



Practices of Green Financing and Sustainable Development: Scope and Complexity

Farzana Rashid, Azmat Ullah *

Department of Business Administration, Port City International University, Chattogram, Bangladesh

Email address:

azmat.pstu@yahoo.com (Azmat Ullah)

*Corresponding author

To cite this article:

Farzana Rashid, Azmat Ullah. Practices of Green Financing and Sustainable Development: Scope and Complexity. *International Journal of Sustainable and Green Energy*. Vol. 12, No. 1, 2023, pp. 6-12. doi: 10.11648/j.ijrse.20231201.12

Received: October 16, 2022; **Accepted:** November 16, 2022; **Published:** January 30, 2023

Abstract: Green financing or environmentally friendly financing is a newly arising financial form to accumulate environmental preservation with sustainable goals, economic gains, emphasizes environmental benefits, low carbon economy in ways that benefit the organization and its stakeholders. Entrepreneurs, investors, and owners of the organization of different countries in the world are more concerned about investment their capital that's why they prefer green or sustainable financing. The article is devoted to the study of the essence of "green" finance and to highlight the present condition of green financing in Bangladesh. This research paper mostly draws on secondary data that was gathered from the Bangladesh Bank's annual report as well as publications on sustainable and inclusive banking, green banking, and green financing that were published in newspapers, journals, and books. The goal of the article is to examine how green financing might be used to achieve sustainable development objectives in Bangladesh and reveals the various challenges that impact to achieve the sustainable development of Bangladesh as well as opportunities which are going to aid the financial institutions of our country. The necessity of greening the financial system is covered in this study and the role of financial governance to overcome the crisis of electricity and how renewable energy (green) will help to diminish this difficulty.

Keywords: Green Finance, Sustainable Development, COVID-19, Electric Crisis, Environment

1. Introduction

Green refers to the fresh, toxic free, environmentally friendly, eco-friendly, organic etc. The widespread use of phrases like natural, organic, environment-friendly, earth-friendly, ecological, non-toxic, biodegradable, plant-based, chlorine-free, and 100% compostable, which consumers mistakenly believe to be synonymous with green, further complicates matters [20]. Financing is the process of collecting funds or capital for any kind of expenditure that help to contribute the economy of the country. It is the act of directing various financial resources—such as credit, loans, and invested capital—to those parts of the economy that need them most or can use them most effectively.

In contrast to traditional financial activities, the green economy places a stronger emphasis on environmental benefits and gives the environmental protection industry more attention. [26]. Green finance promotes interest in recent developments

and innovations, such as environmentally friendly power [29, 9, 7]. Green finance is the fusion of environmentally friendly behavior with the financial and commercial sectors of a country as well as worldwide. Because of green financing, low carbon [3]. A low-carbon economy and green financing have had a significant impact on one another. The low-carbon economy and green finance are nearly connected ideas.

Financial sectors play a vital role in economic development of a country. The proper use of financial resources contribute to set up financial sectors, increase per capita income, decrease unemployment and stimulate overall economic growth in return. Financial and economic progresses are closely correlated [19]. Green financing is a newly arising concept to contribute the economic development of a state. Green funding aims to enhance the amount of money flowing to objectives for sustainable development from banking and non-banking financial institutions (NBFIs) in the public, commercial, and nonprofit sectors. Green or sustainable banking practices take into

account all social, environmental, and ecological problems in order to protect the environment and preserve natural resources. However, the preservation of the environment and natural resources is the main advantage of the green banking strategy. Green banking emphasizes electronic transactions such as ATM, mobile, and online banking use by customers for various banking transactions in order to minimize paper work. Green banks have the capacity to aggregate modest initiatives to a scale that is commercially appealing, create innovative financial products, offer better financing terms for clean energy projects, and expand the market by informing people about the advantages of clean energy.

