Landscape and Opportunities to Finance the Decarbonization of Bangladesh's Apparel Manufacturing Sector

apparel impact institute

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Acknowledgments

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Methodology

The data-gathering methodology for this report followed a detailed, multi-pronged approach that combined desk research, International Financial Institutions (IFI) project assessments, virtual and in-person consultations, and an in-country visit to engage with key stakeholders.

Development Finance International (DFI) began by conducting extensive desk research to review existing data, reports, and literature and establish a baseline understanding of decarbonization efforts in Bangladesh's textile and apparel sector. This was followed by virtual consultations with industry stakeholders and IFIs to identify financing challenges and opportunities.

In October 2023, Apparel Impact Institute (Aii) and DFI conducted a week-long visit to Dhaka, Bangladesh. During this visit, the team engaged with local stakeholders and participated in a sustainability-focused roundtable discussion hosted by Aii on the sidelines of an event by the Bangladesh Apparel Exchange. These interactions helped identify regional challenges and opportunities for decarbonization in major apparel production hubs. Insights captured from this shaped the findings and recommendations in this report.

Recognizing the evolving policy environment in Bangladesh, follow-up consultations were held in January 2024 after the national elections and in September 2024 following changes in government leadership. Additional discussions took place in January 2025 to ensure the findings reflected the latest developments in energy policies and financing opportunities.

Over 40 stakeholders were engaged throughout this process, including government officials, industry leaders, representatives from IFIs, and local financial institutions. This approach ensured the findings and recommendations were grounded in diverse perspectives and could support decarbonization efforts across the apparel value chain.

This comprehensive process also helped build a network of collaborators who can support Aii and its partners in fostering local partnerships and advancing shared goals. These insights provide a strong foundation for driving actionable solutions to decarbonize Bangladesh's apparel industry.

Acronyms & Abbreviations

&	*And*
#	*Number*
~	*Approximately*
ADB	*Asian Development Bank*
AFD	*Agence Française de Développement*
Aii	*Apparel Impact Institute*
AVE	*Average*
B	*Billion*
BAU	*Business as Usual*
BDT	*Bangladesh Taka*
BEEER	*Building Energy Efficiency and Environment Rating*
BGMEA	*Bangladesh Garment Manufacturers and Exporters Association*
BIFFL	*Bangladesh Infrastructure Finance Fund Limited*
C	*Celsius (degrees)*
CAPEX	*Capital Expenditure*
CO2	*Carbon Dioxide*
CPPA	*Corporate Power Purchase Agreement*
CSP	*Climate Solutions Portfolio*
DFI	*Development Finance International, Inc.*
e	*Emissions*
e.g.	*Example Given*
EE	*Energy Efficiency*
ESCO	*Energy Service Company*
ESG	*Environmental, Social, and Governance*
EU	*European Union*
EUR	*Euro*
GCF	*Green Climate Fund*
GCGF	*Green Credit Guarantee Fund*
GHG	*Greenhouse Gas*
GIZ	*Gesellschaft für Internationale Zusammenarbeit*
GTF	*Green Transformation Fund*
GWh	*Gigawatt Hours*
HSBC	*Hongkong and Shanghai Banking Corporation*
i.e.	*That Is (id est)*
IBRD	*International Bank for Reconstruction and Development*
ICSID	*International Centre for Settlement of Investment Disputes*
IDA	*International Development Agency*
IDCOL	*Infrastructure Development Company*
IFC	*International Finance Corporation*
IFI	*International Financial Institutions*
JICA	*Japan International Cooperation Agency*
KfW	*Kreditanstalt für Wiederaufbau*
KPI	*Key Performance Indicators*
M	*Million*
MAX	*Maximum*
M&V	*Monitoring and Verification*
MIGA	*Multilateral Investment Guarantee Agency*
MIN	*Minimum*
MSME	*Micro-, Small-, and Medium-Sized Enterprises*
NDB	*New Development Bank*
NDC	*Nationally Determined Contribution*
NGO	*Non-Government Organization*
O&M	*Operation and Maintenance*
OPEX	*Operational Expenditure*
PPA	*Power Purchase Agreement*
PV	*Photovoltaic*
RE	*Renewable Energy*
RESCO	*Renewable Energy Service Company*

Acronyms & Abbreviations

RMG	*Ready-Made Garment*
ROI	*Return-on-Investment*
SREDA	*Sustainable and Renewable Energy Development Authority*
TDF	*Technology Development and Upgradation Fund*
TVET	*Technical and Vocational Education and Training*
UNEP	*United Nations Environment Programme*
UNFCCC	*United Nations Framework Convention on Climate Change*
UNIDO	*United Nations Industrial Development Organization*
US$	*United States Dollar*
USAID	*United States Agency for for International Development*
VPPA	*Virtual Power Purchase Agreement*

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About Us

Apparel Impact Institute (Aii) is a 501(c)(3) global nonprofit organization dedicated to identifying, funding, scaling, and measuring the apparel and footwear industry's proven environmental impact solutions. Aii works with over 50 brands and retailers who are leading the sector's global decarbonization efforts, including Target, PVH, Lululemon, and H&M Group.

Aii is calling for a US$250M Fashion Climate Fund to leverage a first-of-its-kind collaborative funding model between philanthropy and corporate entities. It is designed to catalyze climate action by funding and scaling solutions for decarbonization, and marked to unlock a total of US$2B in blended capital, to meet the industry's goal to halve carbon emissions by 2030.

Most recently, Aii has updated its widely credited 2021 "Roadmap to Net Zero," a report and guide calling for the system-wide collaboration needed to reduce GHG emissions in the apparel and footwear industry by 45% at minimum by 2030 and to zero by 2050.

To learn more about Aii, visit apparelimpact.org.

Development Finance International Inc. (DFI) Development Finance International (DFI) is an international business development advisory firm with over 30 years of experience in accelerating business and sustainability in emerging markets globally.

DFI specializes in facilitating partnerships between the private sector and International Financial Institutions (IFIs), such as the World Bank Group, Asian Development Bank, and others to deliver on clients' objectives. DFI's efforts have delivered over US$10 billion in partnerships, funding, and business across sectors and have provided significant Returns on Investment (ROI) and socio-economic impact (i.e. GHG reduction, job creation, increased income, among others).

From strategy to day-to-day execution, DFI's holistic approach centers on results delivery, long-term relationships, and multi-stakeholder success for high-impact initiatives, such as funding mobilization, supply chain development, and market entry and expansion. DFI is working with Aii in mobilizing sustainable financing to support the decarbonization of the textile and apparel industry.

To learn more about DFI, visit dfintl.com.

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Executive Summary

Bangladesh's apparel and textile industry stands at a critical crossroads, with an opportunity to lead global decarbonization efforts while unlocking substantial economic and social benefits - including the creation of "green jobs." Recent research from Apparel Impact Institute (Aii) and Cascale suggests that, as of 2023, Bangladesh is among the top five countries with the biggest potential for greenhouse gas (GHG) emissions reductions in the industry.

The decarbonization of Bangladesh's textile and apparel sector is critical. With its strong track record in apparel exports and an expanding market for renewable energy (RE) and energy efficiency (EE), Bangladesh is well-positioned to accelerate sustainable manufacturing and trade.

