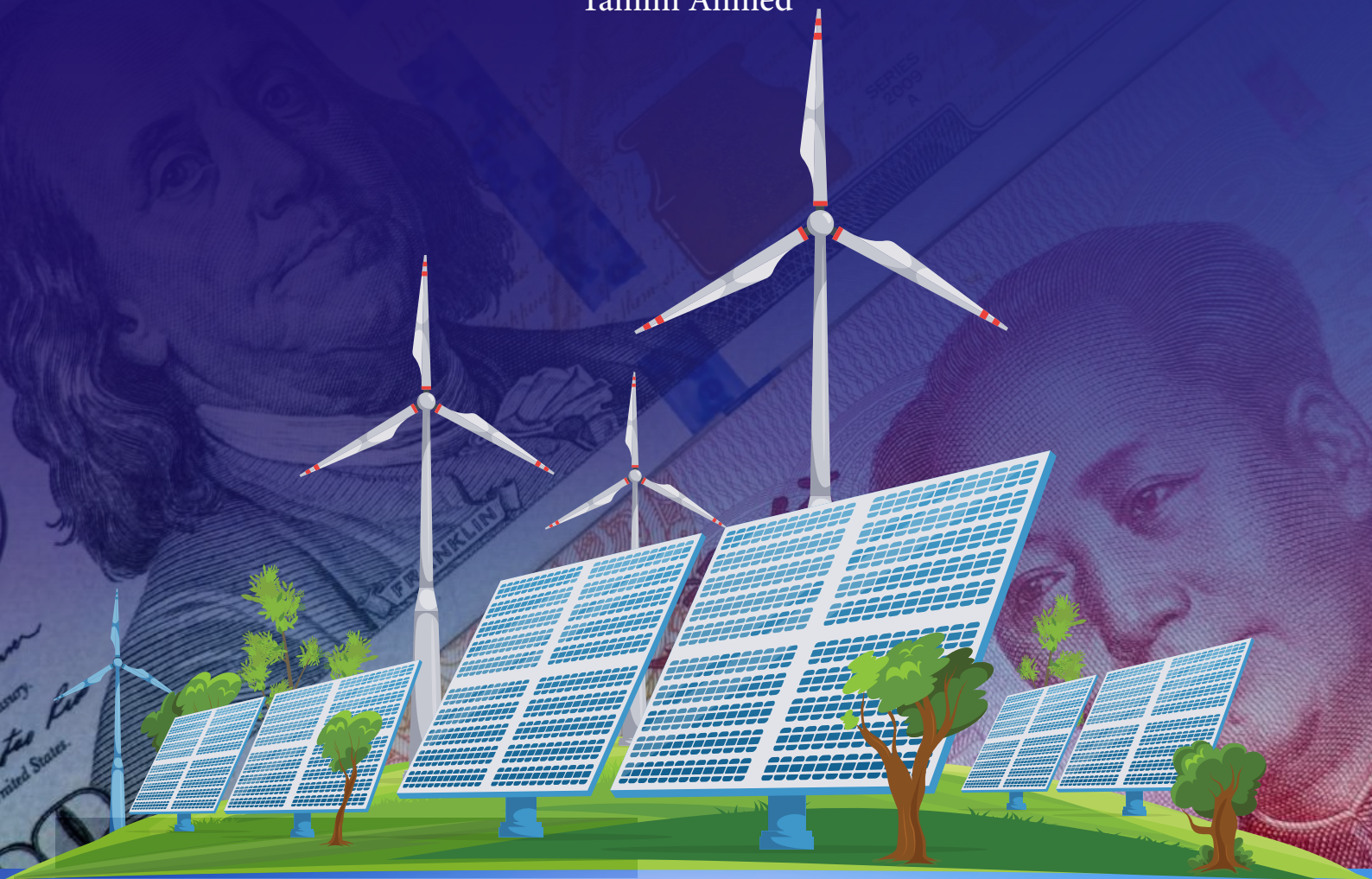


Navigating Financial and Fiscal Landscapes

Targeting Chinese Overseas Investment in Bangladesh's Renewable Energy Sector

Khondaker Golam Moazzem
Mashfiq Ahasan Hridoy
Tamim Ahmed



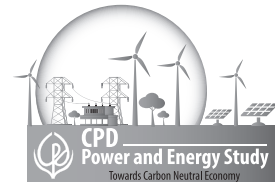
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Published by _____

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First Published December 2024

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Cover Design

Avra Bhattacharjee

Copyediting

HM Al Imran Khan

Page lay-out and typesetting

Md Shaiful Hassan

Citation: Moazzem, K. G., Hridoy, M. A., and Ahmed, T. (2024). *Navigating Financial and Fiscal Landscapes: Targeting Chinese Overseas Investment in Bangladesh's Renewable Energy Sector*. Centre for Policy Dialogue (CPD).

Abstract

This study investigates the fiscal and financial barriers to Chinese overseas investment in Bangladesh's renewable energy sector and explores potential solutions. Using primary data from Key Informant Interviews (KIIs) and a comprehensive literature review of fiscal and financial instruments in Bangladesh and China, the study identifies critical barriers such as currency volatility, regulatory unpredictability, bureaucratic hurdles, land acquisition delays, grid infrastructure limitations, and skill shortages in the renewable energy workforce. Significant gaps are noted between Bangladesh's and China's financial and fiscal tools, emphasizing the need for more accessible, long-term, and comprehensive incentives. The study highlights the availability of approximately USD 39.74 billion in global non-Chinese funding for renewable energy investment in Bangladesh and recommends measures including enhanced financial strategies, improved skills development, streamlined regulations, fixed exchange rate mechanisms, and utilisation of global climate funds to attract investment and strengthen the renewable energy sector.

Acknowledgements

The authors remain truly indebted to Bangladesh China Chamber of Commerce & Industry (BCCI), Bangladesh Bank, Solaric, and Chint Solar Bangladesh for sharing valuable information during the study period.

The research team would also like to express its sincere gratitude to *Mr Md Sarwar Jahan*, Deputy Director, CPD, *Mr S. M. Khalid*, Dialogue Associate, CPD, and *Ms Ema Akhter*, Dialogue Associate, CPD, for their efforts to arrange the dialogue of the study in a short notice within a very busy schedule.

The authors also express their sincerest acknowledgement and appreciation to *Mr Avra Bhattacharjee*, Joint Director of Dialogue and Outreach at CPD, for his valuable support. Additionally, the team would like to thank *Mr HM Al Imran Khan*, Publication Associate, CPD, for his contribution in shaping, refining, and finalisation of the manuscript.

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Acronyms

ADB	Asian Development Bank
AIIB	Asian Infrastructure Investment Bank
BB	Bangladesh Bank
BDT	Bangladeshi Taka
BOOT	Build-Operate-Own-Transfer
BPDB	Bangladesh Power Development Board
CBI	Climate Bonds Initiative
COD	Commercial Operation Date
EIA	Environmental Impact Assessment
EIB	European Investment Bank
EPZ	Export Processing Zone
ERD	Economic Relations Division
EUR	Euro
FiTs	Feed-in Tariffs
GBP	The Green Bond Principles
GBP	British Pound Sterling
GTF	Green Transformation Fund
ICMA	International Capital Market Association
IDA	International Development Association
IDCOL	Infrastructure Development Company Ltd.
IEPMP	Integrated Energy and Power Master Plan
LOI	Letter of Intent
MCPP	Mujib Climate Prosperity Plan
MW	Megawatt
NBFIs	Non-Bank Financial Institutions
NBR	National Board of Revenue

NDB	New Development Bank
NDRC	National Development and Reform Commission
PBOC	The People's Bank of China
PPA	Power Purchase Agreement
PRG	Partial Risk Guarantees
RE	Renewable Energy
SoE	State Owned Enterprise
SREDA	Sustainable and Renewable Energy Development Authority
SRO	Statutory Regulatory Order
TDF	Technology Development Fund
USD	United States Dollar
VAT	Value Added Tax

1. INTRODUCTION

Accelerating renewable energy financing is a significant instrument for achieving Bangladesh's long-term goal of 40 per cent renewable energy-based power generation by 2041. According to the Mujib Climate Prosperity Plan (MCP), Bangladesh needs about USD10 billion for 30 per cent of renewable energy-based electricity and USD 12 billion for generating 17GW by 2041. At present, renewable energy comprises only 4.5 per cent of the total energy-mix. The Ministry of Power, Energy, and Mineral Resources (MoPEMR) has outlined that the total investment needed for clean energy by 2050 is estimated to be USD 64.4 billion as per Integrated Energy and Power Master Plan (IEPMP) Published in 2023. The share of overseas investment in the renewable energy sector has remained highly insignificant. Without accelerating investment and finance from domestic and international sources, achieving the targeted goal of renewable energy in the power sector would be difficult.

Overseas investment is considered a major source of financing in Bangladesh's renewable energy sector. Chinese overseas investment is considered a major source of renewable energy investment for developing countries (Ma, 2023). Being the world leader in the renewable energy sector with well-developed policies, laws, and institutions, Chinese overseas investment could assist in accelerating investment, financing, and developing technologies in Bangladesh's renewable energy sector and developing domestic policies, laws, and institutions related to the renewable energy sector. Despite the limited base of overseas investment in the renewable energy sector of Bangladesh (USD 1 billion between 2016 and 2021), Chinese investment comprises a major share (59 per cent) of overall investment and financing in Bangladesh. In other words, Chinese investors appear to be strongly interested in further accelerating their overseas investment in Bangladesh.

Bangladesh has specific policies, laws, and institutions related to renewable energy that target overseas investment and financing. Fiscal and financial instruments under different policies and laws include attractive tax incentives, concessional financing, and supportive regulatory framework utilised for attracting overseas investment. Despite having those instruments and facilities, overseas investors, including Chinese investors, confronted major challenges, including infrastructure bottlenecks, bureaucratic inefficiencies, and limited access to advanced technologies. Additionally, financial markets in Bangladesh are still maturing, leading to higher capital costs and risk premiums for investors. Besides, Bangladesh has faced challenges in accessing international climate finance due to a lack of institutional preparedness and a poor track record of fiduciary governance. Overall, Bangladesh needs to improve and upgrade its fiscal and financial instruments and the domestic business environment to attract overseas investment, especially Chinese overseas investment in the country.

Against this backdrop, this study investigates the fiscal and financial barriers investors face regarding overseas investment and finds probable solutions to address those challenges. The study seeks to offer significant insights to policymakers, industry stakeholders, and investors regarding how to improve the fiscal and financial landscape of the renewable energy sector so that overseas investors, especially Chinese investors, get attracted to invest/finance for the development of the renewable energy sector of Bangladesh.

2. OBJECTIVES OF THE STUDY

The primary objectives of this study are as follows:

- a) To analyse the current fiscal and financial instruments related to Bangladesh's renewable energy sector, identifying the opportunities, challenges, and gaps in ensuring sustainable financing for overseas investment;
- b) To identify best practices and lessons learned from other countries, particularly from China, in fiscal and financial measurements in the renewable energy sector and their applicability to the Bangladeshi context; and
- c) To provide recommendations for policymakers, industry stakeholders, and investors on how to navigate the fiscal-financial challenges to attract overseas investment in Bangladesh's renewable energy sector.

3. LITERATURE REVIEW

Various fiscal and financial tools are being used worldwide to attract overseas investment in the renewable energy sector. Each instrument is tailored to address unique market conditions and investment climates. A major focus of these fiscal and financial instruments is to reduce the initial investment burden and operational costs for foreign investors, thereby making those investments attractive.

A common fiscal tool is the provision of tax incentives, including tax holidays, reduced corporate tax rates, accelerated depreciation, and tax credits for renewable energy projects. According to Blok et al. (2017), these incentives have been effective in countries such as China and India, where significant tax benefits have spurred rapid growth in renewable energy capacity. Furthermore, a study by the International Renewable Energy Agency (IRENA, 2018) highlights that tax incentives can enhance project viability by improving cash flow and reducing payback periods.

Financial instruments are also pivotal in mitigating investment risks and enhancing the attractiveness of renewable energy projects. Public-private partnerships (PPPs) and green bonds are prominent examples. Green bonds, as outlined by Flaherty et al. (2017), provide long-term, fixed-interest financing tailored for renewable projects, thereby reducing the cost of capital. 'Public Private Partnerships (PPPs)', discussed by Grimsey and Lewis (2004), leverage private-sector efficiency and public-sector support, distributing risks and benefits between stakeholders. Moreover, the use of blended finance, which combines concessional finance from development institutions with private investment, has been highlighted by the OECD (2020) as a mechanism to mobilise significant private capital for high-risk renewable energy ventures.