Objectives of the Study

The paper's objective is to evaluate Bangladesh's current situation for green finance. On the basis of importance of the study, the researchers are encouraged-

- 1) To highlight the existing scenario of green financing in Bangladesh.
- 2) To know the potential scope of green financing in Bangladesh.
- 3) To overview the challenges of green financing in Bangladesh.

2. Literature Review

2.1. Green Financing

Green finance indicates the positive transformation of global economy's into sustainable development through the financing of private and public green investments and public rules, regulations, and policies that support environmentally friendly investments. Various forms of financing or investment that have an effect on the environment and environmental sustainability are included in "green finance" [24]. Depending on the participant, green finance can take on various forms and be driven by a variety of factors, including financial incentives, plans to protect the environment, or a combination of both. A significant aspect of the national environment is green financing and low-carbon economies [8, 14, 15]. The low-carbon economy and green finance are closely related ideas. Green finance should be highlighted as a specific category of financial service and product used in environmental loan decision-making, monitoring, and risk management, as well as promoting environmentally friendly investment and deployment of low-carbon technologies, projects, industries, and enterprises. [13]. Green and sustainable financing stimulates interest in emerging technologies, such as environmentally friendly power [27]. According to UNEP, the simplest definition of green finance is a group of strategies for obtaining, raising, and allocating funds (from the public and private sectors as well as philanthropic contributions) to close the enormous investment gap in creating and maintaining new, environmentally friendly infrastructure that also makes financial sense [23].

In the new circumstances, epidemiological protection measures for humans are provided by green finance, which is crucial for the efficient reproduction of human capital. Green finance also plays a leadership role in designing measures to

preserve the environment and the sustainability of the economy. Iqbal makes a suggestion that can achieve natural manageability by developing financing for solar energy [10]. Iqbal's comparative study also suggests that using ecological or economic finance is the best way to reduce natural corruption [11].

2.2. Sustainable Development

The Sustainable Development Goals (SDGs) are our most ambitious development agenda ever, providing the structure, goals, and vision for the transformation of society into one that is resilient and sustainable. Banks, institutional investors, and multinational financial institutions, along with central banks and financial regulators are the main players developing the growth of green finance. Green financing is crucial to the UN's efforts to achieve several of its Sustainable Development Goals (SDG). There are various project types that fall under the green finance umbrella, including as initiatives for sustainable use of natural resources and land, pollution prevention and control, biodiversity conservation, renewable energy and energy efficiency, and circular economy projects [25].

Massively promoting green financing implies that sustainable or green activities take precedence over regular corporate expenditures that may or may not be sustainable. The main focus on green finance leads to transparency and a regular flow of investments into environmental objectives. One such cutting-edge idea that is in line with the financial industry's obligation to address the current mega-challenges and assure the production of both economic and social value without harming the environment is green financing [22]. During this time, the idea of socially responsible investment (SRI), which has since developed into the environment, social, and governance (ESG) concept of the contemporary business world, also began to gain ground [6]. Numerous strategies are being used internationally to combat climate change and prepare for it in various industries, because of the threat that it poses to achieving all other sustainable development goals [18, 12].

2.3. The COVID-19 Impact on Green Financing

COVID-19 affected the overall financing investment in Bangladesh as well as impact on green financing sectors in our country. According to ADB, the impact of COVID-19 will cause job losses between 11.6 million and over 18.4 million, losses to the region's GDP of \$163 billion or 4.6% of the region's GDP, and losses to the region's GDP of \$253 billion or 7.2% of the region's GDP [1]. As a result of significant decreases in consumption, investment, and trade, the Asian Development Outlook 2020 report from ADB predicts that the region's GDP growth in 2020 will plunge from 4.4% in 2019 to -2.7% in 2020 [2]. Major economies and various financial markets have negatively impacted as a result of the COVID-19 crisis. Additionally, it was discovered that during the epidemic, the performance of renewable funds declined [16].