This report highlights opportunities that can be unlocked through policy, financial, and technical solutions to accelerate economic and environmental impact. Achieving a 50% reduction in GHG emissions by 2030 will require systemic efforts across the value chain, supported by an investment of **US$6.6 billion**, as estimated by DFI's preliminary analysis. While progress has been made with close to **US$1.6** billion in funding confirmed and an additional **US$175 million** expected from International Financing Institutions (IFIs) and local banks, there remains a financing gap of **US$4.8 billion**.

This report aims to contribute to the global discussion on these issues and to spur local and international action. By addressing these challenges and building on partnerships with IFIs and local stakeholders, Bangladesh can not only reduce emissions but also strengthen its global competitiveness and contribute meaningfully to global decarbonization goals.

Recent Developments in Bangladesh

While this report focuses on decarbonization and environmental challenges, it is important to acknowledge the significant social and political changes in Bangladesh since the initial data collection period. These include worker protests in November 2023 and the government transition in August 2024, which reflect broader shifts in the country's socio-economic landscape.

Bangladesh's evolving decarbonization journey presents opportunities to advance its apparel and textile industry while creating quality jobs. For example, the transition to a greener economy demands a local workforce skilled in energy and environmental audits, energy development and installation, and other technical functions critical across the value chain.

By embracing a value chain approach as proposed in this report, Bangladesh can drive progress while fostering inclusive socio-economic development, aligning the country's industrial growth with its environmental and social priorities.

Key Findings

- **The apparel and textile industry contributes over 80% of Bangladesh's foreign export revenue.** Given the industry's scale and continued reliance on fossil fuels, the sector has significant potential to contribute to the goal of a 50% reduction in GHG emissions by 2030.
- **There is growing pressure for the industry to adopt cleaner and sustainable practices**, driven by brand demands and emerging international and local regulations. This includes sustainability finance disclosure requirements from the Bangladesh central bank and several government policies that encourage sustainability and climate action.
- **Manufacturers face challenges in transitioning to sustainability:** financial constraints, limited technical expertise, insufficient energy policies, and inadequate infrastructure.
- **An estimated US6.6 billion in financing is required** to reduce Bangladesh's textile and apparel emissions by 50% by 2030 through renewable energy (RE) and energy efficiency (EE) measures.
- **As of September 2024, 12 credit lines and revolving fund schemes** have been identified, with close to US$1.6 billion in available funding and US$175 million in upcoming funding from IFIs and the national government. This leaves **a financing gap of US$4.8 billion.**
- **IFIs are also partnering with the government and private sector** to improve energy policies, build local technical capabilities, and support decarbonization initiatives, creating activation opportunities for Aii and its partners.
- **A lack of technical experts (e.g. energy auditors) in Bangladesh drives up costs and prolongs inspection processes,** with energy audits averaging US$10,000 - approximately double the cost in neighboring India. Building local expertise can reduce costs and generate quality local jobs.
- **The renewable energy market is still in its early stages,** with limited renewable energy service companies (RESCO) activity and no energy service companies (ESCO) operations in Bangladesh. Growth capital is needed to scale RE and EE solutions.

Recommendations and Calls to Action:

1. **Connect Manufacturers, Brands, IFIs, Funders, and Other Stakeholders:**
   Connect manufacturers with financial and technical resources that build awareness, knowledge, and demand for decarbonization financing and technologies. Initiatives like Aii's engagements with the Bangladesh Apparel Exchange and the Future Supplier Initiative (FSI) - a collaboration with The Fashion Pact, Guidehouse, and DBS Bank focused on Bangladesh - provide models for fostering cross-industry collaboration.

2. **Brand Support and Active Involvement of Manufacturers:**
   Address barriers like high debt levels and perceived risks by encouraging brands to offer stronger incentives and support through various financing and de-risking instruments.
   Aii's Brand Playbook for Financing Decarbonization provides guidance for brands to drive these efforts. Smaller manufacturers with limited access to brands and capital can begin their transition through decarbonization programs with low-cost, short-payback solutions, such as Aii's Clean by Design program.

3. **Shift Risk Perceptions on Green Investments:**
   Educate financial institutions on the returns of green projects through successful case studies and promote the harmonization of "green investment" definitions and standardized certifications to reduce financing barriers and encourage larger-scale investments. Explore creating a platform that can centralize data, facilitate discussions on alternative due diligence, and connect manufacturers with financing.

4. **Scale-up Decarbonization Financing:**
   IFIs and local financial institutions can increase climate and sustainability funding through concessional financing, blended financing, and risk-sharing solutions to improve accessibility for smaller manufacturers. IFIs and local FIs should collaborate with brands and industry leaders to develop tailored solutions that address the financing gap.

5. **Maximize and Enhance Financing and Technical Assistance Opportunities:**
   Utilize existing funding and technical support to build momentum for green investments and create successful case studies that attract further capital. Brands and IFIs can explore third-party guarantees and transaction advisory services to help manufacturers meet requirements and navigate financing processes. They can also support financial institutions in evaluating green finance applications from manufacturers and certifying successful project completion. For IFIs, streamlining application and due diligence procedures can further ease access to funds.

6. **Advocate for More Inclusive and Progressive Policies:**
   Strengthen policies and infrastructure to accelerate decarbonization by advocating for reforms to revise net metering rules, lower import duties on green technologies, and introduce new frameworks for power purchase agreements. Brands, IFIs, local experts, energy developers, and manufacturers must urge the expansion and enhancement of grid and transmission networks to scale renewable energy integration and ensure stable electricity supplies.

7. **Enhance Technical Capacity in the Value Chain:**
   Strengthen workforce capabilities by expanding partnerships with universities and technical institutes to train energy auditors and engineers in renewable energy and energy efficiency solutions. Address the shortage of skilled professionals needed to meet the demand for decarbonization projects and support the development of ESCOs and RESCOs.

Introduction

The Trillion-Dollar Fashion Decarbonization Opportunity

Sustainable fashion focuses on reducing the environmental and social impacts of clothing production, with a particular emphasis on minimizing carbon emissions across the supply chain. From sourcing raw materials to delivering finished products, the aim is to address climate change while promoting responsible environmental stewardship.

As the industry evolves, innovative solutions are emerging to tackle the environmental and social challenges it faces. Accelerating efforts to reduce carbon emissions remains a critical priority for the textile and apparel industry to achieve a more sustainable future.

This report builds on the foundational insights of the 2021 publication, *Unlocking the Trillion-Dollar Fashion Decarbonization Opportunity*, a joint publication by Apparel Impact Institute and Fashion for Good.[1] The report highlights the financial and environmental benefits of adopting low-carbon production models, emphasizing the need for collective action. It also provides strategies for reducing emissions, underscores the role of finance in enabling decarbonization, and calls for private investment and policy support to advance sustainable practices across the industry.

Objective

This report explores the financial aspects of reducing carbon emissions in the clothing and textile industry, with a focus on Bangladesh. It aims to identify country-specific opportunities and challenges while offering actionable recommendations to advance decarbonization. These efforts align with the global target of reducing greenhouse gas (GHG) emissions in the apparel and textile sector by 50% by 2030.