A supportive policy environment is essential for attracting overseas investment in the renewable energy sector of developing countries. Stable and transparent policies give investors the confidence to commit capital to long-term projects. Feed-in tariffs (FiTs) and renewable portfolio standards (RPS) are widely adopted policy tools. FiTs guarantee fixed payments for renewable energy producers, ensuring a stable revenue stream, as seen in Germany's Energiewende policy, which has led to substantial investment in wind and solar energy (Jacobs, 2016). RPS mandates utilities to source a certain percentage of their

energy from renewable sources, creating a sustained demand for renewable energy and encouraging investment. The success of RPS in the United States, as examined by Carley (2009), demonstrates its effectiveness in driving renewable energy growth.

Examining specific country experiences provides insights into effective fiscal and financial frameworks. Denmark's comprehensive approach, combining robust policy support with financial incentives, has positioned it as a leader in wind energy (Daugbjerg and Svendsen, 2001). Similarly, Morocco's adoption of competitive bidding processes for large-scale solar projects, supported by concessional finance from international development banks, has attracted substantial foreign financing, leading to the development of the Noor Solar Complex (World Bank, 2019). Table 1 presents various initiatives and

Table 1: Fiscal And Financial Initiatives of Some Successful Regions

Region	Category	Initiatives
India	Generation	Tax incentives (accelerated depreciation, reduced corporate tax rates); Subsidies for solar and wind energy projects.
	Transmission	Viability gap funding for transmission infrastructure; Concessional loans for grid connectivity.
	Distribution	Renewable Purchase Obligations (RPOs); Feed-in tariffs; Performance-based incentives for distributed generation.
Vietnam	Generation	Tax exemptions and reductions; Preferential import duties on renewable energy equipment; Attractive feed-in tariffs (FITs) for solar and wind projects.
	Transmission	Grid expansion and modernisation support; Financial support from international development banks; Concessional financing.
	Distribution	Policies to improve grid stability and reliability; Incentives for rooftop solar installations.
UK	Generation	Contracts for Difference (CfD); Tax reliefs and grants.
	Transmission	Investment in smart grid technologies; Upgrading transmission networks; Financial incentives from Ofgem for grid enhancements.
	Distribution	Support for community energy projects; Subsidies for energy storage systems.
USA	Generation	Federal tax incentives (Investment Tax Credit, Production Tax Credit); State-level incentives and grants.
	Transmission	Federal funding for transmission infrastructure improvements; FERC incentives for transmission projects.
	Distribution	State policies (net metering, renewable portfolio standards); Financial incentives for distributed energy resources (rooftop solar, energy storage).
Africa	Generation	Tax holidays and import duty exemptions; Feed-in tariffs; Grants and concessional loans from international financial institutions.
	Transmission	Support from multilateral development banks and international donors; African Development Bank's New Deal on Energy for Africa initiative.
	Distribution	Financial assistance programs for expanding electricity access; Local incentives for mini-grids and off-grid renewable energy solutions in rural areas.
China	Generation	FIT; National subsidies for wind, solar, and biomass energy projects; Preferential tax policies for renewable energy companies; Green bonds to fund large-scale renewable energy developments.
	Transmission	Central and local government funding for the expansion of transmission infrastructure to support renewable energy; National investments in smart grid technologies to integrate renewable energy sources; Financial support for grid upgrades.
	Distribution	Incentives for rooftop solar and small-scale wind projects; Policies to promote energy storage integration; Differential pricing mechanisms to support distributed renewable energy generation.

Source: Authors' findings from global literature.

incentives provided by different countries and regions to attract investment in the renewable energy sector's generation, transmission, and distribution.

While these frameworks and tools have proven successful, challenges remain in implementing those tools. Regulatory uncertainties, political instability, and currency risk can deter foreign investment. A study by Wüstenhagen et al. (2007) emphasises the need for policy stability and clear regulatory guidelines to sustain investor confidence. Additionally, the availability of skilled labour and local manufacturing capabilities, as highlighted by Kitzing et al. (2012), are critical for the successful implementation of renewable energy projects.

In general, developing countries need to address a number of issues and concerns to attract overseas investment. Usually, multinational companies (MNCs) invest abroad when they find competitive advantages in a market using their advanced technologies and when local benefits, such as government incentives or market potential, outweigh fiscal and financial challenges. On the other hand, high transaction costs due to inefficient regulations or financial instability can deter investment by increasing operational expenses and risks. It is important to note that leveraging unique resources, like solar or wind potential, and developing capabilities, such as technical skills and innovative financial instruments, can attract investment in the renewable energy sector.

4. METHODOLOGY

The study is based on primary and secondary information and data on renewable energy financing in Bangladesh, especially those related to Chinese overseas investment in Bangladesh. Firstly, secondary literature on overseas investment, including Chinese overseas investment, has been reviewed. A comprehensive review was conducted to understand China's fiscal and financial instruments targeting overseas investment, both domestically and internationally. Secondary data on Bangladesh's investment and financing in the renewable energy sector, overseas investment in the renewable energy sector of Bangladesh, and global renewable energy financing, including Chinese renewable energy investment and financing, have been thoroughly analysed.

Primary data and information are collected through Key Informant Interviews (KIIs). The focus of these KIIs was to gain in-depth knowledge and understanding of the effectiveness of existing fiscal and financial instruments that are being used in Bangladesh to attract overseas investment in Bangladesh's renewable energy sector. Another important focus was to get the experience of overseas Chinese investors in investing in Bangladesh, particularly in terms of availing fiscal and financial incentives offered by Bangladesh. The fiscal and financial instruments offered by the Chinese government for overseas investment were also the focus of the KIIs. Hence, relevant professionals and experts were interviewed. The informants of the KIIs include- (a) Experts on green financing; (b) Officials of the Sustainable Finance Department of the Central Bank of Bangladesh (Bangladesh Bank); (c) Finance lawyer expertise on renewable energy financing; (d) Chinese entrepreneurs who have an investment in renewable energy sector of Bangladesh; and (e) Technical experts on solar and wind-based energy and power.

5. OVERVIEW OF INVESTMENT AND FINANCING IN THE RENEWABLE ENERGY SECTOR OF BANGLADESH

5.1 Renewable Energy-based Powerplants in Operation

Bangladesh's overall power generation based on renewable energy is 1374MWp – out of which 798 MWp is generated through on-grid and 576MWp is generated through off-grid. About 39.1 per cent of this power is generated by solar-based on-grid power plants (537 MWp), 4.4 per cent is generated by wind-based power plants (60.9 MWp), 14.6 per cent by hydropower (200MWp) and the remaining 41.9 per cent is generated by off-grid solar home system (576 MWp). Private sector generates the highest share of this renewable energy base power (847MWp, 61.6 per cent), followed by the public sector 292 MWp, 21.2 per cent) and by the joint venture (235 MWp, 17.1 per cent). A joint venture (JV) between foreign and local companies or entities is a business arrangement where two or more parties, typically from different countries, come together to undertake a specific business project or activity. In this context, a foreign company partners with a local company or entity in the host country to combine resources, expertise, and capital. Each partner shares in the risks, costs, and benefits of the venture, typically in proportion to their ownership stake. Tables 2 and 3 present the distribution of renewable energy plants operating under solar and wind-based power plants.

Table 2: Solar-based On-Grid Power Plants that are Completed and Running

Ownership	No. of plants	Total generation capacity (MWp)
Public	4	91
Private	6	211
Joint venture	2	235
Total	12	537

Source: Based on the database available at: www.changeinitiatves.bd

Table 3: Wind-based Power Plants

Ownership	No. of plants	Total generation capacity (MWp)	Completed and running plants
Public	4	112.9	0.9 (1)
Private	3	215	60 (1)
Joint venture	1	30	n.a.
Not classified	4	275	n.a.
Total	12	632.9	60.9

Source: Based on the database available at: www.changeinitiatves.bd

5.2 Renewable Energy-based Powerplants at Different Stages of Development

Apart from the above-mentioned operational power plants, a significant number of renewable energy-based power plants are at different stages of development. Usually, several stages (mainly five stages) need to be crossed from the initiation to the final operation of the plant, which includes—(a) the planning stage; (b) the proposal stage; (c) issuance of the letter of intent (LOI) stage; (d) waiting for purchase approval stage; and (e) signed power purchase agreement (PPA) stage.

At present, a total of 67 renewable energy-based power plants with a total generation capacity of 4839.4MWp are at different stages of development. Of these, 57 power plants will be implemented with a capacity of 4122MWp under solar-based power plants, while the rest 10 power plants with a capacity of 717 MWp will be generated under wind-based power plants. The most significant number of projects (21 projects) will be implemented under a joint venture (1614.1 MWp, 33.3 per cent), while the private and public sectors will be the next important owners to implement renewable energy-based projects in solar and wind-based projects. However, considering the future power demand for 2030 and 2041, there are further scopes to enhance the generation capacity of renewable energy-based projects.

In terms of the level of maturity of these projects, most of the projects are at an early stage of development—mainly at the planning stage. Forty-one (41) solar and wind projects with a capacity of 3775.3MWp are at the planning stage, accounting for 78 per cent of total under-implementation projects. A significant number of projects are currently at the issuance of LOI stage—15 projects with a capacity of 671.6MWp (13.9 per cent). Only a few projects (10 projects) are at the final stages—waiting for purchase approval and signed power purchase agreements (372.5MWp, 7.7 per cent).

Table 4: Solar-based On-Grid Power Plants which are at Different Stages (MWp)

Status	Public	Private	Joint venture	Not classified	Total
Under planning	395.3 (6)	253 (4)	1110 (9)	1385 (14)	3143.3 (33)
Proposed	20 (1)	n.a.	n.a.	n.a.	20 (1)
LOI Issued	20 (1)	280 (7)	341.6 (6)	n.a.	641.6 (14)
Waiting for Purchase Approval	n.a.	50 (1)	n.a.	n.a.	50 (1)
Signed PPA	n.a.	135 (3)	132.5 (5)	n.a.	267.5 (8)
Total	435.3 (8)	718 (15)	1584.1 (20)	1385 (14)	4122.4 (57)

Source: Based on the database available at: www.changeinitiatves.bd

5.3 Renewable Energy Financing

Investors use different financing instruments to invest in the renewable energy sector. Table 5 presents financing for currently running solar-based power plants. A total of USD 9.5 billion worth of investment/ financing has been made in 11 solar energy-based power plants to generate 537 MWp of electricity. The largest share of finance is loans (91.7 per cent) with a total of USD 8.7 billion. However, investors also apply a number of other options, which include bridge loan (0.27 per cent), concessional loan (0.16 per cent), equity (1.62 per cent), green bond (3.12 per cent), non-concessional loan (1.1 per cent) and syndicated term loan (2.04 per cent). Overall, financing renewable energy projects is highly concentrated on a single instrument—a loan.

The higher investment in public entities compared to private entities in Bangladesh's solar power sector, despite private entities owning more solar plants, can be attributed to several factors. The reason private entities' investment in renewable energy projects appears smaller than that of public entities lies in several factors. First, public sector projects are typically large-scale, centralised utility plants, which come with higher costs related to complex infrastructure, grid integration, and regulatory requirements. Second, these projects are sometimes located in more challenging areas, adding to the

Table 5: Finance in Solar-based On-Grid Power Plants Currently Running (In USD/million)

	Public (USD/million)	Private (USD/million)	Joint venture (USD/million)	Total (USD/million)
Government funded	n.a. (1)	n.a.	n.a.	n.a. (1)
Bridge loan	n.a.	25.8 (1)	n.a.	25.8 (1)
Concessional loan	15 (1)	n.a.	n.a.	15 (1)
Equity	n.a.	155.5 (3)	n.a.	155.5 (3)
Green Bond	n.a.	n.a.	300 (1)	300 (1)
Loan	8,766 (2)	31.5 (1)	n.a.	8797.5 (3)
Non-concessional loan	103 (1)	n.a.	n.a.	103 (1)
Syndicated term loan	n.a.	196 (1)	n.a.	196 (1)
Total (mil. USD)	8884 (5)	408.8 (6)	300 (1)	9592.8 (12)

Source: Based on the database available at: www.changeinitiatives.bd

Note: Total indicates finance of 11 power plants as data of one plant is missing.

investment. Third, private projects, on the other hand, tend to focus on smaller, decentralised solar installations, which often bypass many of the infrastructure and grid connection costs, making their cost per megawatt lower. Fourth, public projects sometimes involve more expensive financing structures such as government loans and syndicated financing, whereas private entities access more competitive equity-based funding. Fifth, public projects also prioritise broader goals like energy security and employment, leading to higher contingencies and inefficiencies, whereas private projects are more profit-driven and cost-conscious. This focus on efficiency, combined with faster deployment and access to newer technologies, enables private entities to keep costs down, even though they are involved in higher-capacity projects. Thus, while private entities have higher renewable energy capacity, their investment appears smaller due to the lower cost per MW of their projects.