The COVID-19 pandemic has also been a significant turning point and has fueled the philosophy of green finance as the preferred mechanism for nations to avoid the "business as usual" method of functioning and to rebuild better through "green recovery" policies intended to promote climate-positive, inclusive, and sustainable growth of the economy [4]. As investors demand greater transparency and accountability about the nature and impact of investments and as they grow more interested in financing projects that offer solid returns and a wide range of social and environmental benefits at the same time, these initiatives are expected to gain more momentum and practical action in the near future [17].

The global pandemic will have a long-term impact on human behavior towards the environment and on the financing of this area. As worries about protecting populations from illness and mitigating climate change grow, it is essential to build resilience to COVID-19 and long-term environmental threats.

2.4. The Positive Relation of Green Financing and Electricity

Bangladesh is currently capable of producing 22,348MW of electricity daily. Yesterday, the highest peak-time generation was 13,228 MW, despite the maximum demand being predicted to be 14,000 MW. According to the BPDB data, of that, approximately 52% comes from gas-powered plants, 27% from furnace oil-powered plants, 5.86% from diesel-powered plants, 8.03% from coal-powered plants, 1% from hydro, 0.5% from other renewable energy, and 5.27% is imported [5].

According to PM Hasina, the cost of producing electricity from renewable sources is Tk 12.84 per KW, however the government only charges Tk 5.08 per KW. Furnace oil costs Tk 17.41 per KW, diesel costs Tk 36.85, and coal costs Tk 12.37, although the subsidised price for customers is Tk 5.08 for all three [21]. Renewable energy power and coal are the lowest sectors to generate the electricity in Bangladesh.

Government takes initiative to emphasize the renewable energy power production for generating electricity whereas the renewable energies only 0.5 percent. After observing the information, there is big chance for financial institution to invest in renewable energy sector to help government & publics by generating solar based electricity and solar irrigation pumping systems.

3. Research Methods and Procedure

This article is a descriptive study. Information has been gathered from secondary sources to fulfill the objectives of the study. The data acquired from secondary sources like reports of Annual Report of Bangladesh Bank and articles on green banking, green financing, country experiences, newspapers, journals and books, Sustainable and Inclusive Banking from the Bangladesh Bank website (2021). The analysis is mainly based on description. In case of necessity simple graphs, charts and tabular presentations may reveal. Statistical analyses are not feasible alternatives due to the fact that green financing is an emerging concept and necessary data are not yet available on websites.

4. Research Findings and Discussion

Present Condition of Green and Sustainable Financing in Bangladesh for FY2021.

Sustainable Financing Scenario

On December 30, 2020, the term "sustainable finance" is defined for the first time in the sustainable finance policy. Since January 2021, banks and NBFIs have been making contributions to sustainable finance. Banks and NBFIs collectively disbursed BDT 348.14 billion and BDT 6.05 billion in sustainable finance from January to June of FY2021, respectively. During this time, sustainable finance made up 7.19 percent of the overall loan disbursements. Table 1 displays the amount of sustainable financing provided by banks and NBFIs by category.

Table 1. Sustainable Finance Summary (January-June 2021).

							(In Million BDT)
Category of Sustainable Finance	SOCBs	SDBs	PCBs	FCBs	Total	NBFIs	Grand Total
Sustainable Agriculture	10,947.39	30,927.00	88,098.03	11,720.56	141,692.98	735.49	142,428.47
Sustainable CMSME	3,987.61	2,563.76	41,283.94	385.40	48,220.71	1,093.60	49,314.31
Socially Responsible Financing (SRF)	5,945.00	0.00	45,009.80	12,837.57	63,792.37	1,801.70	65,594.07
Working Capital and Demand Loan of Green Products/ Projects/Initiatives	192.23	0.00	30,803.36	17,943.32	48,938.91	400.83	49,339.74
Priority Green/ Eco-Friendly Products for Trading Sector	0.32	0.00	7,664.96	1,868.50	9,533.78	232.60	9,766.38
Green Finance	2,585.54	16.73	31,465.39	1,894.86	35,962.52	1,784.81	37,747.33
Sustainable Finance	23,658.10	33,507.49	244,325.48	46,650.22	348,141.29	6,049.03	354,190.32

Source: Sustainable Finance Department, Bangladesh Bank.