Financing is a cornerstone of sustainable transformation. This report maps and examines financial mechanisms and investment opportunities, offering practical insights for stakeholders. It emphasizes the critical role of financing in driving sustainable transformation, with a focus on the contributions of International Financial Institutions (IFIs). IFIs play a pivotal role in catalyzing investment, providing financial resources, and delivering technical support to accelerate decarbonization.

By presenting data and successful strategies from the sector, this report seeks to guide policymakers, investors, and industry leaders in advancing decarbonization efforts. Its goal is to foster a more sustainable and resilient apparel value chain in Bangladesh and beyond.

The Role of International Financial Institutions

International Financial Institutions (IFIs) are key players in supporting developing countries and emerging economies. They provide services beyond financing, including technical support and the ability to convene influential stakeholders. Their support comes through various funded initiatives and projects at global, regional, and national levels, catalyzing both government and private sector funding.

IFIs offer financial support in the form of loans, grants, and occasionally, equity investments. They also contribute technical support, such as policy expertise and recommendations, publish knowledge materials, and offer capacity building and training for government entities and other key stakeholders. Additionally, IFIs bring together high-level officials such as Heads of State, Ministers, and sector-specific leaders to drive action on sustainable development, poverty reduction, and infrastructure projects worldwide.

There are several types of IFIs, including multilateral development banks, bilateral aid organizations, and United Nations agencies. Philanthropic foundations and other financial institutions also support sustainability and socio-economic development.

A brief overview of each type and examples are provided below. However, **this is not a comprehensive and exhaustive list** of all the organizations in the IFI and development sector.

INTERNATIONAL FINANCIAL INSTITUTIONS (IFS)

Multilateral Development Banks: Financial institutions established by multiple countries to provide loans and grants for development projects in emerging countries. They can have a global scope, such as the World Bank and the International Monetary Fund, or have a regional focus, such as the Asian Development Bank and the Asian Infrastructure Investment Bank.

Bilateral Aid Agencies: Government organizations that provide development assistance directly and independently to other countries, often focusing on specific regions or sectors based on their national interests and priorities.

Examples of these include the United Kingdom Foreign, Commonwealth & Development Office (UK FCDO), the United States Agency for International Development (USAID), and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

United Nations Programmes and Specialized Agencies: Specialized units within the United Nations system that are tasked with addressing specific global challenges such as environment, livelihood, and labor. Examples of these include the United Nations Environment Programme (UNEP), the United Nations Framework Convention on Climate Change (UNFCCC), and the United Nations Industrial Development Organization (UNIDO).

OTHER INSTITUTIONS CONTRIBUTING TO DEVELOPMENT

These may have local or international coverage.

Philanthropies & Foundations: Charitable organizations or individuals that donate funds, resources, or expertise to support various social causes, initiatives, or development projects aimed at improving human welfare and addressing global challenges.

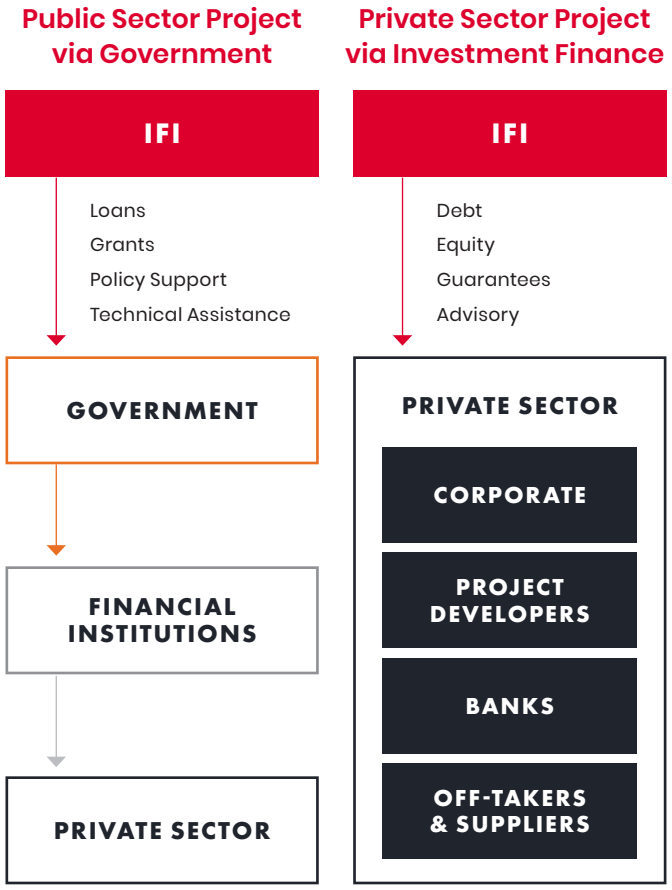
These organizations may have global or regional activities and can collaborate with each other to support shared causes. The Bill & Melinda Gates Foundation and the Rockefeller Foundation are among those with international activities. In Bangladesh, active organizations with local activities include the Bangladesh Environment and Development Society and GreenTech Foundation Bangladesh.

Banks & Funds: Organizations dedicated to providing resources and support for specific global challenges. These institutions mobilize funding, expertise, and partnerships to address matters involving climate change, livelihood, conservation, and public health.

Many international banks and funds active within the climate and MSME spaces often work with local financial institutions to implement their projects and disburse their resources into the country. International players include Green Climate Fund (GCF), HSBC, BNP Paribas, and Citibank. In Bangladesh, local institutions like the Infrastructure Development Company (IDCOL) and the Bangladesh Infrastructure Finance Fund Limited (BIFFL), are actively engaged in addressing sustainability and climate issues.

HOW IFIS WORK: MODES OF FINANCING

IFIs offer external funding to both the public and private sectors. Their resources can be allocated through national and state governments or provided directly to companies for projects with socio-economic and sustainable development goals. The terms and conditions of these funding arrangements often differ significantly between public and private projects.



Decarbonizing the Apparel Industry

Bangladesh Apparel and Textile Sector

Over the years, Bangladesh's textile and apparel industry has been central to the country's industrial growth and expanded manufacturing capacity, positioning Bangladesh as a global leader in this sector. The country accounts for 6.8% of global apparel exports, ranking second only to China, which holds 30% of the global market.[2] According to estimates by Aii and the NYU Stern School of Business, approximately 7,000 facilities operate within Bangladesh's textile and apparel industry. [3] These facilities engage in activities ranging from raw material processing to the production of ready-made garments (RMG) and are concentrated in key hubs such as Dhaka, Gazipur, Chattogram, and Narayanganj.[4]

Bangladesh's key textile and apparel hubs/clusters and their share of total factories

1. **Dhaka - 43%**
2. **Gazipur - 28%**
3. **Chattogram - 17%**
4. **Narayanganj - 8%**

Source: Center for Policy Dialogue, Oxfam Bangladesh (2024)

The Ready-Made Garment (RMG) sector is the backbone of Bangladesh's economy, contributing over 80% of the country's foreign export revenue.[5] Between 2014 and 2019, garment exports grew from US$24 billion to US$33 billion, with an average annual growth rate of 8%.[6] By 2023, annual RMG export earnings reached US$47.4 billion, with the United States, Germany, and the United Kingdom as the top importers.[7] The Bangladesh Garment Manufacturers and Exporters Association (BGMEA) has set an ambitious target to achieve US$100 billion in annual export earnings by 2030, reflecting the sector's potential for continued growth.[8]

Beyond exports, the industry accounts for over 13% of Bangladesh's GDP[9] and represents nearly 45% of industrial employment, providing jobs to more than 4 million people. This underscores the sector's critical role in driving economic growth and supporting livelihoods across the country. [10 11]

Despite its economic significance, Bangladesh's textile and apparel industry faces considerable environmental challenges. The high consumption of energy, water, and chemicals across the supply chain has contributed to significant environmental degradation and greenhouse gas (GHG) emissions. Key production stages, including raw material processing, weaving, knitting, dyeing, finishing, manufacturing, and distribution, heavily depend on fossil fuels. In Bangladesh, natural gas burning remains the country's primary source of energy.