5.4 Overseas Investment in the Renewable Energy Sector

As of today, Bangladesh's power and energy sector has done a decent job of attracting significant overseas investment over the last few decades. According to the International Energy Agency (IEA), as cited by Moazzem & Hridoy (2024), the cumulative investment in Bangladesh's energy sector from 2010 to 2022 totalled about USD 39 billion, of which about USD 1 billion was invested in renewable energy projects between 2016 and 2021.

China has remained Bangladesh's highest investor in the power sector during this period. According to data from the American Enterprise Institute (2024), from 2010 to 2023, Bangladesh received USD 12,290 million in investment from China in its power and energy sector. Of these, 51.7 per cent were invested in coal-based projects, 9.4 per cent in gas-based projects, 8.1 per cent in oil-based power plants, and 4.8 per cent in alternative sources projects (Table 6). A couple of observations can be raised from the Chinese investment data. Firstly, from 2015 to 2019, Bangladesh received higher Chinese overseas investment (77.5 per cent) in its energy sector in four years. In most recent years, the trend has rather decreased. Second, similar to the global situation, state-owned enterprises (SOEs) of China were found to be the leading investors for Bangladesh's energy sector over the years. Only 6.8 per cent

of the investment came from private investors. The global experiences reveal that the private sector is increasingly investing in renewable energy compared to Chinese SoEs. Hence, Bangladesh must find a way to attract more private company-led investments rather than receiving investments made by only Chinese SoEs.

Table 6: An analysis of the Chinese Overseas Investment in Bangladesh in its Energy Sector

Category		Chinese investment in Bangladesh's Energy Sector	
		Sum (USD million)	Share (%)
Year-wise	2010	430	3.5
	2012	490	4.0
	2013	760	6.2
	2014	190	1.5
	2015	2110	17.2
	2016	4130	33.6
	2018	1250	10.2
	2019	2030	16.5
	2020	310	2.5
	2021	300	2.4
	2022	290	2.4
Subsector-wise	Machinery	3200	26.0
	Alternative	590	4.8
	Coal	6360	51.7
	Gas	1150	9.4
	Oil	990	8.1
Ownership-wise	Both (Joint investment)	1500	12.2
	Private	830	6.8
	SoE	9960	81.0

Source: American Enterprise Institute (2024).

6. FINANCIAL INSTRUMENTS AVAILABLE FOR OVERSEAS INVESTMENT IN THE RENEWABLE ENERGY SECTOR

6.1 Bangladesh Bank Refinancing Schemes

6.1.1 Different Types of Refinancing Schemes

Bangladesh Bank's (BB) refinancing schemes provide financial support to commercial banks, enabling them to offer loans for sustainable projects. Table 6 presents key aspects of Bangladesh Bank's refinancing scheme. The three primary schemes are:

Green Transformation Fund (GTF): Initially launched at USD 200 million, the fund has been expanded to EUR 200 million. This brings the total allocation to approximately USD 418.7 million to finance green and sustainable projects across various sectors, including manufacturing and export-oriented

industries. The GTF provides long-term financing options, ranging from five (5) to 10 years, for importing green and energy-efficient machinery, including those related to renewable energy. The fund offers loans at favourable terms, such as the Euro Interbank Offered Rate (EURIBOR) plus 1 per cent for loans denominated in euros.

Technology Development Fund (TDF): The fund is valued at BDT 1,000 crore (approximately USD 118 million), established in line with the Export Policy 2018-2021. The TDF's primary aim is to enhance these industries' competitive capacity and sustainability by providing refinance schemes for technological upgrades. The fund offers loans at competitive interest rates ranging from 5 per cent to 6 per cent, with terms of three to 10 years. The loans can be used to modernise and upgrade technologies and improve workplace environments.

Financing in Green Products and Initiatives: Bangladesh Bank has proactively financed green products and initiatives to promote environmental sustainability. As of the latest data, the total amount allocated to green finance during the fiscal year 2023 was BDT 126.41 billion by banks and BDT 23.58 billion by non-bank financial institutions (NBFIs), accounting for 5.84 per cent of the total term loan disbursements. The bank has disbursed significant amounts in both USD and EUR to support sustainable export growth across various industries. By June 30, 2023, the GTF had disbursed USD 140.94 million and EUR 71.21 million across several projects, alongside BDT 1778 million to local currency projects.

6.1.2 Interest Rate and Loan Mandates

Under BB's guidance, commercial banks provide loans and bonds for green and sustainable projects at an interest rate of 5 per cent, with repayment terms ranging from five (5) to seven (7) years. BB mandates that each commercial bank allocates 15 per cent of its total annual outstanding loans to sustainable projects and 2 per cent to green projects. This requirement ensures a steady flow of financing towards environmentally beneficial initiatives.

6.1.3 Green Loans

In its sustainable finance policy, BB has made it mandatory for banks and other financial institutions to dedicate 2 per cent of all loans to renewable energy facilities and green projects. These green loans come with specific conditionalities to ensure their effectiveness and alignment with environmental goals:

100 per cent Green Eligibility: Loans must be exclusively used for projects that meet green criteria, contributing to environmental objectives such as reducing greenhouse gas emissions, conserving biodiversity, or improving energy efficiency.

Transparency and Accountability: Loan agreements must include provisions for monitoring and reporting on the use of funds. This ensures that the funds are used as intended, with regular audits or reporting mechanisms in place.

Environmental Impact Assessment (EIA): Projects must demonstrate a positive environmental impact and avoid causing harm to the environment.

Table 7: Refinancing Scheme of Bangladesh Bank

Scheme	Key Features and Requirements	Description	Terms and Conditions
Green Transformation Fund (GTF)	Supports importing green and energy-efficient machinery.	Initially launched with \$200 million, expanded to €200 million, totalling approximately \$418.7 million. Aimed at financing green and sustainable projects across various sectors, including manufacturing and export-oriented industries.	Long-term financing options for 5-10 years. Loans at EURIBOR + 1% for euro-denominated loans.
Technology Development Fund (TDF)	Loans for modernising and upgrading technologies. Improving workplace environments.	Valued at BTD 1,000 crore (approximately \$118 million). Established to enhance competitive capacity and sustainability of export-oriented industries by providing refinance schemes for technological upgrades.	Interest rates are 5% to 6%. Loan terms are for 3-10 years.
Financing in Green Products and Initiatives	Green finance accounted for 5.84% of total term loan disbursements in FY23.	Proactive financing for green products and initiatives to promote environmental sustainability. FY23 allocations was of BDT 126.41 billion by banks and BDT 23.58 billion by NBFIs.	Total disbursements are USD 140.94 million and EUR 71.21 million as of June 2023. Local currency disbursements are BDT 1778 million.
Interest Rate and Loan Mandates for Private Banks	Ensures steady financing for environmentally beneficial initiatives.	BB provides loans and bonds for green and sustainable projects at 5% interest with repayment terms of 5-7 years. Mandates commercial banks to allocate 15% of total annual loans to sustainable projects and 2% to green projects.	Interest rate is 5%. Repayment terms are 5-7 years.
Green Loans	100% Green Eligibility is maintained through monitoring and reporting on fund use	Mandatory for banks and financial institutions to dedicate 2% of all loans to renewable energy facilities and green projects	Loans exclusively for green criteria projects
Green Bonds	Certification from accredited third-party organisations. Reporting and disclosure on fund use and environmental impact. Monitoring and Impact Assessment is mandatory.	Fixed-income instruments for climate and environmental projects. Issued by various entities to support sustainability initiatives.	Issuers must adhere to recognised standards (e.g., Climate Bonds Initiative standard).

Source: Bangladesh Bank reports, notices and interviewees.

6.1.4 Green Bonds

Green bonds are fixed-income instruments earmarked for climate and environmental projects. Issued by corporations, financial institutions, municipalities, or governments, these bonds support sustainability initiatives. BB's guidelines for green bonds include several conditionalities to ensure their effectiveness:

Use of Proceeds: The funds raised must finance or refinance eligible green projects, contributing to objectives such as climate change mitigation, adaptation, sustainable water and marine resource

protection, circular economy transition, waste prevention and recycling, pollution control, and biodiversity restoration.

Certification: Green bonds require certification or verification from accredited third-party organisations to ensure adherence to environmental standards, providing transparency and credibility.

Reporting and Disclosure: Issuers must regularly report on the use of proceeds and the environmental impact of funded projects, allowing investors and stakeholders to assess their effectiveness.

Compliance with Green Bond Standards: Green bonds should comply with recognised standards, such as the Climate Bonds Initiative (CBI) standard, ensuring they meet international best practices.

Monitoring and Impact Assessment: Issuers are required to monitor and assess the environmental impact of projects over time, evaluating their contribution to sustainability goals and compliance with standards.

6.2 Development Loans and Grants

Bangladesh has received significant international financial support to bolster its renewable energy sector. The International Development Association (IDA) has committed around USD 40 billion, including USD 524 million for renewable energy. Key global and regional financial institutions like the ADB, World Bank, and others are involved in a collaborative USD 320 million climate finance initiative, demonstrating an international solid commitment to Bangladesh's sustainable energy transition.

European Investment Bank (EIB) and the European Union have committed EUR 395 million to support the installation of approximately 750 MW of renewable energy capacity in Bangladesh. This funding includes a EUR 350 million framework loan and a EUR 45 million grant for technical assistance and concessional lending tools.

In addition, the International Finance Corporation (IFC) is investing USD 15 million in the Southeast Asia Clean Energy Fund II, which focuses on early-stage and growth-stage investments in renewable energy projects across Southeast Asia, including Bangladesh. This fund combines public, private, and philanthropic capital to support utility-scale solar, wind, and energy storage projects.

Under the Bangladesh-German Development Cooperation Negotiations 2024, Germany has offered EUR 232.5 million (equivalent to over BDT 2,700 crore) in assistance, according to Economic Relations Division (ERD) officials.

7. FISCAL INSTRUMENTS AVAILABLE FOR OVERSEAS INVESTMENT IN THE RENEWABLE ENERGY SECTOR

Different types of fiscal instruments are available for investment in Bangladesh's renewable energy sector. All the fiscal incentives apply for renewable projects that require local and foreign financing. Table 8 presents the key features of these fiscal instruments.

7.1 Tax Holiday

In Bangladesh, power generation companies, except those using coal, that reach their Commercial Operation Date (COD) between January 1, 2023, and June 30, 2024, will benefit from a full income tax exemption until June 30, 2036, but only on income derived from their power generation activities. Companies achieving their COD between July 1, 2024, and June 30, 2025, will receive a tax exemption of 100 per cent for the first five years, 50 per cent for the next three years, and 25 per cent for the following two years. Additionally, foreign employees of these companies are granted a three-year income tax exemption starting from their arrival in Bangladesh. There's also an investment requirement where 30 per cent of the tax-exempt income must be reinvested in the same or a new industry, with an additional obligation to invest 10 per cent profit annually in purchasing shares of listed companies in Bangladesh.

In China, the government has implemented a highly effective fiscal strategy to incentivise investment in renewable energy by offering comprehensive and stable tax benefits, coupled with direct subsidies and incentives, that have significantly fuelled the growth of the sector. For instance, China provides long-term tax exemptions and reductions for renewable energy projects alongside subsidies such as feed-in tariffs, guaranteeing a fixed return on investment over a prolonged period. These measures offer predictability and reduce financial risks for investors, thereby encouraging substantial and sustained investment in the renewable energy sector.