4.1. Scenario of Green Financing

Different categories of green financing products include renewable energy, energy efficiency, alternative energy, liquid waste management, solid waste management,

recycling manufacturing recyclable goods, environment-friendly brick production, green/environment-friendly establishments, green agriculture, green CMSME, and green SRF. The total amount of green finance disbursed by banks and NBFIs during FY2021 was BDT 97.64 billion and BDT

3.16 billion, respectively. Table 2 lists the overall amount and percentage of green financing provided by banks and NBFIs by category.

Table 2. Green Finance in FY2021.

Green Finance (Product)	(In million BDT)						
	SOCBs	SDBs	PCBs	FCBs	Bank's Total	NBFIs	Total
Renewable Energy	1,838.89	6.38	1,598.04	3.13	3,446.44	496.72	3,943.17
Energy Efficiency	227.96	0.00	11,014.12	1,264.30	12,506.38	1,032.21	13,538.59
Alternative Energy	0.00	0.00	45.51	0.00	45.51	0.00	45.51
Liquid Waste Management	396.13	0.00	6,074.61	559.88	7,030.62	379.69	7,410.31
Solid Waste Management	119.13	0.00	177.80	0.00	296.93	83.15	380.08
Recycling Manufacturing Recyclable Goods	813.54	0.00	10,294.47	3.40	11,111.41	0.35	11,111.76
Environment Friendly Brick Production	372.10	11.00	5,438.67	0.00	5,821.77	312.10	6,133.87
Green/ Environment Friendly Establishments	5,638.70	0.00	36,893.84	12,993.75	55,526.29	100.00	55,626.29
Green Agriculture	56.64	2.83	498.47	462.24	1,020.18	157.40	1,177.58
Green CMSME	93.96	0.00	469.59	200.20	763.75	516.80	1,280.55
Green SRF	0.00	0.00	68.45	0.00	68.45	77.90	146.35
Total	9,557.05	20.21	72,573.57	15,486.90	97,637.73	3,156.32	100,794.05

Source: Sustainable Finance Department, Bangladesh Bank.

(N.B.: The figures in the parentheses are the number of banks/NBFIs.)

4.2. Green Products/Initiatives Disbursement

The total amount of refinance completed under the plan up through June 2021 was BDT 5,681.89 million. The entire

amount paid out under the refinancing program in FY2021 was BDT 994.81 million. Table 3 shows the product-wise disbursement pattern from FY2017 to FY2021.

Table 3. Trend in BB Refinance Scheme Disbursements for Green Products/Initiatives.

Products	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Bio gas	46.6	10.5	4.56	1.24	2.17
Effluent treatment plant	179.6	60	108.44	132.5	193.14
Energy efficient technology	0.6	13	10	46.29	200
Green industry	0	500	152.33	198.7	485
HHK technology in brick kiln	10	0	5	100	0
Led bulb/tube manufacturing/assembly plant	0	0	0	0	24
Organic manure from slurry	0.1	0	0	0	0
Paper waste recycling	20	0	0	0	0
Safe working environment	55.3	81.97	39.96	88.1	60
Solar home system	35.3	0	0.19	0.45	1.32
Solar mini grid	0	0	0	0	27.5
Vermicompost	1.3	0	0.79	1.26	1.67
Total	919.70	348.80	321.27	568.54	994.81

Source: Sustainable Finance Department, Bangladesh Bank.