The RMG sector alone accounts for 8.2% of Bangladesh's total electricity consumption.[12] Combined with the broader textile industry, the total textile and garment sector represents 27.8% of Bangladesh's primary energy consumption.[13]

Policy and Regulations

The policy landscape in Bangladesh is undergoing significant changes driven by a combination of global commitments and national targets, local and international regulations, and numerous financial incentives, all aimed at promoting sustainable practices across the sector. For manufacturers, these policies and initiatives are critical to guiding their transition and ensuring their competitiveness in global supply chains as brands, investors, and regulators push for stronger climate action.

Many of the policies and regulations focus on enhancing sustainability reporting and disclosures, expanding renewable energy (RE) use, and improving energy efficiency (EE) across the sector. These all influence how manufacturers operate and invest in decarbonization efforts. In analyzing the landscape, DFI conducted a comprehensive review of independent studies and consulted with key stakeholders, including financial institutions, industry experts, and associations.

However, while Bangladesh has taken significant steps to integrate sustainability into its industrial policies, there are opportunities to revise and expand some policies to enhance their impact.

This section is divided into **two parts**:

- **Part one** covers sustainability policies and programs that are shaping the industry, and
- **Part two** covers energy regulations and government programs driving the transition.

Together, this section provides a broad understanding of the policy environment, its impact on manufacturers, and potential recommendations to further enhance the landscape.

Part One: Sustainability

Bangladesh is widely recognized as a climate-vulnerable country, with high exposure to risks such as rising sea levels and extreme weather events (e.g. cyclones, heat waves, flooding).[14][15] This heightens the urgency for a sustainable industrial transition that not only meets global expectations but also strengthens national resilience.

Internationally, there is a growing push for decarbonization and the integration of environmental considerations into industrial operations. As sustainability regulations gain momentum globally, manufacturers are increasingly expected to reduce emissions, comply with environmental, social, and governance (ESG) reporting standards, and invest in cleaner production methods.

The following section briefly describes some of the key policies, targets, and agreements shaping Bangladesh's textile and apparel industry.

International Commitments and Regulations:

- **Updated Nationally Determined Contributions (NDCs)**
  Bangladesh has committed to reducing greenhouse gas (GHG) emissions by 21.85% below Business-as-Usual (BAU) levels by 2030 - with international support. Updated NDCs indicate that 96% of planned GHG reductions are expected to come from the energy sector, highlighting the sector's potential and government focus. [16]

- **European Union Carbon Border Adjustment Mechanism (CBAM):**
  CBAM addresses carbon emissions associated with the production of goods entering the EU market. The mechanism requires importers to declare the emissions coming from the production of their imported goods and pay a fee corresponding to the emissions released. Through CBAM, EU-based international brands need to encourage and support their suppliers to reduce their carbon intensity and GHG emissions. Otherwise, manufacturers exporting to the EU may face carbon-related costs.[17]

- **Greenhouse Gas Protocol (GHGP) Emissions Reporting**
  The GHGP is a widely used global standard for accounting and reporting greenhouse gas emissions across a value chain. The newly enacted Corporate Sustainability Reporting Directive requires all European companies to report on sustainability.[18] By creating an emissions inventory, businesses can understand their value chain emissions and target the most carbon-heavy segments - typically the indirect emissions that come from the company's upstream and downstream value chain (e.g. production of imported products, transportation, the use and recycling of sold products, etc.).[19] [20]

National Regulations and Programs Supporting Sustainability

- **Strategic Sustainability Initiatives**
  The Climate Change Strategy and Action Plan (2009) and National Sustainable Development Strategy (2010-2021) laid the foundation for environmental initiatives in the country and set long-term goals for sustainable industrial development, emphasizing the alignment of economic development with climate priorities.[21] [22]

- **Sustainable Reporting and Disclosures:**
  The Sustainable Finance Policy (2023) and the Guideline on Sustainability and Climate-related Financial Disclosures (2023) encourage financial institutions to incorporate ESG considerations into their operations.[23]

- **Green Financing Programs:**
  The Green Banking Policy Guidelines (2011) set the stage for sustainability-focused lending practices. Following this, Bangladesh launched the Green Transformation Fund (GTF) and Technology Development and Upgradation Fund (TDF) which offer concessional financing for manufacturers investing in energy efficiency and sustainability improvements.[24]

While these policies provide a strong framework for sustainability and incentivize decarbonization, many manufacturers, particularly smaller manufacturers, face challenges in complying with ESG reporting requirements, securing green financing, and navigating complex disclosure frameworks.

Expanding financial incentives, providing transaction support and capacity-building programs for manufacturers, and simplifying financing processes can enhance the effectiveness of these policies and encourage broader adoption of sustainability practices across the industry.

Part Two: Energy

Similarly, Bangladesh has introduced various policies to support RE deployment, improve energy efficiency, and promote industrial decarbonization. These policies include tax incentives, concessional financing, and renewable energy targets to accelerate clean energy adoption across industries.

The following policies and targets are not comprehensive but serve to provide an overview of some of the notable energy policies that impact the decarbonization journey of the industry's value chain.

- **Renewable Energy Policy (2008, under revision):** Offers tax exemptions for RE equipment and project investors, and electricity tariff adjustments for RE sources. It also encourages financing mechanisms such as grants and subsidies for renewables like solar, wind, and biomass.[25]
- **Energy Efficiency and Conservation Master Plan (2015):** Provides subsidies for energy-efficient equipment, tax reductions and exemptions, and concessional loans.[26]
- **Bangladesh Delta Plan 2100 (2018):** Set a target for 30% of the total energy mix to come from renewable sources by 2041. [27] This target was then raised to 40% in 2021.[28]
- **Tax Holidays for Renewable Energy Generation:** In 2023, a policy introduced 5-year tax exemptions for private power generation companies, except those using coal-fired plants.[29] The eligibility criteria and tax holidays under this policy were then expanded in November 2024 to 10 years and now include other operating models, further encouraging investments in RE within the power sector.[30]

Overall, while the policies have laid the groundwork for advancing RE and EE, there remain opportunities to expand these to scale the adoption and integration of RE and improve manufacturers' access to clean electricity. Based on discussions with industry experts, manufacturers, and energy developers, some key areas that can be looked into are:

- **Net Metering:**
  The system allowing manufacturers to sell surplus electricity from RE systems (like rooftop solar installations) back to the grid is capped at 70%, limiting manufacturers' ability to maximize their RE systems.[31] Facilities in Export Processing Zones (EPZ) and Economic Zones are also currently excluded, creating barriers to large-scale solar adoption.[32]

- **Off-Site Renewable Energy:**
  Currently, there are no defined frameworks in Bangladesh for long-term or Corporate Power Purchase Agreements (CPPAs) or Virtual Power Purchase Agreements (VPPAs), restricting manufacturers' ability to secure long-term RE contracts. These topics will be further explained in the Enhancing Deployment of Solutions chapter of this report.