In contrast, while Bangladesh has made strides by offering income tax exemptions for power generation companies, including those in the renewable sector, the approach is relatively less comprehensive. It lacks the long-term stability seen in China's model. Bangladesh's tax exemptions are time-bound and decrease progressively, which might create uncertainty for investors considering long-term projects. Furthermore, the additional requirements to reinvest tax-exempt income and purchase shares in listed companies can add complexity and potentially deter foreign investors. The gap lies in Bangladesh's less predictable and more conditional fiscal incentives, which may not provide the same level of confidence and security as the stable, long-term incentives offered in China. VAT and Duty Exemptions

In Bangladesh, renewable energy devices such as solar cells, solar water heater kits, solar collectors, and photovoltaic solar panels (excluding solar inverters, which attract a 37 per cent VAT) benefit from an 18 per cent VAT exemption. Solar power sets used by EPZ industries are exempt from import duty, whereas other equipment and panels incur a 25–26.20 per cent duty. Export-oriented industries outside the EPZs face a minimal customs duty of 1 per cent. Additionally, investors are exempted from capital gains tax when they transfer company shares. A power generation company must meet several criteria to qualify for a tax holiday and VAT and duty exemptions in Bangladesh.¹

In Bangladesh, electricity supply is exempt from VAT according to a Statutory Regulatory Order (SRO), eliminating the need for separate approval. For a tax holiday, as outlined in the Power Purchase Agreement (PPA), entities must obtain a certificate from the National Board of Revenue (NBR) if there's

¹These criteria include: a) companies must commence operations before 31 December 2022, and not involve coal-based power generation; b) companies must adhere to stringent record-keeping and return filing requirements as mandated; c) companies need to register with the NBR before 30 June of the year following the year of incorporation; d) companies must be incorporated under the Companies Act of 1994; e) companies should not be a subsidiary where another company holds 50 per cent or more of its shares; f) companies cannot be formed as a result of an amalgamation or demerger; and g) companies must register with the NBR.

a corresponding effective tax SRO. This ensures withholding taxes are not applied to power payments by the Bangladesh Power Development Board (BPDB). A copy of the PPA and the Commercial Operation Date (COD) certificate are typically necessary to obtain this certificate.

In China, the approach to fiscal incentives for renewable energy is both comprehensive and streamlined, creating a highly attractive environment for investors. The Chinese government offers extensive VAT exemptions and reductions not only on renewable energy equipment like solar panels and wind turbines but also on the entire supply chain, including producing and selling electricity generated from renewable sources. Additionally, China has minimised import duties on essential renewable energy components to encourage the adoption and production of renewable technologies. Moreover, investors benefit from straightforward procedures to qualify for these incentives, with fewer bureaucratic hurdles than in many other countries.

Table 8: Fiscal Incentives in Bangladesh

Fiscal Instrument	Description	Requirements
Tax Holiday	Full income tax exemption for power generation companies (excluding coal) reaching COD between Jan 1, 2023, and Jun 30, 2024, until Jun 30, 2036. Partial exemptions for COD between Jul 1, 2024, and Jun 30, 2025. Foreign employees receive a three-year income tax exemption. 30% of tax-exempt income must be reinvested.	Commence operations before Dec 31, 2022. Must not involve coal-based power generation. Adhere to record-keeping and return filing requirements. Register with the NBR before Jun 30 of the year following incorporation. Must be incorporated under the Companies Act of 1994.
VAT and Duty Exemptions	18% VAT exemption for renewable energy devices. Solar power sets for EPZ industries are exempt from import duty. Other equipment incurs a 25-26.20% duty. Export-oriented industries outside EPZs face 1% customs duty. Capital gains tax exemption on share transfers.	Power generation companies must adhere to record-keeping and return filing requirements. Must register with the NBR.
Reduction on Custom Duties	Exemption from custom duties for parts and machineries related to renewable energy. Complete photovoltaic systems and wind power generators enjoy 1% duty. Solar water heaters with insulated storage tanks have a 10% duty.	Specific renewable energy products are exempt from custom duties. Must meet criteria set by the government for exemptions.
Net Metering Policy	Allows consumers to export excess generated electricity to the grid. Residential users can install solar systems up to 25 kWp, and commercial users up to 300 kWp. Varied tariffs for excess solar energy fed back into the grid.	Consumers must install renewable energy systems. Tariff rates for excess energy vary by distributor.
Feed-in Tariff	Solar projects are incentivised at USD 0.10 per kWh, and onshore windmills at USD 0.12 per kWh. BPDB commits to purchasing power at these fixed rates for 20 years. Government sanctioned FiTs for three solar projects totalling 370 MW in 2023.	Projects must meet criteria for solar and wind energy. BPDB purchases power at fixed rates for 20 years.

Source: Compiled by authors.

In comparison, while Bangladesh provides VAT exemptions, import duty relief, and tax holidays for renewable energy investments, these incentives are often accompanied by complex eligibility criteria and procedural requirements that can be burdensome for investors. For instance, the need to obtain various certificates and approvals from different authorities, such as the NBR, adds layers of administrative complexity. The variability in VAT and duty rates, particularly the lack of exemption for critical components like solar inverters, also presents a gap compared to China's more holistic and consistent approach. Furthermore, the exemptions in Bangladesh are often tied to specific conditions, such as the requirement to operate within Export Processing Zones (EPZs), which limits their applicability.

7.2 Reduction on Custom Duties

Parts and machinery related to power production from renewable energy sources are often exempted from customs duties; some even have zero duty. Photovoltaic cells and solar-powered lanterns or lamps that do not require electrical power are entirely exempt from customs duties, showcasing a strong incentive for solar energy products. Moreover, complete photovoltaic systems and wind power generators enjoy a highly favourable duty of only 1 per cent, significantly lower than typical rates, to stimulate investments in these technologies. Lastly, solar water heaters with insulated storage tanks benefit from a lower duty rate of 10 per cent, emphasising the government's support across a range of renewable energy solutions.

In China, the government's approach to incentivising renewable energy is similarly robust but often more extensive and consistent, which has been key in making China a global leader in renewable energy. China not only exempts critical components like photovoltaic cells and wind turbines from customs duties but also provides substantial subsidies for their production and deployment, alongside low-interest financing options for related infrastructure projects. Additionally, China's policies often extend to the entire supply chain, ensuring that all stages of renewable energy production—from manufacturing to deployment—are supported by favourable duty rates, tax exemptions, and financial incentives.

In comparison, while Bangladesh offers significant customs duty exemptions and reductions for various renewable energy components, the scope of these incentives is somewhat narrower and more varied. The inconsistency in duty rates and the selective nature of exemptions can create uncertainty for investors, who might prefer China's more comprehensive and predictable incentives.

7.3 Net Metering Policy

The net metering policy in Bangladesh is outlined in the Net Metering Guidelines - 2018, which was submitted to the Sustainable and Renewable Energy Development Authority (SREDA) Power Division, Ministry of Power, Energy & Mineral Resources, Government of the People's Republic of Bangladesh. The policy aims to promote renewable energy through the installation of rooftop solar systems, utilise the full potential of renewable energy sources, and reduce the country's dependence on conventional energy sources.

Under the net metering scheme, consumers with installed renewable energy systems can export their excess generated electricity to the grid, and the consumer's electricity bill for such exported electricity will be adjusted with his/her bill in the following month. This allows consumers to cut down on electricity expenditure and encourages the use of renewable energy sources.

This policy enables residential users to install up to 25 kWp solar systems and commercial users up to 300 kWp, fostering self-sufficiency and renewable energy use. The policy stipulates varied tariffs for excess solar energy fed back into the grid by different distributors, ranging from 4.3679 to 6.4531 BDT/kWh. This variation in tariff rates reflects the diverse operational and cost structures of the distribution companies within the country. Currently, there are 1941 net metering systems equivalent to 84.592 MW (SREDA, 2024).

In China, the net metering policies are part of a broader and more integrated framework designed to promote renewable energy adoption at both the residential and commercial levels. China's policies typically offer a uniform and straightforward approach, with incentives that include net metering and guaranteed feed-in tariffs (FiTs) that provide a stable and predictable return on excess energy fed back into the grid. This consistency across regions and distribution companies in China reduces uncertainty for consumers and investors, encouraging broader adoption of renewable energy systems.

In contrast, while Bangladesh's Net Metering Guidelines - 2018 marks a significant step towards promoting renewable energy, the policy's implementation reveals some gaps compared to China's best practices. The variation in tariff rates across different distributors in Bangladesh introduces complexity and potential uncertainty for consumers, which might deter some from fully embracing the net metering scheme. Moreover, while fostering self-sufficiency, the capacity limits set for residential and commercial users may not fully exploit the potential of larger-scale installations that could contribute more significantly to the national grid.

7.4 Feed-in Tariff

Solar projects are incentivised at USD 0.10 per kWh and the inaugural onshore windmill at USD 0.12 per kWh. The Bangladesh Power Development Board (BPDB) commits to purchasing power from these projects at these fixed rates for around 20 years. In 2023, the government-sanctioned FiTs for three solar projects totalling 370 MW, including a notable 200 MW facility in Dinajpur, a 100 MW project in Feni, and a 70 MW plant in Bandarban, each with specified tariffs to ensure steady revenue for the project lifespan.

In China, the government has effectively used Feed-in Tariffs (FiTs) as a key mechanism to drive the expansion of renewable energy projects. China's FiTs have been designed to offer attractive, long-term guarantees for renewable energy producers, providing them with stable and predictable revenue streams. These tariffs are usually set at competitive rates and are adjusted periodically to reflect changes in market conditions and technology costs. This approach has been instrumental in scaling up both solar and wind energy production, as it reduces financial risks for investors and ensures that renewable energy projects remain economically viable over the long term.

8. CHALLENGES AND RISKS FOR OVERSEAS INVESTMENT IN BANGLADESH'S RENEWABLE ENERGY SECTOR: OBSERVATIONS FROM THE FIELD

From the KIIs conducted with representatives from two Chinese renewable energy companies operating in Bangladesh, a green financing expert, a finance lawyer, the Sustainable Finance Department of Bangladesh Bank, and the Head of Sustainability at a prominent private bank, several critical factors have been identified for attracting foreign financing, especially from China, into Bangladesh's renewable energy sector.

8.1 Risks for the Overseas Investors

Investors in renewable energy projects face significant risks, primarily due to the high proportion of fixed costs involved, making securing financing a critical factor. To support these investments, Bangladesh Bank has implemented several refinancing schemes. These include a BDT 4 billion scheme for environment-friendly products and initiatives, a BDT 1.5 billion scheme specifically for Islamic banks and financial institutions, a USD 200 million Green Technology Fund (GTF) aimed at aiding the export-oriented textile and leather sectors in importing green machinery, and a BDT 10 billion Technology Development or Upgrade Fund (TDF) targeting industrial sectors as per the Bangladesh Export Policy 2018-21.

Feedback from 30 renewable energy (RE) industry leaders in Dhaka highlights that a significant portion of PV assembly/manufacturing and power plant production companies have benefited from these green financing initiatives. Despite this support, various risks influence the cost of capital and project feasibility. Key risks identified include currency, permit, and financing risks.

Currency risk arises from mismatches between foreign currency debt/equity and domestic revenues, exacerbated by local currency volatility. Permit risks involve bureaucratic hurdles, lack of transparency, and land acquisition issues, with bureaucracy being a principal barrier. Financing risks are compounded by difficulties securing affordable and adequate funding for RE projects.

The market landscape is fraught with land acquisition and power market risks to broader market, financial, and regulatory uncertainties. Implementation risks, such as those related to land acquisition and permit delays, are significant, while technological readiness appears to be of lesser concern.

Social acceptance risks emerge from a general lack of awareness and resistance to RE projects, while hardware risks are linked to the quality and availability of utility-scale hardware, worsened by local content requirements and inefficient customs procedures. Labour market dynamics also pose a challenge, primarily due to a shortage of skilled labour and a non-competitive labour market structure.

Developer-related risks focus on the management and execution capabilities of Independent Power Producers, where poor management is a significant concern. Grid and transmission risks reflect limitations in grid management and infrastructure capacities. Off-taker credit risks are also crucial, influenced by poor credit quality and dependency on payments, with notable corporate governance issues.

Table 9: Risks of the Investors and Companies

Risk category	Risks
Currency Risk	• Mismatches between foreign currency debt/equity and domestic revenues
	• Local currency volatility
Permit Risk	• Bureaucratic hurdles
	• Lack of transparency
	• Land acquisition issues
Financing Risk	• Difficulties in securing affordable and adequate funding for RE projects
Market Risk	• Risks related to land acquisition
	• Power market risks
	• Broader market, financial, and regulatory uncertainties
Social Acceptance Risk	• Lack of awareness and resistance to RE projects
Hardware Risk	• Quality and availability of utility-scale hardware
	• Local content requirements
	• Inefficient customs procedures
Labour Market Risk	• Shortage of skilled labour
	• Non-competitive labour market structure
Developer-related Risk	• Management and execution capabilities of Independent Power Producers
	• Poor management concerns
Grid and Transmission Risk	• Limitations in grid management and infrastructure capacities

Source: Authors' findings based on KIs.

One key issue that has recently demotivated Chinese investors from investing in Bangladesh is the Government of Bangladesh's (GoB) demand that the settlement of disputes for Chinese-invested renewable energy projects be placed within Bangladesh. In contrast, Chinese companies expect such settlements to occur in a country outside Bangladesh. Common frameworks include arbitration under institutions like ICSID or the ICC, often stipulated in Bilateral Investment Treaties (BITs). The Government of Bangladesh's insistence on resolving disputes domestically contrasts with these international norms, which may demotivate Chinese investors who generally expect the option for neutral, third-party arbitration.

