "Green Finance for Developing Countries." 2016.


# ACADEMIC VITA

**Current Address:**
314A Holmes Hall  
University Park, PA 16802

**Barisha Towhid**
[barzt5133@psu.edu](mailto:barzt5133@psu.edu)  
+1(814) 826-5272

**Permanent Address:**
Block- D, Lalmatia  
Dhaka 1207, Bangladesh

## EDUCATION

Pennsylvania State University, Smeal College of Business, Schreyer Honors College  
*Bachelor of Science in Finance*  
Mathematics minor

## RELEVANT EXPERIENCE

**Centre for Policy Dialogue-Civil Society Think Tank**  
*Research Intern*
- Gained skills in research and analysis, critical thinking and professional communication
- Analyzed 2018 Bangladesh National Budget for Climate Change for press briefing
- Collaborated with supervisor and team, used Excel and statistical software Eviews

**Visionese LLC-360 Virtual Tour Startup Company**  
*Fund Coordinator*
- Collaborated with tech startup founders to generate business plan and financial projections
- Developed funding applications for future financial viability and expansion potential of startup
- Resulted in win of $2000 in funding and startup training at Ben Franklin Techcelerator program and Abington Launchbox Business Plan Competition
- Acquired competence in time management, professional writing and adaptability

**Market Analysis Group (MAG), Penn State Finance Society-Online Business Publication**  
*Lead in Commodities Sector*
- Lead team of students to write articles, do sector presentations and stock pitches; edit work and provide feedback as a platform for students to develop professional business writing skills and stay up-to-date with business news
- Gained aptitude in teamwork, management, public speaking, and motivation
- Published business articles, e.g. “End of the Wage-Price Spiral?”, “Cash-strapped Venezuela Finally Defaults”

**Penn State Investment Association (PSIA)**  
*Member in Telecommunication Sector and Financial Sector*
- Participated in stock pitch competition; used strengths and risks analysis, comparable analysis, ratio analysis and discounted cash flow
- Acquired skills in presentation, teamwork, persuasion and applying financial concepts
- Worked on weekly educational assignments involving ratios, acquisitions and valuation

## LEADERSHIP EXPERIENCE

**Mohona- Bangladesh Cultural Club**  
*Senior Advisor, Past President, Treasurer and Co-founder*
- Initiated new cultural organization to share Bengali culture with Penn State community
- Expanded membership by 15%, delegated exec board teams, formed partnerships with

---

**Permanent Address:**
University Park, PA  
Graduation Date: May 2019  
Dean’s List: 6/6 semesters

**Current Address:**
314A Holmes Hall  
University Park, PA 16802

University Park, PA  
Spring 2017

University Park, PA  
Spring 2017- Present

University Park, PA  
Fall 2015-17

University Park, PA  
Fall 2016-Present
other cultural organizations and hosted socials for outreach to larger audience

- Organized and coordinated two major cultural events including “Bengali New Year”
- Gained competence in enterprise, leadership, self-management, delegation, interpersonal communication, problem-solving, event planning and ability to work under pressure

**Bangladesh Assembly of Youth Advocates (BAYA)**

*Project Director*

- Co-organized “Menstruation Regulation for All” sponsored project, delivered opening speech and coordinated audience in information session, as part of social movement to promote reproductive health among lower-class women
- Acquired aptitude in organization, strong work ethic and persistence

**Marie Stopes Hospital**

Dhaka, Bangladesh

Fall 2014-15

**HONORS/SKILLS/INTERESTS**

- Received the Freshman Award for 4.0 GPA in first semester of college
- Received nationally highest score in high school accounting
- Inducted member of Phi Eta Sigma for position on Dean’s list every semester
- Fluent in the language Bengali, moderate proficiency in French
- Proficiency in Excel features: functions, charts, pivot tables and vlookup
- Interests include: philosophy, travelling, writing, theatre and singing