- **Import Duties:**
  High import duties on RE equipment further increase the cost of adopting RE. Some components, such as solar photovoltaic (PV) panels which convert sunlight into electricity, benefit from an 18% value-added tax exemption. However, other equipment such as solar inverters and solar power sets used by EPZ industries still face import duties ranging from 25% to 37%, to as high as 58.6% for mounting structures.[33]

- **Grid Infrastructure:**
  Aging and underdeveloped transmission and distribution systems make it difficult for manufacturers to access off-site renewable energy and increase exposure to frequent power outages, impacting operational stability.[34]

All together, expanding net metering, exploring the introduction of frameworks for CPPAs and VPPAs when appropriate, reducing import taxes, and strengthening grid infrastructure may enhance manufacturers' access to clean energy and support long-term industrial sustainability and energy security.

Recent consultations with the Center for Policy Dialogue (CPD) indicate that the government is exploring reforms, including raising the net metering cap to 100%, extending eligibility to industrial zones, and drafting guidelines for new power purchase agreements. Beyond these, CPD also recommends developing automated distribution systems to enhance grid utilization and explore more alternative energy sources and off-grid power generation (e.g. wind-based power generation in Bengal).

Natural Gas: Not a Long-Term Solution

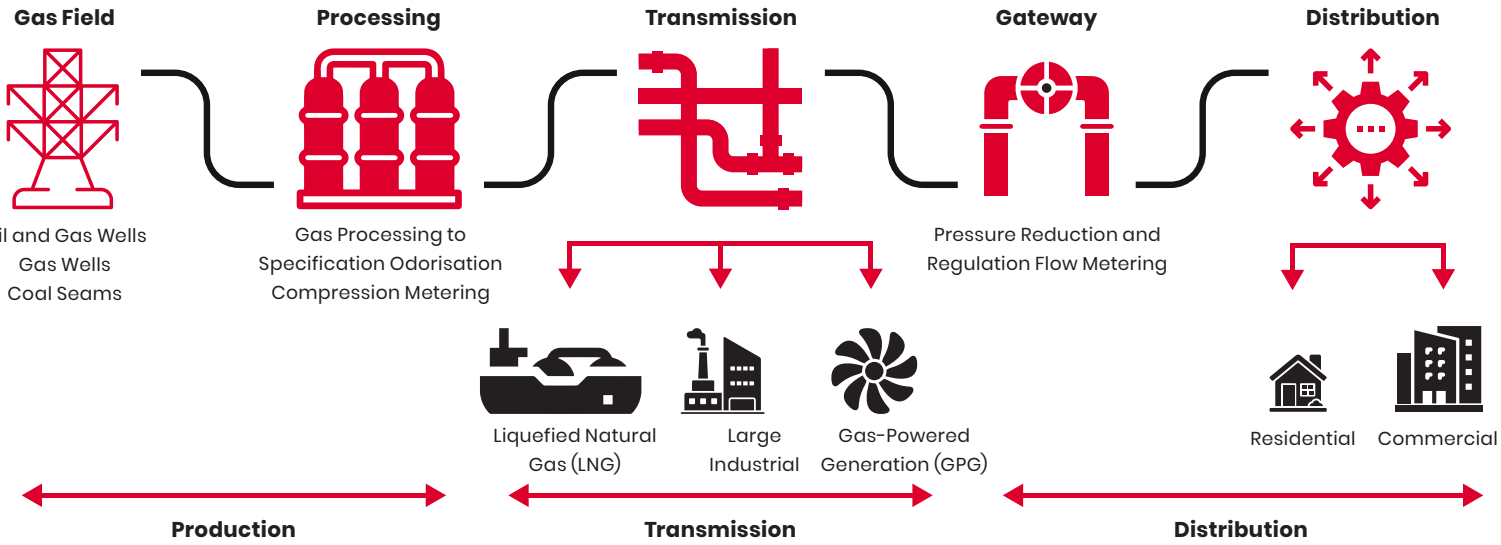


Image source: Natural Gas Supply Chain diagram originally designed by the Australian Energy Market Operator (AEMO) (2014).[35]

Natural gas is a fossil fuel composed primarily of methane. It is commonly used for electricity generation, heating, and industrial processes due to its relative affordability and lower CO2 emissions when compared to coal or oil. As of 2021, **natural gas accounted for 51% of Bangladesh's primary energy supply**, serving as a key power source for industries, including the textile and apparel sector.[36]

While often seen as a cleaner alternative to other fossil fuels, natural gas is not ideal for long-term sustainability. Methane, the primary component of natural gas, is a potent GHG with a global warming potential over 80 times greater than CO2 over a 20-year period.[37] The extraction, transportation, and use of natural gas can also lead to significant methane leaks, further undermining its climate benefits.[38]

Additionally, prolonged reliance on natural gas delays the transition to truly renewable energy sources, such as solar and wind.[39] A recent study by Aii and Global Efficiency Intelligence points out that Bangladesh's textile industry mainly relies on gas-fired boilers to produce heat and steam, highlighting opportunities to scale up alternative low-carbon technologies such as electric boilers, heat pumps, and biomass systems to support manufacturers' transition.[40]

While most IFIs are gradually reducing support for natural gas exploration and drilling activities worldwide,[41][42] natural gas plays such a dominant role in Bangladesh that new IFI projects are still being funded. For instance, the New Development Bank (NDB) approved a project in February 2024 to construct and upgrade natural gas distribution pipelines and stations in Bangladesh. Moving forward, a gradual shift from gas-reliant systems toward more sustainable alternatives will be essential to ensure the country's true and deep decarbonization.

Manufacturers' Perspective

As sustainability regulations gain momentum globally, apparel and textile manufacturers are under steadily increasing pressure to adapt their operations. Both international and local regulations are reshaping the industrial production landscape, pushing manufacturers to prioritize sustainability to remain competitive in a rapidly changing market.

However, transitioning to sustainable operations presents both internal and external challenges. Manufacturers must navigate complex processes like decarbonizing operations, upgrading infrastructure and equipment, and securing the resources needed to make these changes. While cleaner practices promise long-term benefits, the required upfront investment and innovation can be significant, creating barriers that slow progress.

This section outlines the opportunities and challenges manufacturers face, drawing insights from DFI's consultations with industry experts and associations, and Aii's surveys and interviews with suppliers.

The Opportunity

Despite the challenges, many manufacturers are beginning to recognize the financial and operational advantages of adopting renewable energy and energy-efficient practices. Sustainability investments can lower long-term costs, improve resource efficiency, and boost competitiveness in global markets.

Despite this growing recognition, manufacturers often need incentives, financial support, and expert guidance to translate interest into action. Industry stakeholders have expressed willingness to explore sustainable practices, but a large gap between awareness and implementation remains. Consistent engagement from buyers and other stakeholders, coupled with meaningful incentives, may help bridge this divide.

By addressing these needs, manufacturers have an opportunity to unlock economic benefits while contributing to the broader goals of sustainability and decarbonization.