However, the most concerning issue for Chinese investors regarding Bangladesh is the ability to repatriate their returns in USD. The ongoing foreign reserve crisis in Bangladesh, coupled with the lack of guaranteed initiatives targeting foreign investors by the Bangladesh Bank, has increased this uncertainty. It is worth noting that many developing countries mobilise institutions such as the New Development Bank (NDB) and the Asian Infrastructure Investment Bank (AIIB) to provide Partial Risk Guarantees (PRG), a strategy that Bangladesh has not adopted.

8.2 INSTITUTIONAL ENVIRONMENT

8.2.1 Administrative Delays

From the initial submission of investment proposals to obtaining a sanctioned Power Purchase Agreement (PPA), the authorisation procedure is notably lengthy, with some projects experiencing

delays of one to two years. The KIIs with representatives from Chinese renewable energy companies, green financing experts, and regulatory authorities revealed that despite predetermined timelines for each phase—ranging from project proposal submission to tariff discussions and contract approval—delays often occur due to bureaucratic red tape.

All companies in the renewable energy sector are mandated to produce an Environmental Impact Assessment (EIA) that addresses multiple environmental, social, and legal protections in accordance with the Terms of Reference provided by the Department of Environment. Stakeholders indicated that preparing this report incurs significant expenses, often necessitating the engagement of international consultants for comprehensive environmental evaluations at project sites. Sometimes, the same report must be provided multiple times, including once before and after acquiring the land.

Additionally, post-contract award, enterprises face growing challenges in clearing goods at customs, leading to further delays in project execution. Interviews highlighted that these delays, coupled with the costs of meeting extensive environmental and regulatory requirements, significantly impact project timelines and budgets.

Barriers to market entry play a significant institutional role in shaping business costs and company performance. Interviewees from Chinese renewable energy companies and sector experts revealed that protracted administrative procedures and hold-ups in business commencement amplify the initial costs associated with foreign investments, thereby deterring foreign financing inflows into Bangladesh.

8.2.2 Corruption in Project Allocation

Interviews revealed that the decision-making process of foreign investors regarding direct investments in the power sector is significantly influenced by the method of project allocation. It was noted that renewable energy initiatives in Bangladesh seldom go through competitive bidding or tender processes, often being assigned via direct negotiations. This approach creates opportunities for corrupt practices.

Interviewees pointed out a tendency to grant projects without conducting thorough due diligence on the technical, commercial, and financial aspects required for project endorsement. As a result, many projects fail to meet their completion deadlines, encounter substantial obstacles in securing financing during the implementation phase, or ultimately result in abandoned ventures. This lack of due diligence and transparency in the project allocation process poses significant risks to investors and deters foreign direct investment in the renewable energy sector.

8.2.3 Inconsistency of Rules and Processes

The consistency of regulatory frameworks is pivotal in attracting foreign direct investment to the renewable energy sector. Interviewees underscored the consistency of regulatory frameworks as a pivotal factor in attracting foreign financing to Bangladesh's renewable energy sector. Investors from abroad, particularly those investing in developing nations, seek assurance that the 'rules of the game' will remain steadfast and not be subject to arbitrary changes by the government after they have committed their investments based on these regulations.

The biggest challenge comes in terms of EIA reports. The Ministry of Land, Ministry of Agriculture, and Ministry of Local Government often do not come to a consensus on the EIA report. If one body accepts the report, the others resend it for corrections. This incurs extra expenditure for the companies.

8.2.4 Lack of Priority Access to the Grid

This consideration is crucial for companies specialising in renewable energy when contemplating investments in Bangladesh's power sector. Given the inherently intermittent nature of solar and wind energy, these sources exhibit variable power output throughout the day; typically, production ramps up slowly in the morning, hits its stride at midday, and tapers off by late afternoon. To manage these fluctuations, the grid must be capable of dynamically balancing its load, integrating power from conventional plants to complement renewable energy during its peak production times.

Respondents emphasised the significance of securing grid access for their maximum peak power output at specific times of day as essential to the viability of their operations. Yet, concerns were raised about the technical capabilities of the national grid, which is perceived to lack the necessary sophistication and agility to absorb and dispatch electricity on demand seamlessly.

8.2.5 Development Plan and Renewable Target

Bangladesh has multiple renewable energy laws and regulations like IEPMP, SREDA Act 2012 and Renewable Energy Policy 2008. However, apart from IEPMP, all the other documents require revisions and congruency between them. The respondents demanded a unique policy for the investors as well as the existing companies working in the sector.

Table 10: Major Concerns from an Overseas Investment Point of View

Category	Variable	Concerns
Institutional Environment	Administrative Delays	<ul style="list-style-type: none"> Lengthy authorisation procedures Significant expenses for Environmental Impact Assessments (EIAs) Customs delays
	Corruption in Project Allocation	<ul style="list-style-type: none"> Lack of competitive bidding Projects are often allocated through direct negotiations Risks and delays in project completion
	Inconsistency of Rules and Processes	<ul style="list-style-type: none"> Regulatory framework inconsistency Multiple approvals are needed for EIA reports, causing extra costs and delays
	Lack of Priority Access to the Grid	<ul style="list-style-type: none"> National grid's limited capability to absorb and dispatch renewable energy Peak power output access issues
	Development Plan and Renewable Target	<ul style="list-style-type: none"> Existing laws need revision and congruency Demand for a unique policy for investors and companies
Macroeconomic Environment	Absence of Fixed Exchange Rate	<ul style="list-style-type: none"> Exposure to exchange rate fluctuations Financial viability concerns
	Access to Local Finance	<ul style="list-style-type: none"> High costs of local finance Limited venture capital and bond market Bureaucratic hurdles and high financing costs
	Lack of Skilled Labour	<ul style="list-style-type: none"> Inadequate sector knowledge among professionals High training costs and time lost

(Table 10 contd.)

(Table 10 contd.)

Category	Variable	Concerns
Natural Condition	Availability of Land	• Prolonged negotiations with landowners

Source: Authors' findings from the KIIIs.

8.3 Macroeconomic Environment

8.3.1 Absence of Fixed Exchange Rate

The majority of renewable energy projects, such as wind and solar initiatives, are typically denominated in US dollars, although some projects may be indexed in the local currency. Projects that are dollar-indexed face exposure to exchange rate fluctuations when repatriating profits abroad. This exposure impacts the financial viability of these projects, as fluctuations in the exchange rate can lead to significant variations in the amount of profit that can be repatriated.

Without a stable exchange rate, investors face uncertainty regarding the future value of their investments and potential returns when converted back to their home currency. This volatility can lead to significant financial losses, eroding investor confidence and making long-term financial planning more challenging.

8.3.2 Access to Local Finance

Accessing local finance in Bangladesh is comparatively costly, which is a significant factor for foreign financing in the renewable energy sector. The availability of venture capitalist funds supporting renewable energy projects in the country is limited, and Bangladesh lacks a well-established capital market and bond market that foreign investors could leverage to raise substantial funds for their power projects. Most investors emphasise the scarcity of financing options for initiating renewable power projects in the country.

Local banks and non-banking financial entities like the Infrastructure Development Company Ltd. (IDCOL) hesitate to extend substantial loans for renewable energy projects due to concerns regarding project risks, insufficient awareness about green projects, excessive paperwork, and bureaucratic hurdles associated with loan approval processes. IDCOL's financing costs for renewable energy projects are deemed excessively high, often reaching 6 per cent or more, coupled with a significant volume of paperwork, rendering the process overly complex and burdensome. Wary of these challenges, one investor opted to secure foreign funds to finance their power project, obtaining financing at a rate as low as 4%. Such rates are unattainable for local banks and IDCOL, making them unable to compete in terms of financing costs.

Renewable energy projects frequently face heightened investment risks due to various factors, including their extended payback periods, rapid technological advancements, relatively low maturity levels, the intermittent nature of renewable energy sources, and evolving government regulations and processes. These uncertainties can erode trust and lead to elevated borrowing costs for project developers. To address these challenges, various funding channels are essential for financing renewable

energy projects. These channels may include venture capital, private equity, bank financing, support from state agencies, and corporate research and development investments.

8.3.3 Lack of Skilled Labour

Skilled labour is another crucial aspect most respondents highlight when attracting foreign financing to the renewable energy sector. The presence of a skilled workforce and technical support is vital for the development of renewable energy projects. Professionals such as project installers, engineers, architects, and technicians involved in renewable energy initiatives often do not possess adequate knowledge of the sector's characteristics, benefits, and technical requirements. As a result, training them incurs more expenditure, and the time lost from that incurs sunk costs. Specialised skills are necessary to operate and maintain renewable energy infrastructure, including the availability of spare parts to ensure smooth project operations.

8.4 Natural Condition

8.4.1 Availability of Land

Land availability stands out as one of the most critical factors influencing investment decisions regarding foreign financing in the renewable energy sector. The KIs highlighted that land acquisition poses a significant hurdle in the implementation of renewable energy projects and can often be the deciding factor in project feasibility.

As a rough estimate, a renewable energy project typically requires approximately 3-4 acres of land per megawatt of capacity. For instance, a company aiming to execute a 200 MW project would necessitate around 600-800 acres of land. Acquiring such a substantial land parcel in one contiguous stretch poses considerable challenges, often requiring prolonged negotiations with numerous landowners. This land-intensive nature of the industry exacerbates the complexities associated with project implementation and financing.

Interviewees noted that delays in land acquisition impede project execution, even if the project itself is technically and financially sound. These delays can stem from difficulties in reaching agreements with landowners, navigating regulatory requirements, and resolving disputes. Consequently, larger projects face diminished prospects of successful implementation due to these land acquisition challenges.

9. COMPARATIVE ASSESSMENT OF FINANCIAL AND FISCAL TOOLS AND SUPPORTIVE POLICY ENVIRONMENT: IDENTIFYING GAPS

From all the previous discussions, it is evident that there remains a big gap in the existing financial and fiscal tools of Bangladesh's renewable energy sector compared to China. This chapter explores the critical gaps in Bangladesh's approach, identifying the areas that need improvement to attract more significant investment, particularly from Chinese point of view, into the renewable energy sector. At the later portion, this chapter will explore about the potential financing sources the Chinese investors can tap in for investing in Bangladesh.

9.1 Tax Incentives

In Bangladesh, the renewable energy sector benefits from tax holidays and VAT exemptions. For example, power generation companies, except those using coal, receive full income tax exemption until June 30, 2036, if they commence operation between January 1, 2023, and June 30, 2024. However, these incentives are time-bound and decrease progressively, which might create uncertainty for long-term investors. Additionally, the requirement to reinvest a portion of the tax-exempt income into the same or a new industry, coupled with the obligation to purchase shares of listed companies, adds complexity and may deter foreign investors.

In contrast, China's tax incentives are more stable and long-term, providing greater security for investors. China offers extensive tax exemptions and reductions not only for renewable energy projects but also for the entire supply chain, including the production and sale of renewable energy. These measures are complemented by subsidies, such as feed-in tariffs, which guarantee a fixed return on investment over a prolonged period, thereby reducing financial risks for investors.

Table 11 Comparison Between the Features of Tax Incentives

Feature	Bangladesh	China
Income Tax Exemptions	Time-bound, progressively decreasing.	Long-term, stable.
VAT Exemptions	Selected renewable energy devices.	Comprehensive, across supply chain.
Additional Requirements	Reinvestment in industry, purchase of shares.	No additional requirements.
Subsidies	Limited, project-specific.	Extensive, including FiTs.

Source: Authors' findings.

9.2 Financial Tools of National Bank

Bangladesh Bank has implemented several refinancing schemes, such as the Green Transformation Fund (GTF) and the Technology Development Fund (TDF), aimed at supporting green and sustainable projects. While these initiatives are commendable, they are often accompanied by stringent conditions and limited accessibility, particularly for foreign investors. The interest rates and loan mandates also vary, with commercial banks required to allocate a portion of their loans to sustainable projects, yet the effectiveness of these measures in attracting substantial foreign investment remains questionable.

China, on the other hand, employs a more integrated approach, utilising a range of financial tools including public-private partnerships (PPPs), green bonds, and loans from national development banks. China's financial strategies are designed to mitigate risks and ensure a stable flow of funds to renewable energy projects. For instance, the National Development Bank (NDB) and other policy banks play a crucial role in providing low-interest loans and long-term financing options for renewable energy projects, ensuring that financial resources are available throughout the project lifecycle.