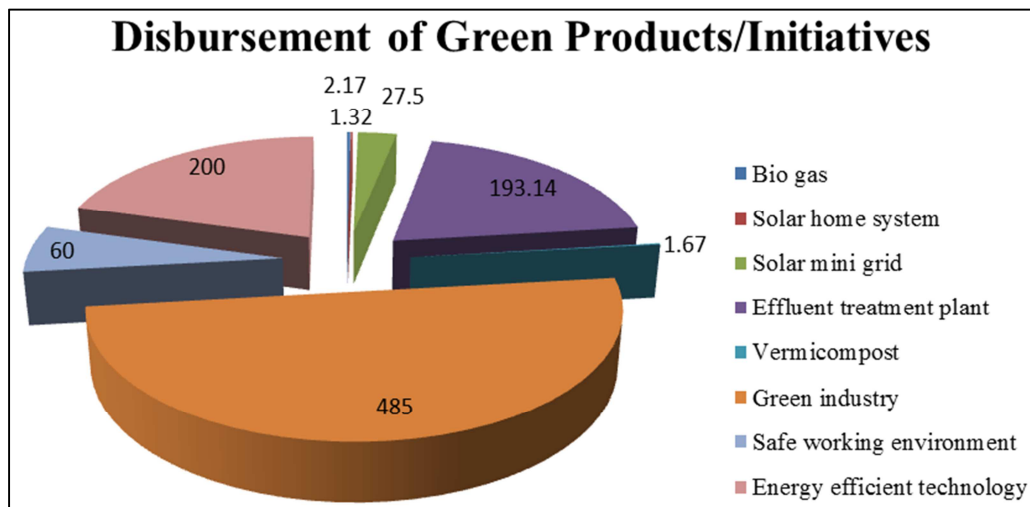


Figure 1. Green Products/Initiatives Disbursement.

4.3. Green Product Exist in Bangladesh

In order to expand financing for green products or initiatives at a reduced cost of capital, a revolving refinance scheme of BDT 2.0 billion was launched in 2009. Later, it was extended to BDT 4.0 billion. Initially, this scheme's refinance facility was extended for 6 (six) green products or

initiatives. Following stakeholder consultations, the technical advisory committee, and market demand, Bangladesh Bank increased the number of green products and activities that are eligible for this refinancing program from 6 to 55 in FY2021 (Table 4).

Table 4. List of Eligible Green Products/ Initiatives under "Refinance Scheme for Green Products/ Initiatives/ Projects".

1) Solar Home System	29) Net Metering Rooftop Solar System
2) Cold Storage Run by Solar Energy	30) Solar Mini Grid
3) Setting up Bio-gas Plant in Existing Cattle/Poultry Farm	31) Solar Nano Grid
4) Integrated Cow Rearing and Setting up Bio-gas Plant	32) Solar Pico Grid
5) Organic Manure from Slurry	33) Palm Oil Production Through Energy Efficient Plant
6) Medium Size Bio-gas Plant	34) Vermicompost Production
7) Large Scale Biomass based Bio-gas Plant	35) Improving Working Environment and Safety Ensuring Project
8) Poultry and Dairy based Large Scale Bio-gas Plant	36) Green Featuring Building
9) Windmill Electricity Generation Plant	37) Green Industry
10) Hydro Electricity Plant (Pico, Micro, Mini)	38) Setting up Modern Technology Based Plant (HHK/Tunnel Kiln/equivalent Technology) to Reduce Carbon Emission in Brick Manufacturing Industry
11) Replacement of Energy Inefficient Materials by Energy Efficient Materials	39) Foam Concrete Brick Manufacturing Plant
12) Solar Micro	40) Compressed Block Brick Manufacturing Plant
13) Auto Sensor Power Switch Assembly Plant for Electricity Savings	41) Used Led Acid Battery Recycling Plant
14) Energy Efficient Improved Cook Stove Assembly Plant	42) Solar Battery Recycling Plant
15) LED Bulb Manufacturing Plant	43) Recyclable Non-Oven Polypropylene Yarn and Baggage Manufacturing Plant
16) LED Bulb/Tube Light Assembly Plant	44) Recyclable Baggage Manufacturing
17) Replacement of Conventional Lime Kiln by Energy Efficient Kiln	45) Paper Manufacturing by Recycling of Waste/Used Paper Plant
18) Waste Heat Recovery System	46) Plastic Waste (PVC, PP, LDPE, HDPE, PS) Recycling Plant
19) Bio Crude Oil Production through Pyrolysis Method	47) PET Bottle Recycling Plant
20) Biological ETP	48) Fecal Sludge Management and Treatment
21) Combination of Biological and Chemical ETP	49) Hazardous Waste Management
22) Solar Irrigation Pumping System	50) Organic Manure Production from Municipal Waste
23) Surface Water withdrawal, Refinement and Supply Run by Solar Pumping and Plant	51) Methane Recovery and Electricity Generation from Municipal Waste
24) Solar PV Assembly Plant	52) Sewage Water Treatment Plant
25) Solar PV Power Plant	53) Waste Water Treatment Plant
26) Solar Cooker Assembly Plant	54) Central Effluent Treatment Plant (CETP)
27) Solar Water Heater Assembly Plant	55) Conversion of Chemical ETP to Combined Biological and Chemical ETP
28) Solar Air Heater and Cooling System Assembly Plant	