The Challenges

A 2024 report titled From Catwalk to Carbon Neutral, supported by the German development agency GIZ, highlighted challenges faced by South Asian manufacturers, many of which mirror the experiences of manufacturers in Bangladesh.[44]

Key challenges include limited awareness of financing options and sustainable technologies, which slows adoption, alongside financial constraints such as insufficient capacity for capital expenditures. Business cycle risks and difficulties in accessing financing create additional hurdles.

In addition to these issues, stronger mechanisms are needed to enhance financial payback on decarbonization investments. Limitations with existing electricity grid infrastructure add to operational complexities, affecting the scalability of RE and EE solutions.

From Catwalk to Carbon Neutral (2024)

To advance the decarbonization agenda, it is crucial to engage manufacturers in adopting sustainable practices and technologies. Addressing these challenges will require collaborative efforts throughout the value chain to create a supportive environment that promotes sustainable practices and innovation.

"There is a need to engage with, and understand the challenges of, smaller manufacturers/suppliers in accessing financing for sustainability."
- Bangladesh-based Manufacturer

1. Limited Awareness and Access

For many manufacturers, the financing application process is perceived as complicated and time-consuming, creating challenges from the outset. Smaller manufacturers, in particular, face compounding issues, such as limited knowledge of financing options and insufficient manpower to prepare required documentation. This is often exacerbated by inadequate financial literacy, especially for facilities outside urban centers.

In addition to financing, there is a lack of awareness about decarbonization technologies. Manufacturers report uncertainty over when to invest in upgrades, particularly with rapidly advancing technologies like solar PV. While there is growing interest in rooftop solar PV projects, awareness and demand for EE upgrades remain low. This may partly be due to the limited local availability of some EE technologies in Bangladesh, which restricts adoption and progress.

Modern, resource-efficient technologies such as waste heat recovery systems that capture and reuse excess heat and digital energy management systems that track and optimize energy use in real time remain underutilized in Bangladesh's textile sector. These solutions often require costly imported equipment and have few service providers to support installation, maintenance, and training.

2. Financial Constraints for Capital Investments

While a few large manufacturers have strong balance sheets, most small and medium-sized manufacturers struggle to finance the upfront costs of new investments. Capital expenditures are challenging for many in the sector, especially for manufacturers with high existing debt levels who struggle even more to secure external funding.

Financial maturity and capacity also vary widely among manufacturers. Tailored solutions are essential to ensure financing options align with the needs of small and medium enterprises, enabling them to effectively adopt sustainable practices.

Project financing for long-term investments, such as large-scale solar system installations, could address some of these challenges. However, such offerings are still limited in the financial sector. Expanding access to project financing could play a critical role in supporting manufacturers' transition to cleaner practices.

3. Business Cycle Risks and Limited Brand Support

Many manufacturers prioritize short-term survival over sustainability investments due to uncertainty in securing consistent orders from brands. Unpredictable cash flows caused by reduced or canceled orders can make manufacturers hesitant to take on loans, as there is a risk of being unable to repay if contracts are not renewed or extended.

Additionally, there is a perceived disconnect between manufacturers and brands regarding sustainability pressures. While international regulations push brands to make their supply chains more sustainable, these demands are often passed down to manufacturers with limited support or incentives. Manufacturers are sometimes asked to meet ambitious reduction targets within tight timeframes without access to the necessary support and resources.

To reduce resistance to sustainability investments, brands can play a key role by offering incentives such as longer-term purchase contracts or guarantees, potentially in collaboration with other stakeholders. These efforts can be seen as market signals and help improve manufacturers' creditworthiness and access to financing, creating a more supportive environment for green investments.

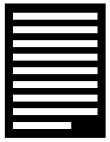
4. Risk Perceptions of Green Investments

While financing options for green investments are available from various banks and lenders, the terms often remain challenging for manufacturers. Local commercial banks tend to offer loans for capital expenditures at high interest rates, reflecting perceived elevated risks for these types of investments.

Concessional loans and refinancing options from some financial institutions involve complex applications and due diligence requirements, including in-person inspections and additional collateral or guarantees. For manufacturers, especially first-time borrowers or those without a strong track record, these can be time-consuming and difficult to meet. While intended to mitigate risks tied to limited credit histories, these requirements create significant barriers for manufacturers seeking financing for sustainability projects.

Risk perception is particularly high for EE investments, which are less understood than solar projects, which have gained wider market acceptance. This slows the adoption of EE technologies and reinforces hesitation among both lenders and manufacturers.

There is also a lack of alignment among financial institutions on what qualifies as a "green" investment and which certifications reduce perceived risks. Greater harmonization and clarity in these could boost confidence and improve access to financing for manufacturers aiming to adopt sustainable practices.



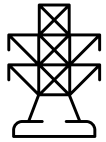
5. Need for Policies and Frameworks that Improve Investment Payback

Public policies play an important part in improving or shortening payback periods of decarbonization investments, particularly for on-site renewable electricity generation. As discussed briefly in the policy section, some key opportunities for improvement lie in net metering, import duties, and electricity pricing.

Net metering is currently capped at 70%. Expanding this cap and enabling clustered facilities including those in export zones to participate and contribute their aggregated power could unlock larger-scale projects and enhance their financial viability and bankability.

Local manufacturing of RE technology is also not yet established in Bangladesh. As a result, high import duties and taxes on certain RE equipment, such as solar inverters and mounting equipment, significantly raise project costs. These higher costs, coupled with foreign exchange constraints, make it challenging for banks to provide financing for imported equipment.[45]

Lastly, unpredictable electricity costs can also deter investment as price fluctuations affect payback projections. Stable electricity prices through a clear and predictable framework could help manufacturers manage their operational costs and provide them with more confidence in planning decarbonization investments.