In recent years, China has made substantial strides in renewable energy development. By 2023, the country saw an 85 per cent increase in solar PV and a 60 per cent increase in wind energy capacity, leading to global additions in these sectors. This growth is part of China's broader strategy to accelerate its renewable energy capacity, aiming to meet its 2030 targets for wind and solar installations ahead of schedule.

The NDB has been crucial in financing this expansion. The bank plans to increase its loan book by approximately USD 1.2 billion annually, focusing on sustainable projects that support the BRICS nations' renewable energy goals. As of recent reports, the NDB has allocated USD 911 million specifically for clean energy initiatives. This financial support is pivotal as China aims to account for nearly 60 per cent of the new renewable capacity expected globally by 2028, emphasising the country's central role in the global renewable energy landscape.

Table 12 Comparison between the Financial Tools

Tool	Bangladesh	China
Green Financing	GTF, TDF, limited scope.	Extensive use of PPPs, green bonds, NDB loans.
Interest Rates and Mandates	Varying, mandatory allocation for green projects.	Low-interest, stable long-term financing.
Accessibility	Complex eligibility, limited foreign access.	Broad access, including for foreign investors.

Source: Authors’ findings.

9.3 Tax Holidays and Exemptions

In Bangladesh, tax holidays and exemptions are offered to attract investment in the renewable energy sector. These incentives are crucial for reducing the initial financial burden on investors. For instance, Bangladesh provides a full income tax exemption until June 30, 2036, for power generation companies that begin operations between January 1, 2023, and June 30, 2024. However, this incentive diminishes progressively for companies starting operations after June 2024. Additionally, foreign employees in these companies are granted a three-year income tax exemption, with further conditions requiring a portion of tax-exempt income to be reinvested within the country.

Despite these incentives, several gaps exist like:

- The tax holidays are not as long-term as those offered by China, creating uncertainty for long-term projects
- The requirement to reinvest tax-exempt income adds complexity and may deter foreign investors
- The exemptions primarily target new projects, with less focus on supporting ongoing or expanding renewable energy initiatives

In contrast, China's tax policies are more robust and long-term, offering comprehensive tax exemptions and reductions across the entire renewable energy supply chain. China's approach includes:

- Tax benefits are often guaranteed for longer periods, providing greater security for investors
- Exemptions and reductions apply to various stages of renewable energy projects, including production, sale, and even import of critical components
- China's tax incentives are straightforward with fewer conditions attached, making it easier for investors to benefit

Table 13 Comparative Overview of Tax Holidays and Exemptions

Feature	Bangladesh	China
Duration	Time-bound, progressively decreasing.	Long-term, stable.
Reinvestment Requirements	Mandatory reinvestment of tax-exempt income.	No additional reinvestment requirements.
Scope	Limited to new projects.	Comprehensive, covers entire supply chain.
Complexity	Complex conditions and procedures.	Simplified, fewer conditions.

Source: Authors’ findings.

9.4 VAT and Import Duty Exemptions

Bangladesh provides VAT exemptions on certain renewable energy devices, such as solar cells, solar water heater kits, and photovoltaic solar panels. However, these exemptions do not extend to all components, such as solar inverters, which are subject to a 37 per cent VAT. Import duties also vary, with some equipment benefiting from reduced rates, while others face higher charges. This inconsistency can create uncertainty and additional costs for investors.

In China, the approach to VAT and import duties is more consistent and supportive, with comprehensive exemptions that cover a broader range of renewable energy components, including critical items like solar inverters and wind turbines. Import duties on these components are minimised, significantly reducing the cost of importing necessary technology. Additionally, the criteria for receiving these exemptions are simplified, making them more accessible to a wider range of projects.

Table 14 Comparative Overview of VAT and Import Duty Exemptions

Feature	Bangladesh	China
VAT Exemptions	Limited, not covering all components.	Broad, including critical components.
Import Duties	Varying rates, some high.	Minimal, consistent across key components.
Conditionality	Tied to specific conditions (e.g., EPZs).	Fewer conditions, more straightforward.

Source: Authors’ findings.

9.5 Feed-in Tariffs (FiTs)

Feed-in tariffs (FiTs) are crucial in providing a stable revenue stream for renewable energy projects. In Bangladesh, solar projects are incentivised at USD 0.10 per kWh, with a 20-year commitment from the Bangladesh Power Development Board (BPDB) to purchase power at these rates. However, the implementation of FiTs in Bangladesh faces challenges:

- FiTs are primarily available for solar projects, with fewer incentives for other renewable sources such as wind or biomass
- The rates offered are not always competitive, potentially limiting their attractiveness to investors

China's FiT scheme is more expansive:

- China's FiTs cover a broad range of renewable energy sources, including wind, solar, and biomass, providing consistent support across the sector
- The FiTs are designed to be attractive, with regular adjustments to reflect market conditions, ensuring ongoing competitiveness
- The long-term commitment to purchase power at fixed rates provides a secure and predictable revenue stream for investors

Table 15 Comparative Overview of Feed-in Tariffs

Feature	Bangladesh	China
Coverage	Limited, mainly solar.	Broad, including wind, solar, biomass.
Tariff Rates	Fixed but not always competitive.	Competitive, regularly adjusted.
Long-Term Commitment	20 years, primarily for solar.	Stable, long-term across various sources.

Source: Authors' findings.

9.6 Green Bond

Bangladesh is in the early stages of developing its green bond market. The country has made some progress by introducing green finance policies and encouraging financial institutions to invest in environmentally sustainable projects. However, the green bond market in Bangladesh remains underdeveloped, with limited issuance and low investor participation. Several challenges hinder the growth of this market:

- Bangladesh lacks a comprehensive regulatory framework specific to green bonds. While there are general guidelines for green finance, specific regulations governing the issuance, certification, and monitoring of green bonds are still in development
- There is a lack of awareness and understanding of green bonds among investors and issuers in Bangladesh. This has resulted in low demand for green bonds and limited market activity
- There are few incentives for issuers and investors to engage in the green bond market. Tax benefits, subsidies, or other financial incentives that could encourage participation are not yet widely available

China, on the other hand, has established itself as a global leader in the green bond market. The country has made significant strides in promoting green finance, and its green bond market has grown rapidly in recent years. Key features of China's green bond market include:

- China has developed a robust regulatory framework for green bonds, with clear guidelines for issuance, certification, and monitoring. The People's Bank of China (PBOC) and the National Development and Reform Commission (NDRC) play critical roles in regulating and promoting the market
- China has a large and active green bond market, with significant participation from both the public and private sectors. The country is one of the world's largest issuers of green bonds, with substantial volumes issued each year

- The Chinese government provides various incentives to encourage the issuance and investment in green bonds, including tax benefits, subsidies, and favourable regulatory conditions. This support has helped to catalyse market growth
- China has aligned its green bond market with international standards, such as the Green Bond Principles (GBP) issued by the International Capital Market Association (ICMA). This alignment has attracted foreign investors and enhanced the credibility of Chinese green bonds

Table 16 Comparative Overview of Green Bond Markets in Bangladesh and China

Feature	Bangladesh	China
Regulatory Framework	Limited and underdeveloped.	Comprehensive and well-established.
Market Awareness and Participation	Low awareness, limited participation.	High awareness, broad participation.
Issuance Volume	Minimal, mostly government backed.	Large, significant public and private sector involvement.
Incentives for Issuers and Investors	Few incentives available.	Strong incentives, including tax benefits and subsidies.
Alignment with International Standards	Limited alignment	Aligned with global standards (e.g., GBP).
Government Support	Moderate support, mainly through policies.	Strong support, including financial incentives.

Source: Authors’ findings.

9.7 Build-Operate-Own-Transfer (BOOT)

The Build-Operate-Own-Transfer (BOOT) model is a form of public-private partnership that has been applied in various sectors globally, including infrastructure and energy. In China's renewable energy sector, the BOOT model provides an innovative approach to developing, financing, and operating renewable energy projects. This model has been utilised to encourage private investment in the renewable energy sector, a critical part of China's strategy to increase its renewable energy capacity and reduce carbon emissions.

However, this model does not exist in any industrial or business sector of Bangladesh. But this model could be an attractive form of financing for the potential Chinese investors in Bangladesh.

In the BOOT model, a private entity—a developer or a consortium—is granted the right to finance, design, construct, and operate a renewable energy facility for a predetermined period. During this period, the private entity owns the project and is responsible for all operational risks and costs. The revenue generated from the sale of electricity or other energy produced serves as the return on investment. After the agreed period, ownership of the project is transferred back to the public sector, typically at no cost. This period often aligns with the depreciation schedule of the assets, ensuring the private entity can recover its investment and earn a profit.

This model offers several compelling advantages for China's renewable energy sector. Firstly, it effectively allocates operational risks to the private sector while allowing the public sector to focus

on providing stable regulatory environments. This risk management leads to enhanced efficiency and potential innovations due to the involvement of private entities that bring advanced technologies and professional management practices. Moreover, the BOOT model is financially advantageous for public projects as it leverages private capital without immediate public expenditure, easing government fiscal burdens. These benefits contribute to higher quality standards and potentially faster deployment of renewable energy projects, aligning with China's environmental goals and energy demands.

9.8 Accelerated Depreciation

This model is also absent in Bangladesh.

Renewable energy assets often qualify for accelerated depreciation schedules. This policy allows companies to write off the costs of renewable energy investments more quickly, improving their financial returns and encouraging further investment in the sector.

Enterprises investing in renewable energy projects can sometimes deduct a significant portion of their investment from their taxable income. This deduction provides a direct financial incentive for companies to invest in renewable energy technologies.

9.9 Public-Private Partnerships (PPPs)

The structure of PPPs typically involves private companies providing funding and technical expertise, while the government contributes by offering subsidies, tax incentives, and favourable regulatory treatments. These partnerships are often structured under long-term contracts where risks and rewards are shared between the public sector and private investors. For instance, the government might guarantee certain payments or minimum revenues to make the projects financially attractive to private investors.

This model is yet to be implemented in Bangladesh, but the investors believe this could be the easiest way for Bangladesh towards energy transition.

One of the key benefits of PPPs in China's renewable energy sector is the innovation potential. Private companies often bring cutting-edge technologies and efficient management practices to projects, which can lead to more sustainable and cost-effective renewable energy outputs. Moreover, PPPs can accelerate renewable energy projects' construction and operational phases, helping China meet its renewable targets faster.

Policy certainty is a key issue in financing clean energy PPPs. The government's ambitious target of installing 10 solar photovoltaic power generation programs before 2015 required supporting policies, such as a photovoltaic electricity subsidy policy, to achieve the target. The State Council's reform policy in 2013, which allowed the electricity price to be set for 25 years, improved policy certainty.

9.10 Preferential Loans

Bangladesh has yet to initiate any big enough projects to avail preferential loans from Bangladesh Bank. But it could be a key instrument in the future to finance bigger projects. However, Bangladesh needs to establish a dedicated bank to solely finance the renewable projects beforehand.

China's policy banks, such as the Export-Import Bank of China (Exim Bank), have been instrumental in providing preferential loans to renewable energy projects. These banks offer financial products designed to support the government's clean energy targets, including low-interest loans and long-term financing options.

In 2023, the CDB alone provided over USD 30 billion in preferential loans specifically targeted at renewable energy projects. This funding supported a range of initiatives, from large-scale solar farms in desert areas to offshore wind projects along the coastal regions.

Several major renewable energy projects in China have benefited from preferential loans. For instance, the Three Gorges New Energy project, one of the largest solar farms in the world, received substantial financing from the CDB. This project is expected to add 10 GW of solar capacity, significantly contributing to China's renewable energy goals. Another example is the Longyuan Wind Power Group, which has received preferential loans to expand its wind energy capacity. This funding has enabled the company to develop wind farms with a combined capacity of over 5 GW, further solidifying China's position as a global leader in wind energy.

9.11 Carbon Trading and Renewable Energy Certificates (RECs)

Launched in July 2021, China's national ETS is the world's largest carbon market, covering approximately 2,200 power plants and accounting for about 4.5 billion tons of CO₂ emissions annually. This system incentivises reductions in greenhouse gas emissions by putting a price on carbon, making renewable energy projects more economically attractive compared to fossil fuels. By setting a carbon price, the ETS encourages companies to invest in cleaner energy alternatives like wind, solar, and hydroelectric power, helping to bridge the cost gap between renewables and traditional energy sources. As of 2023, the average carbon price in China's ETS was around 40 yuan (USD 6.20) per ton of CO₂, with trading volumes reaching over 179 million tons of CO₂ and a market value exceeding 7.1 billion yuan (USD 1.1 billion). The ETS is expected to expand further by 2025 to cover more industrial sectors, such as cement, steel, and petrochemicals, potentially increasing its coverage to about 8 billion tons of CO₂. To ensure the system's effectiveness, the government is enhancing monitoring, reporting, and verification (MRV) systems, as well as developing more sophisticated financial instruments like carbon futures and options.