4.4. Challenges to Green Finance in Bangladesh

A relatively recent issue in Bangladesh's financial system is green finance; consequently, it is projected that the private sector will lack the ability to carry out policies and programs. The absence of a comprehensive legal and regulatory structure, the availability and high cost of land, the lack of technological potential data, and the accessibility of commercial funding from financial institutions are the prime challenges to the successful execution of green projects. Because they offer a lower rate of return and carry a greater investment risk than fossil fuel initiatives, financial institutions are hesitant to support green projects [28].

Although the Bangladesh Bank has produced green banking rules, the underdeveloped stock and bond markets, insufficient bank and financial institution capacity, and a lack of knowledge about the risks and returns of green projects all limit the predicted growth of green projects in Bangladesh. However, the ability to raise capital for green investments has been constrained by a number of microeconomic issues,

including difficulties internalizing environmental externalities, information asymmetry, a lack of adequate analytical capacity, and an unclear definition of what is meant by "green". There are some challenges to green financing in Bangladesh, such as:

- 1) Compared to polluting projects in the same business, green projects typically have a longer payback period.
- 2) A significant obstacle to properly designing incentives and disincentives for risky projects is the lack of standardized procedures and formats to estimate the financial implications of environmental hazards.
- 3) Because it is difficult to internalize these externalities, more money is invested in "brown" than "green" enterprises.
- 4) Low-investment experience in green projects faces a separate set of difficulties.
- 5) The specific risks associated with green projects raise the expected rate of return from any other financial investment decision.
- 6) Green projects that require a large initial investment

struggle to find the necessary funds to get off the ground.

- 7) Insufficient business interest in environmentally friendly (green) projects.
- 8) Businesses are not motivated to take on green projects because there is very little consumer demand for eco-friendly goods or solutions.

4.5. Scope of Green Financing in Bangladesh

Bangladesh Bank and different financial institutions of our country have taken various steps to promote sustainable financing and the government of Bangladesh set up different green plants for stimulating existing and new entrepreneurs of environmentally friendly financing that helps to protect society as well as the environment. Under the program, participating banks and financial institutions (PFI) are permitted to charge a maximum interest rate of 6-7% on funding for green products and activities. The maximum interest rate for financing the PFI in the "Solar Irrigation Pumping System" under the refinance plan has been determined by Bangladesh Bank at 6.00 percent. Some other opportunities are as follows:

- 1) Creating new debt and equity instruments could be another strategy for obtaining green financing from private sector sources.
- 2) Green bonds should be introduced in Bangladesh that are another opportunity for green financing.
- 3) The insurance industry can be incorporated to help the promotion of green finance by lowering the risk associated with green initiatives.
- 4) Green financing provides producers with incentives through financing channels, which is essential for fostering the green transformation.
- 5) Green refinance programs and green banking incentives help private sector manufacturers go green.
- 6) BB has selected a number of priority sectors for the extension of SME financing support, including the production of renewable energy, light engineering, plastics, jute-made items, leather, agro-product and food processing, etc.
- 7) Exploring new potential sectors of transport, urban building construction and housing, clean power generation, energy efficiency for promoting green finance.
- 8) Utility-scale the best range of green finance includes solar PV, grid-connected solar rooftop, solar home systems, solar irrigation, solar mini-grids, wind, biomass, biogas, waste-to-energy, small hydro, geothermal, hydrokinetic, tidal, and better cook stoves.
- 9) Many small and medium-sized businesses in the leather, ceramic, and ready-made garments that have strong forward links have yet to embrace cleaner production methods means green financing.