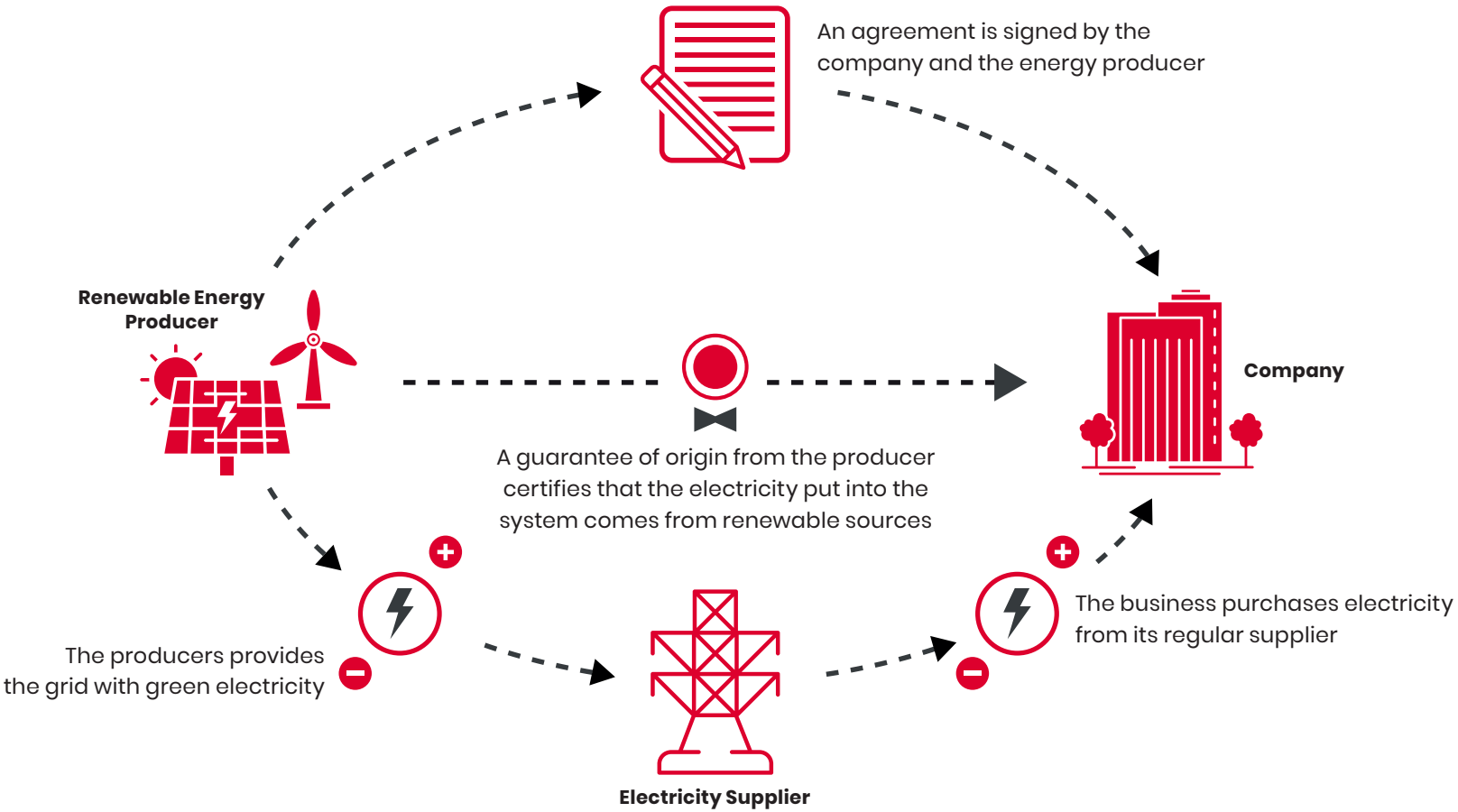
6. Grid Infrastructure Limitations

Another challenge cited by manufacturers is recurring electricity outages due to load shedding, which refers to scheduled power outages designed to manage electricity demand. These outages are often caused by insufficient transmission and distribution systems, which struggle to meet the growing energy needs of manufacturing facilities. The World Bank also noted that grid operators face difficulties managing the variability of RE sources increasingly integrated into the grid.[46]

One benefit of EE is that it can help ease pressure on the grid by reducing the overall electricity demand, especially during peak hours when outages are most common. By lowering demand at critical times, efficiency measures reduce stress on the grid, which over time can help grid operators reduce the need for scheduled power cuts or load shedding.[47]

These infrastructure challenges impact clean energy investments in several ways. Manufacturers have said that the risk of outages negatively impacts the payback calculation projections of RE investment proposals to lenders. Inadequate transmission and distribution networks also limit access to lower-cost electricity from utility-scale solar or wind farms, which are often located far from manufacturing hubs. This lack of reliable infrastructure also slows the development and financing of off-site renewable energy projects.

Off-Site Renewable Energy



Off-site renewable energy refers to clean energy generated at a location separate from where it is consumed. Consumers can access this energy by entering into agreements to purchase renewable electricity from large-scale projects like wind farms or solar parks.

This approach allows businesses to benefit from renewable energy without needing to install equipment on their own premises. It is particularly advantageous for facilities with space constraints or operational limitations that are looking to lower their carbon footprint.[48]

Available Technical Solutions to be Financed

Advancing the decarbonization of Bangladesh's textile and apparel industry requires tailored solutions that address the sector's unique characteristics and the specific challenges manufacturers face. Innovative technologies and strategies are critical to driving sustainability across the value chain.

Aii's efforts are focused on creating a pool of low-carbon suppliers as part of a comprehensive roadmap for decarbonizing the apparel industry. In 2021, Aii and the World Resources Institute published the Roadmap to Net Zero. This working paper identifies six key interventions to reduce carbon emissions and align with the goal of limiting global warming to 1.5°C.[49]

These interventions guide Aii's strategic programs, which include the **Clean by Design Energy & Water Efficiency Program**, the **Fashion Climate Fund**, and the **Climate Solutions Portfolio**. In 2023, Aii expanded these initiatives to 31 regions worldwide, including Bangladesh.[50]

AII'S KEY INTERVENTIONS FOR REDUCING EMISSIONS TOWARDS NET ZERO

1. Reduce process demand for energy & reduce energy losses
2. Reduce/eliminate GHG emitted from generating heat and electricity
3. Reduce emissions from production of natural & synthetic fibers
4. Minimize waste in each step of production
5. Maximize circular reuse of fibers, fabrics, or chemicals

Through its programs, Aii aims to scale the most cost-effective solutions, evaluating them based on the cost per tonne of CO2 reduced. Aii acknowledges that achieving the industry's goal of a 50% reduction in CO2 emissions by 2030 requires a multifaceted approach. There is no single solution for the industry's factories. Instead, a combination of interventions, including energy efficiency and renewable energy measures, will be necessary for effective and efficient decarbonization.[51]

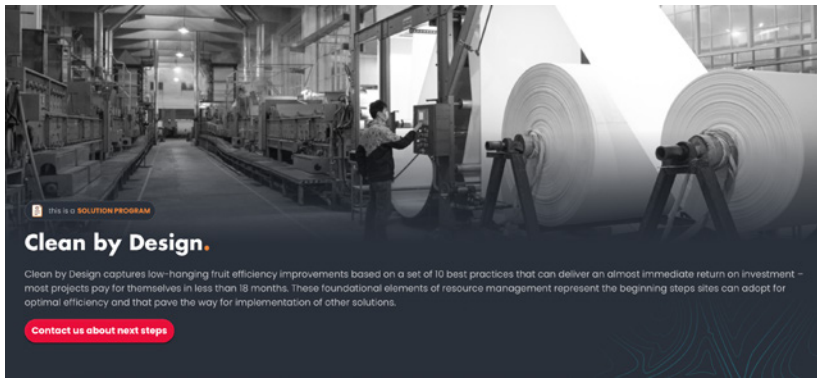
In response to industry challenges, Aii introduced the Climate Solutions Portfolio to address three critical questions:

1. What emission-reducing solutions exist?
2. Which solutions are effective?
3. Which solutions should be prioritized?

AII CLIMATE SOLUTIONS PORTFOLIO (CSP)

Aii's Climate Solutions Portfolio is a selection of vetted and effective climate programs, solutions, and funding opportunities for the apparel and textile industry. These solutions have been identified by Aii as having significant potential for impact in reducing energy demand, minimizing energy losses, lowering emissions, or cutting waste.

Each solution addresses at least one tier in the supply chain. The online Climate Solutions Portfolio platform showcases the outcomes of these solutions through real-life case studies, offering valuable insights and visibility to potential investors and manufacturers.