Complementing the ETS, China launched its REC market in July 2017 as part of its broader efforts to boost renewable energy development. The REC system allows renewable energy generators to sell certificates representing the renewable electricity they produce, separate from the physical electricity. This market-based mechanism has grown significantly, with over 20 million RECs issued by the end of 2023. These certificates are increasingly utilised by both renewable energy producers and consumers looking to offset their carbon footprints and meet regulatory requirements. The Chinese government has supported the REC market through policies mandating that large energy consumers purchase RECs to meet renewable energy consumption targets, alongside subsidies and tax incentives that enhance the financial viability of renewable energy projects.

China is also integrating its REC market with the national ETS, creating a more comprehensive and flexible mechanism for achieving emission reduction targets. This integration allows companies to meet both their renewable energy and carbon reduction obligations more efficiently. By 2023, REC revenues had supported the deployment of over 5 GW of solar PV projects and an additional 4 GW of wind energy capacity, underscoring the significant role of RECs in China's renewable energy strategy.

When Bangladesh will initiate carbon market in the future, these two initiatives of China would be a lesson for them.

9.12 Potential Financing Sources for Chinese Investors for Investing in Bangladesh

China's overseas investment in the Bangladeshi renewable energy sector depends on several factors, with securing the necessary funds being one of them. Numerous financing schemes targeting renewable energy and beyond are available globally. However, not all these financing schemes may be eligible for Chinese investors to invest in Bangladesh. A compilation analysis based on the OECD database (2024) shows that approximately USD 39.74 billion in funds are available globally from non-Chinese sources to invest in Bangladesh's renewable energy sector (Table 11). This funding can be accessed in various forms, including loans, technical assistance, equity, financial aid, and so on (Table 11). A detail of all the funding schemes considered for the analysis has been provided in the Annex (Annex 1).

While various financing sources are available globally for Chinese investors to invest in Bangladesh's renewable energy sector, Chinese investors are currently finding Chinese financing sources (such as BRI) to be more suitable for their investment. According to conducted KIIs, Chinese investors are keen to utilise the funds issued by financial institutions based in China due to their concessional interest rate and the longer repayment period. Especially, financial entities facilitating BRI, i.e., China Development Bank (CDB), Asian Infrastructure Investment Bank (AIIB), Export-Import Bank of China (Exim Bank of China), Agricultural Development Bank of China, Industrial and Commercial Bank of China, Bank of China, Silk Road Fund, China Construction Bank, New Development Bank (NDB), and China Export and Credit Insurance Corporation are ideally their most expected sources of funds than any other global entities.

While the progress so far in securing Chinese overseas investment can be lauded, the emergence of several challenges in the Bangladeshi economy has created uncertainty over the continuation or realisation of the full potential of securing Chinese investment in the renewable energy sector. In this regard, understanding the key barriers, especially from the Chinese point of view, should be a priority for Bangladeshi policymakers.

According to the KIIs that were conducted, Chinese overseas investors do not prefer to come directly and invest in renewable projects. In fact, they are not willing to be involved in the planning phase of any renewable energy project. Typically, they prefer project owners, in Bangladesh's case, the local private firms or the government, to plan these projects themselves and identify the ideal space and required capacity for renewable energy-based power plant installation. Once the planning is done, Chinese investors would like to bid as investors by sourcing the required equipment. One added benefit of this modality is that if Chinese companies are involved in the project, Bangladeshi local investors can apply for secure financing support from the aforementioned financial institutions based in China.

Table 17 Available Global Funds for which Bangladesh is Eligible for Investment in its Renewable Energy Sector

Fund title	Co-financing	Technical assistance	Loan	Concessional loan	Results based payments	Financial Aid	Equity	Carbon finance	Forward purchase or the contract value of carbon certificates	Results Sharing Facility	Weather hedges Contingent financing (Cat DDO)	Catastrophe bonds	Mezzanine financing	Financial Incentives	Guarantee	Mezzanine Debt	Loan guarantee	Structured financing	Grant funding	ODA
ASEAN Infrastructure Fund	✓	✓	✓																	
BioCarbon Fund		✓					✓												✓	
Canada Climate Change Program		✓	✓																✓	
Canadian Climate Fund for the Private Sector in Asia				✓																
Carbon Initiative for Development					✓															
Clean Technology Fund			✓																✓	
Climate Catalyst Fund							✓													
Climate Finance Innovation Facility		✓						✓												
Climate Public Private Partnership			✓				✓												✓	
Climate Technology Initiative Private Financing Advisory Network		✓																		
ADB Carbon Market Initiative	✓	✓						✓												

(Table 17 contd.)

(Table 17 contd.)

Fund title	Co-financing	Technical assistance	Loan	Concessional loan	Results based payments	Financial Aid	Equity	Carbon finance	Forward purchase or advance payment for the contract value of carbon certificates	Results Sharing Facility	Weather hedges Contingent financing (Cat DDO) Catastrophe bonds	Mezzanine financing	Financial Incentives	Guarantee	Mezzanine Debt	Loan guarantee	Structured financing	Grant funding	ODA
Danish Climate Investment Fund	✓	✓	✓				✓					✓							
DEG - Deutsche Investitions-Fund			✓				✓					✓							
Entwicklungsge-sellschaft mbH																			
EIB Climate Change Technical Assistance Facility		✓	✓																
EIB-KfW Carbon Programme II									✓										
End-User Finance for Access to Clean Energy Technologies in South and South-East Asia	✓	✓											✓						
FMO Entrepreneurial Bank	✓	✓	✓															✓	
ADB Clean Energy Financing Partnership Facility	✓	✓	✓											✓				✓	
Fund Solutions for Climate Finance			✓																
GEF Trust Fund - Climate Change focal area																		✓	

(Table 17 contd.)

(Table 17 contd.)

Fund title	Co-financing	Technical assistance	Loan	Concessional loan	Results based payments	Financial Aid	Equity	Carbon finance	Forward purchase or advance payment for the contract value of carbon certificates	Results Sharing Facility	Weather hedges Contingent financing (Cat DDO) Catastrophe bonds	Mezzanine financing	Financial Incentives	Guarantee	Mezzanine Debt	Loan guarantee	Structured financing	Grant funding	ODA
Global Climate Change Alliance+							√											√	
Global Energy Efficiency and Renewable Energy Fund																			
Global Facility for Disaster Reduction and Recovery																		√	
ADB Climate Change Fund	√	√																√	
Green Climate Fund			√	√										√				√	
IFC Partial Credit Guarantees			√															√	
IFC Risk Sharing Facility										√									
Interact Climate Change Facility			√												√			√	
International Climate Fund (UK)			√											√				√	√
International Climate Initiative (Germany)			√															√	
International Development Association			√															√	
IRENA / Abu Dhabi Fund for Development				√															

(Table 17 contd.)

(Table 17 contd.)

Fund title	Co-financing	Technical assistance	Loan	Concessional loan	Results based payments	Financial Aid	Equity	Carbon finance	Forward purchase or the contract value of carbon certificates	Results Sharing Facility	Weather hedges Contingent financing (Cat DDO)	Catastrophe bonds	Mezzanine financing	Financial Incentives	Guarantee	Mezzanine Debt	Loan guarantee	Structured financing	Grant funding	ODA
Japan's Fast Start Finance			✓												✓				✓	✓
KfW Development & Climate Finance			✓												✓			✓		✓
Korea Green Growth Trust Fund		✓																	✓	
Least Developed Countries Fund																			✓	
MDB Pilot Program for Climate Resilience		✓	✓																✓	
Multilateral Carbon Credit Fund								✓												
Nationally Appropriate Mitigation Action facility (UK and Germany)		✓	✓			✓													✓	
Nordic Climate Facility	✓																			
Pilot Program for Climate Resilience			✓																✓	
Public-Private Infrastructure Advisory Facility		✓																	✓	

(Table 17 contd.)

(Table 17 contd.)

Fund title	Co-financing	Technical assistance	Loan	Concessional loan	Results based payments	Financial Aid	Equity	Carbon finance	Forward purchase or the contract value of carbon certificates	Results Sharing Facility	Weather hedges Contingent financing (Cat DDO) Catastrophe bonds	Mezzanine financing	Financial Incentives	Guarantee	Mezzanine Debt	Loan guarantee	Structured financing	Grant funding	ODA
Renewable Energy and Energy Efficiency Partnership	✓	✓						✓								✓		✓	
Scaling-Up Renewable Energy Program for Low-Income Countries	✓		✓				✓											✓	
Seed Capital Assistance Facility							✓											✓	
Special Climate Change Fund																		✓	
UNFCCC Adaptation Fund																		✓	
World Bank Carbon Funds and Facilities								✓											
World Bank Group Catastrophic Risk Management											✓								
Source: OECD (2024).																			

Source: OECD (2024).

In rare cases, foreign entities can register local entities to build, operate, and run energy facilities. For example, a China-based energy company could establish a local entity to operate energy projects and, after a few years, transfer ownership to a local company. However, the preference of Chinese investors is to transfer ownership in the quickest possible time, whereas currently, the Bangladesh government prefers to transfer ownership in the long run, demotivating Chinese investors from adopting such a short-term BOOT modality.

As per the KII, it is high time Bangladesh focused on the development of its transmission system in a short time. In that connection, the country can utilise the short-term BOOT modality. Unless an effective transmission system is developed, Chinese investors may not find it profitable to invest in renewable energy-based power plants as per their expectations.

10. RECOMMENDATIONS AND WAY FORWARD

Based on the findings of the study, the following recommendations can be made:

i. Improve Financial Strategies to Mitigate Currency Risk

The Bangladesh government should take proactive steps to address the concerns of Chinese investors regarding currency risks. This can be achieved by establishing a foreign exchange risk mitigation fund that offers currency hedging products, subsidises currency swaps, and provides partial guarantees for foreign exchange losses. Additionally, the government should develop local currency financing options, encouraging local banks to offer credit in BDT and creating incentive schemes for foreign investors to access BDT (Taka)-denominated bonds. Bilateral currency swap agreements with key partner countries should also be implemented to provide liquidity in local currency and reduce reliance on foreign currency debt, thereby stabilising the investment environment. For Chinese investors, engaging with these local currency options and utilising hedging tools can safeguard their investments against currency volatility, making Bangladesh a more attractive destination for renewable energy projects.

ii. Reduce Market Risks for Greater Investment Stability

The Bangladesh government should address the concerns of Chinese investors regarding variable tariff adjustments by establishing long-term power purchase agreements (PPAs) with fixed tariffs. This would provide investors with revenue certainty and mitigate power market risks. To further manage broader market, financial, and regulatory uncertainties, the government should consider creating a stabilisation fund to compensate investors for revenue losses due to unexpected regulatory changes or market fluctuations. Additionally, promoting public-private partnerships (PPPs) and offering government-backed financial guarantees can significantly enhance investor confidence, making the renewable energy sector more attractive to foreign investors. Chinese investors are encouraged to engage in these PPPs and fixed-tariff PPAs to secure more predictable returns and reduce exposure to market risks in Bangladesh.

iii. Mitigate Labour Market Risks by Enhancing Skills and Mobility

To address the shortage of skilled labour and the non-competitive labour market structures in Bangladesh's renewable energy sector, the Bangladesh government should implement policies inspired by China's successful practices. This includes establishing specialised training institutes and vocational programs in collaboration with Chinese educational institutions to rapidly upskill the local workforce. The government should also consider introducing labour mobility programmes, similar to China's approach of relocating skilled labour across regions, to ensure the availability of necessary expertise for renewable energy projects. Furthermore, the government can incentivise foreign companies, including Chinese firms, to establish local training centres and partner with local companies to enhance labour market competitiveness. Chinese investors are encouraged to actively participate in these training initiatives and collaborate with local institutions to build a skilled labour force, ensuring the smooth execution of renewable energy projects in Bangladesh.

iv. Implement Fixed Exchange Rate Mechanisms to Reduce Currency Risks

To mitigate the risks associated with the absence of a fixed exchange rate in Bangladesh's renewable energy sector, the Bangladesh government can draw on Chinese practices by establishing a foreign exchange stabilisation fund. This fund would cushion investors against severe currency fluctuations, similar to the approach used in China. Additionally, the government should encourage the use of local currency financing, promoting BDT-denominated investments to reduce reliance on foreign currencies and limit exposure to exchange rate risks. Developing state-backed financial institutions that provide access to hedging instruments, such as forward contracts and currency swaps, would further protect investors against adverse currency movements. Chinese investors are advised to leverage these hedging tools and participate in local currency financing to secure their investments and reduce the impact of currency volatility in Bangladesh.