5. Recommendations and Conclusion

Green financing is the best option for positive contribution

against environmental degradation. After evaluating the overall scenarios of green financing, the report concludes that green financing in Bangladesh has a bright future for investing in RE projects. Government takes initiative to finance in various sectors that produce environmentally friendly products or services and to establish different projects that help the existing financial institutions convert conventional financing to green financing for protecting the environment as well as the human welfare.

Green financing is another way to create new solar-based projects for power generation that will play a vital role for safeguarding the as well as supporting the government by supplying solar-generated electricity. The government has prioritized "Solar Irrigation Pumping System" for the agricultural industry above more traditional diesel and electricity-powered pumps. At least the minimal percentage of the crisis is mitigated if the government, financial banking organizations and non-banking financial organizations invest their capital to generate electricity by renewable energies like solar based electronic systems.

References

- [1] ADB (2020). An Updated Assessment of the Economic Impact of COVID-19. ADB Brief No. 133. Manila. May.
- [2] ADB (2020). Asian Development Outlook 2020 Supplement: Lockdown, Loosening, and Asia's Growth Prospects. Manila. June.
- [3] Aleksandrov N, Espinoza R, Gyurko L (2013) Optimal oil production and the world supply of oil. *J Econ Dyn Control* 37: 1248–1263. <https://doi.org/10.1016/j.jedc.2013.01.015>
- [4] Asian Development Bank (ADB) (2021) Green, Sustainability and Social Bonds for COVID-19 Recovery. Available from: <https://www.adb.org/sites/default/files/publication/678191/green-sustainability-social-bonds-COVID-19-recovery.pdf>.
- [5] Bangladesh Power Development Board (2022). Annual report. <http://www.bpdb.gov.bd/>
- [6] Boffo R, Patalano R (2020). ESG Investing: Practices, Progress and Challenges. Available from: <https://www.oecd.org/finance/ESG-Investing-Practices-Progress-Challenges.pdf>.
- [7] Ehsanullah S, Tran QH, Sadiq M, et al (2021). How energy insecurity leads to energy poverty? Do environmental consideration and climate change concerns matters. *Environ Sci Pollut Res*. <https://doi.org/10.1007/s11356-021-14415-2>
- [8] Guild J (2020) The political and institutional constraints on green finance in Indonesia. *J Sustain Financ Invest*. <https://doi.org/10.1080/20430795.2019.1706312>
- [9] Hsu CC, Quang-Thanh N, Chien FS, et al (2021). Evaluating green innovation and performance of financial development: mediating concerns of environmental regulation. *Environ Sci Pollut Res*. <https://doi.org/10.1007/s11356-021-14499-w>
- [10] Iqbal, W., Altalbe, A., Fatima, A., et al (2019). A DEA approach for assessing the energy, environmental and economic performance of top 20 industrial countries. *Processes* 7: <https://doi.org/10.3390/PR7120902>