v. Improve Access to Affordable Local Finance for Renewable Energy

To accelerate the financing process for renewable energy projects, the Bangladesh government, in collaboration with Bangladesh Bank and local private banks, should consider establishing state-backed green banks or dedicated renewable energy funds. These institutions could offer lower-cost financing options, reducing reliance on traditional high-cost local finance, similar to successful models in China. Additionally, to foster the growth of venture capital and bond markets, the government should provide tax incentives and subsidies for investments in renewable energy and create a favourable regulatory environment for green bonds, drawing inspiration from China's extensive green bond initiatives. Streamlining bureaucratic processes and reducing administrative barriers will further lower the costs and complexity of accessing finance. Chinese investors are encouraged to engage with these local financing options and explore opportunities in Bangladesh's emerging green bond market to secure more cost-effective funding for their projects.

vi. Putting Emphasis on Distributed Energy System Along with Utility Scale Renewable Energy-based Power Generation

Considering the difficulties confronted by the private investors in investing in utility scale renewable energy-based power generation, a possible big potential area for private investors including those of

Chinese investors would be distributed renewable energy. The study portrays that private investors confront different types of difficulties including difficulty in dealing with expensive financing structures, higher costs related to complex infrastructure, grid integration, regulatory requirements, etc. Hence a possible scope to consider private investment in distributed renewable energy in power generation. A detailed framework needs to be developed for distributed renewable energy targeting local and overseas private investment including those of Chinese investment.

vii. Streamline Regulatory Processes for Renewable Energy Investments

To reduce uncertainty and promote investment in the renewable energy sector, the Bangladesh government should consider implementing a consistent regulatory framework similar to China's Renewable Energy Law, which provides clear guidelines and stable policies for investors. Additionally, Bangladesh can adopt a 'one-stop-shop' system for project approvals, where a single agency handles all necessary permits and approvals, significantly reducing the time and costs associated with bureaucratic processes. China's success with the National Development and Reform Commission (NDRC) in coordinating approvals and ensuring smooth project execution serves as a model that Bangladesh can follow. Chinese investors would benefit from engaging with a streamlined regulatory process, which would minimise delays, reduce costs, and create a more predictable investment environment in Bangladesh's renewable energy sector.

viii. Combat Corruption in Renewable Energy Project Allocation

To address the issue of corruption in the allocation of renewable energy projects, the Bangladesh government should implement a robust and transparent competitive bidding system, similar to the approach China has increasingly adopted. This system would replace direct negotiations, which often lead to favouritism and corruption, with a fair process where all interested parties have an equal opportunity to bid. Additionally, Bangladesh should establish a central regulatory authority, akin to China's National Energy Administration, to oversee the bidding process and enforce strict anti-corruption measures. This authority should be empowered to monitor, audit, and ensure compliance with established rules and regulations, promoting transparency and accountability. By adopting these strategies, Bangladesh can reduce the risks and delays associated with corruption, thereby improving the efficiency and fairness of project implementation. Chinese investors are encouraged to participate in a reformed and transparent system, which would provide a more secure and equitable environment for their investments.

ix. Establish Partial Risk Guarantees to Attract Investment

Like many other developing countries, Bangladesh Bank and its other guarantee mechanism should enable partial risk guarantee for investors through mobilising the support of global financial institutions such as the World Bank, ADB, IFC, etc. This should minimise investment risks and attract more Chinese overseas investment into Bangladesh.

The Bangladesh government, in collaboration with Bangladesh Bank, should enable partial risk guarantees (PRG) for investors by mobilising support from global financial institutions such as the World Bank, ADB, and IFC. This initiative would significantly minimise investment risks, making Bangladesh

a more attractive destination for foreign investors, including those from China. By providing PRGs, Bangladesh can offer protection against political, regulatory, and financial risks, thereby enhancing investor confidence. Chinese investors are encouraged to leverage these risk mitigation tools to secure their investments and participate more actively in Bangladesh's renewable energy sector.

x. Create a Priority Local Currency Conversion Channel for Renewable Energy Investors

Given the ongoing foreign reserve crisis, the investors, including the Chinese investors, do not feel assured about being able to convert their investment return into USD from BDT. A dedicated local currency conversion channel targeting renewable energy investors, established by Bangladesh Bank, might provide a better signal to the investors and secure more investment in Bangladesh. In addition, Bangladesh should continue its efforts to receive China's proposed loan assistance, which is equivalent to USD 5 billion in Chinese currency, to tackle the ongoing crisis.²

xi. Adopting International Arbitration Standards

To attract and retain foreign investment, particularly from Chinese investors in renewable energy projects, the Government of Bangladesh (GoB) should adopt a flexible dispute resolution policy that aligns with international standards. Specifically, the GoB should allow for the option of international arbitration in a neutral third-country venue, which is a common practice in cross-border investments. This can be facilitated by incorporating clauses into investment agreements or Bilateral Investment Treaties that permit dispute resolution through established international arbitration bodies such as ICSID or ICC. By offering this flexibility, Bangladesh can enhance investor confidence, reduce perceived risks, and thereby encourage greater foreign investment in its renewable energy sector.

xii. Utilise Available Global Climate Funding Sources

The study's findings reveal that Chinese investors overwhelmingly prefer Chinese funding sources to finance their renewable energy investments. However, given that Bangladesh is a developing country and highly vulnerable to climate change, there is a vast pool of non-Chinese funding resources available globally to invest in Bangladeshi renewable energy. To ensure a sustainable flow of financing in the long term, these Chinese investors should also consider tapping into these non-Chinese funding sources.

²During the Bangladeshi PM's most recent visit to China, this issue was not resolved. However, China indicated that the deal might take some time to finalise.

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Annex

Annex Table 1: List of Available Funding Schemes for Investment in Bangladesh's Renewable Energy Sector

Name of fund	Type of fund	Financing mechanism	Level of Funding
ASEAN Infrastructure Fund	Multilateral	Co-Financing, Loan Technical assistance	USD 485.3 million
BioCarbon Fund	Multilateral	Grant funding and technical assistance	USD 84 million
Canada Climate Change Program	Multilateral	Loan, equity, Technical Assistance	CAD 276.55 million
Canadian Climate Fund for the Private Sector in Asia	Multilateral	Concessional financing, Grants	CAD 82.39 million
Carbon Initiative for Development	Multilateral	Results based payments	
Clean Technology Fund	Multilateral	Grant, Loan	USD 5.3 billion
Climate Catalyst Fund	Multilateral	Equity (Fund of funds)	USD 418 million
Climate Finance Innovation Facility	Multilateral	Carbon finance, technical assistance	EUR 28.3 million
Climate Public Private Partnership	Bilateral	Equity, Loan, Grant	USD 283 million
Climate Technology Initiative (CTI) Private Financing Advisory Network (PFAN)	Multilateral	Technical assistance	USD 140 million
ADB Carbon Market Initiative	Multilateral	Co-financing, Carbon finance, technical assistance	USD 267 million
Danish Climate Investment Fund	Bilateral	Co-financing, Loan, Technical assistance, Equity	DKK 1.3 billion
DEG - Deutsche Investitions- und Entwicklungsgesellschaft mbH	Bilateral	Loans, Mezzanine financing, Guarantee, Equity capital	Up to EUR 25 million per project
EIB Climate Change Technical Assistance Facility	Multilateral	Loan, Technical assistance	EUR 10 million
EIB-KfW Carbon Programme II	Multilateral	Forward purchase or advance payment for the contract value of carbon certificates	EUR 100 million
End-User Finance for Access to Clean Energy Technologies in South and South-East Asia (FACET)	Multilateral	Co-financing, Financial Incentives (loan, co-financing, guarantee, credit insurance), Technical assistance	EUR 69 million
FMO Entrepreneurial Bank (IDF and AEF)	Bilateral	Co-financing, Loan and Grant, Technical assistance	

(Annex Table 1 contd.)

(Annex Table 1 contd.)

Name of fund	Type of fund	Financing mechanism	Level of Funding
ADB Clean Energy Financing Partnership Facility	Multilateral	Co-financing, Guarantees, Loan, Grant, Technical assistance	USD 298 million
Fund Solutions for Climate Finance (KfW & Partners)	Bilateral	Loan	Green for Growth Fund (GGF): EUR 400 million; Global Climate Partnership Fund (GCPF): USD 500 million for international climate protection
GEF Trust Fund - Climate Change focal area (GEF 6)	Multilateral	Grant	USD 3 billion over 2015-2019, together with climate adaptation fund
Germany's International Climate Initiative	Bilateral	Not Available	EUR 1.6 billion (2008-2014)
Global Climate Change Alliance+	Multilateral	Grant	EUR 316 million
Global Energy Efficiency and Renewable Energy Fund	Multilateral	Equity (Fund of funds)	EUR 220 million
Global Facility for Disaster Reduction and Recovery	Multilateral	Grant	USD 156 million (committed), USD 60 million (approved) in FY2014
ADB Climate Change Fund	Multilateral	Co-financing, Grant, Technical assistance	USD 50 million
Green Climate Fund	Multilateral	Grant, Concessional loan, Guarantees, Equity	USD 10.2 billion (pledged as of June 2015)
IFC Partial Credit Guarantees	Multilateral	Loan, Guarantee	N/A
IFC Risk Sharing Facility	Multilateral	RSF	N/A
Interact Climate Change Facility	Multilateral	Grant, Senior, Loans and Mezzanine Debt	EUR 400 million
International Climate Fund (UK)	Bilateral	Grant, Loan, Guarantee, ODA	GBP 3.87 billion
International Climate Initiative (Germany)	Bilateral	Grant, Loan	EUR 120 million annually
International Development Association	Multilateral	Grant, Loan	N/A
IRENA / Abu Dhabi Fund for Development	Bilateral	Concessional loan	USD 350 million
Japan's Fast Start Finance	Bilateral	Grant, Loan, ODA, Guarantees	
KfW Development & Climate Finance	Bilateral	Grant, Loan, ODA, Structured financing	Vary, depending on contract
Korea Green Growth Trust Fund	Multilateral	Grant, Technical assistance	USD 40 million (additional funding pending for approval)
Least Developed Countries Fund	Multilateral	Grant	USD 932 Million (as of June 2015)
MDB Pilot Program for Climate Resilience	Multilateral	Grant, Loan, ODA, Technical Assistance	USD 1 billion
Multilateral Carbon Credit Fund	Multilateral	Carbon Finance	EUR 208.5 million

(Annex Table 1 contd.)

(Annex Table 1 contd.)

Name of fund	Type of fund	Financing mechanism	Level of Funding
Nationally Appropriate Mitigation Action facility (UK and Germany)	Multilateral	Technical and financial assistance; Grants and loans	USD 205 million
Nordic Climate Facility	Multilateral	Co-financing	Between €250-500K
Pilot Program for Climate Resilience	Multilateral	Grant, Loan	USD 800 million
Public-Private Infrastructure Advisory Facility	Multilateral	Grant, Technical Assistance	USD 15 million
Renewable Energy and Energy Efficiency Partnership	Multilateral	Carbon Finance, Grant, Loan guarantee, Technical Assistance	EUR 150,000 maximum per project
Scaling-Up Renewable Energy Program for Low-Income Countries	Multilateral	Grant, Loan, Equity, Co-financing	USD 796 million
Seed Capital Assistance Facility	Multilateral	Grant, Equity	USD 10.5 million
Special Climate Change Fund	Multilateral	Grant	USD 345 million (as of June 2015)
UNFCCC Adaptation Fund	Multilateral	Grants	USD 262 million
World Bank Carbon Funds and Facilities	Multilateral	Carbon finance	USD 2.5 billion (through 10 carbon funds and facilities)
World Bank Group Catastrophic Risk Management	Multilateral	Weather hedges Contingent financing (Cat DDO) Catastrophe bonds	(Cat DDO) To provide immediate liquidity up to USD500 million or 0.25% of GDP (whichever is less)

Source: OECD (2024).

This insightful study identifies barriers hindering Chinese overseas investment in the renewable energy sector of Bangladesh, from currency volatility and bureaucratic hurdles to skill shortages and regulatory unpredictability. By comparing Bangladesh's fiscal tools with China's robust investment strategies, it identifies actionable solutions to bridge the gaps and attract substantial global funding. With over USD 39.74 billion available from international sources, the study provides a roadmap for leveraging innovative financing mechanisms, streamlining processes, and enhancing skills to create a competitive and sustainable renewable energy sector.



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