- [11] Iqbal, W., Fatima, A., Yumei, H., et al (2020). Oil supply risk and affecting parameters associated with oil supplementation and disruption. *J Clean Prod* 255:.. <https://doi.org/10.1016/j.jclepro.2020.120187>
- [12] Knittel, N. (2016). Climate Change Adaptation: Options and Mechanisms under the UNFCCC. Available from: <https://climatepolicyinfohub.eu/climate-change-adaptation-options-and-mechanisms-under-unfccc>.
- [13] Lindberg, N. (2014). Definition of Green Finance (German Development Institute). https://www.diegdi.de/uploads/media/Lindenberg_Definition_green_finance.pdf
- [14] Mohsin M, Ullah H, Iqbal N et al (2021) How external debt led to economic growth in South Asia: a policy perspective analysis from quantile regression. *Econ Anal Policy* 72: 423–437. <https://doi.org/10.1016/J.EAP.2021.09.012>
- [15] Mohsin M, Zhou P, Iqbal N, Shah SAA (2018) Assessing oil supply security of South Asia. *Energy* 155: 438–447. <https://doi.org/10.1016/j.energy.2018.04.116>
- [16] Naqvi, B., Mirza, N., Rizvi, S. K. A., Porada-Rocho_n, M., & Itani, R. (2021). Is there a green fund premium? Evidence from twenty seven emerging markets. *Global Finance Journal*, 50, 100656. <https://doi.org/10.1016/j.gfj.2021.100656>
- [17] Netto, A. L., Salomom, V. A. P., & Barrios, M. A. O. (2021). Multi-Criteria Analysis of Green Bonds: Hybrid Multi-Method Applications. *Sustainability* 13: 10512. <https://doi.org/10.3390/su131910512>
- [18] Ravindranath, N. H., Sathaye, J. A. (2002). Global Mechanisms for Addressing Climate Change. In: *Climate Change and Developing Countries. Advances in Global Change Research*, Springer, 179–223. https://doi.org/10.1007/0-306-47980-X_7
- [19] Sadorsky, P. (2011). Financial development and energy consumption in Central and Eastern European frontier economies. *Energy Policy*, 39 (2), 999–1006. <https://doi.org/10.1016/j.enpol.2010.11.034>
- [20] TerraChoice (2009). Seven Sins of Greenwashing: Environmental Claims in Consumer Markets. Summary Report North America 2009. TerraChoice Group, Inc. Ottawa, Ontario, Canada.
- [21] The Daily Star (2022). Available: <https://www.thedailystar.net/news/bangladesh/news/power-crisis-may-worsen-3075341>. August 7, 2022
- [22] Thomson, S. (2021). *Green and Sustainable Finance Principles and Practice*. Kogan Page, New York and London.
- [23] United Nations Environment Programme (UNEP) (2021) Adaptation Gap Report 2020-Executive summary. Available from: <https://www.unep.org/resources/adaptation-gap-report-2020>.
- [24] Volz U, Böhnke J, Knierim L, Richert K, Röber G.-M, Eidt V (2015). *Financing the Green Transformation: How to Make Green Finance Work in Indonesia* (Basingstoke: Palgrave Macmillan). <http://www.palgrave.com/us/book/9781137488110>
- [25] World Economic Forum (2020). Green Horizon Summit: The Pivotal Role of Finance. Available: <https://www.weforum.org/agenda/2020/11/what-is-green-finance>.
- [26] Wang, Y. & Zhi, Q. (2016). The role of green finance in environmental protection: Two aspects of market mechanism and policies. *Energy Procedia*, 104, 311 – 316.
- [27] Wang, M., Li, X., Wang, S. (2021). Discovering research trends and opportunities of green finance and energy policy: a data-driven scientometric analysis. *Energy Policy* 154: 112295. <https://doi.org/10.1016/j.enpol.2021.112295>
- [28] Yoshino, N., and F. Taghizadeh-Hesary. 2018. Alternatives to Private Finance: Role of Fiscal Policy Reforms and Energy Taxation in Development of Renewable Energy Projects. In *Financing for Low-Carbon Energy Transition: Unlocking the Potential of Private Capital*, edited by V. Anbumozhi, K. Kalirajan, and F. Kimura. Springer, Singapore.
- [29] Zhang D, Mohsin M, Rasheed AK, et al (2021) Public spending and green economic growth in BRI region: mediating role of green finance. *Energy Policy*. <https://doi.org/10.1016/j.enpol.2021.112256>.