Clean by Design Program (Aii Climate Solutions Portfolio, 2024)

The Climate Solutions Portfolio identifies, funds, monitors, and reports on climate impact solutions that brands and manufacturers can integrate into their operations to reduce their environmental footprint.

Since 2022, Aii, through its CSP, has provided grant funding to support the development of innovative solutions focused on energy efficiency, renewable energy, and sustainable materials and practices across various countries.

Each supported solution has demonstrated significant potential for cost-effective environmental impact reduction. The objective is to advance these solutions from the concept and testing stages to a scalable level, ensuring they are commercially viable and ready for market deployment.

The table below outlines Aii's CSP grantees with implementation sites in Bangladesh.[52]

Solution	Solution Type	Solution Description	Region(s)	Saving Potential $kgCO_2e/kg$ production	US$ per Tonne of CO_2e
Solar PV Installation Bangladesh	Renewable Energy	A comprehensive approach to driving renewable energy adoption in the textile and apparel sector in Bangladesh	Bangladesh	14-20%	US$6.01
Clean by Design Direct to Manufacturer Recruitment Bangladesh	Energy Efficiency	Set of best practices in resource management to improve efficiency and consumption with almost immediate returns on investment using a Direct to Manufacturer recruitment approach	Bangladesh	12%	US$0.46
Cleaner Production Systems Program	Energy Efficiency	Various measures to reduce GHG emissions in T2 and T3 materials processing facilities	Bangladesh India	8%	US$0.76
Software Recommendation Engine	Energy Efficiency	Automated facility impact measurement software to detect and develop resource efficiency recommendations	Bangladesh India China Pakistan Sri Lanka Vietnam	GHG: 10% Energy: 6-26%	US$0.52

The previous table showcases only a portion of the solutions supported by Aii. Beyond these examples, Aii also promotes the adoption of other technologies aligned with its six focus areas, all designed to reduce resource consumption, emissions, and waste.

Additional solutions include innovations like heat recovery from hot water and steam, pigment dyeing techniques, and fault detection machinery. For example, Aii's Climate Solutions Portfolio has registered an AI-enabled real-time quality control for knitting machines by Smartex, a patented ring dyeing technology by Cleankore, and a textile printing solution by Zydex.

Looking ahead, Aii aims to broaden the scope of its supported solutions to drive greater impact across the textile and apparel value chain. Key focus areas for expansion include low-carbon thermal energy, renewable electricity deployment, and battery energy storage systems.

The Big Financing Challenge

Achieving decarbonization in Bangladesh's textile and apparel sector hinges on mobilizing substantial financial resources to implement transformative solutions such as those previously identified. These interventions are critical for reducing GHG emissions by 50% by 2030 and ensuring a more sustainable future for the industry. However, the scale and complexity of these initiatives demand careful planning and investment to drive impactful change.

This section provides a preliminary analysis of the financial requirements, structured around a strategic decarbonization timeline. The timeline prioritizes deploying solutions across facilities within specified timeframes, focusing initially on the largest GHG emitters. By detailing the assumptions, calculations, and visualizations of financing needs, this section presents a transparent roadmap for achieving sustainability goals by 2030.

ASSUMPTIONS

The financial analysis is based on several key assumptions derived from research, local consultations, and industry insights:

1. **Number of Facilities:** Bangladesh's textile and apparel sector includes approximately 7,000 factories according to research and local consultations.

2. **Energy Audit Costs:** Conducting an energy audit for each facility is estimated at US$10,000 per audit, based on input from industry experts.

3. **Intervention Costs:** The average costs of energy efficiency and renewable energy interventions per facility, as determined by Aii studies, are:
    - Energy efficiency: US$0.5 M to US$1 M (ave. US$0.75 M)
    - Renewable energy: US$1 M to US$5 M (ave. US$3 M)
    - Combined EE and RE: US$1.5 M to US$6 M (ave. US$3.75 M)

4. **GHG Reduction Potential:** Average GHG emission reductions per facility from interventions, based on data from the reduction potential of all Bangladeshi facilities that have completed a Carbon Target Setting program with Aii from 2018 to September 2024, are as follows:
    - Energy efficiency: 7.5% to 52.1% (average 18.7%)
    - Renewable energy: 0.8% to 35.6% (average 11.0%)
    - Combined EE and RE: 29.7% (sum of averages) with the higher range of combined interventions reaching 87.7% which means a 50% estimate is conservatively achievable for the largest and most polluting facilities

5. **Action Plan Conversion Rate:** Aii's programming has a conversion rate of 35%. This means that for every 100 action plans developed, 35 facilities will proceed to the implementation and monitoring stages.

Process

STEP 1: Pareto Principle

The Pareto Principle can be applied to focus on the top 20% of Bangladesh's 7,000 textile and apparel facilities which are likely responsible for around 80% of the industry's emissions. This group of **1,400** facilities represents the primary target for decarbonization efforts.

Aii, in collaboration with Cascale, identified the top 1,000 mid-supply-chain facilities (commonly referred to as Tier 2 facilities, which handle processes such as dyeing, finishing, and fabric production) as the largest GHG emitters. These facilities account for approximately 70% of industry emissions worldwide. The calculations in this report align with Aii's findings, demonstrating that a significant share of emissions originates from a relatively small subset of facilities.

STEP 2: GHG Reduction from Deployment

If a combination of renewable energy and energy efficiency measures are implemented across all 1,400 high-emitting facilities (hypothetically representing 80% of industry emissions), it would result in a 50% reduction in emissions for these facilities. This corresponds to an **absolute reduction of 40%** from total industry emissions.

STEP 3: Facilities to Deploy

To achieve a **50% reduction** in total emissions, interventions must expand beyond the initial 1,400 high-emitting facilities. This number can be extrapolated from the previous step. If 1,400 engaged facilities contribute to a 40% reduction, a 50% reduction would require sustainability interventions at **1,750 facilities**, targeting the facilities with the highest emissions and assuming a similar level of emissions reduction per facility.

STEP 4: Facilities to Audit

To determine how many facilities need to be audited to convert **1,750 facilities**, the computations can be back-calculated using Aii's conversion rate. While the conversion rate may vary across the industry, this report will use the average Aii conversion rate of 35%. Using this rate gives a total of **5,000 facilities to be audited.**

Decarbonization Timeline

From 2022 to 2024, Aii audited 99 facilities in Bangladesh, resulting in 34 facilities moving on to implementing the recommended action plans. This means that reaching 1,750 will require the industry to deploy interventions to an additional 1,716 facilities. Since the installation of decarbonization upgrades typically takes about one year, the industry must complete audits and start deployment in all 1,716 facilities by the end of 2029 to meet the 2030 decarbonization target.

Applying the estimated 35% audit-to-deployment conversion rate of Aii indicates that 4,903 facilities need to be audited to successfully convert or deploy to 1,716 facilities. Dividing this equally across a five-year period from 2025 to 2029 gives an annual count of **981** facilities to be audited and, in turn, **343** facilities to deploy interventions to.

The annual facility count and intervention deployment cost will vary per facility based on factors including their location, current state, and existing infrastructure, among others. For this report, an average cost of US$3.75 million per facility for energy efficiency and renewable energy interventions will be used based on Aii's studies. Using this estimate for the targeted 343 facilities, approximately US$1.29 billion is needed per year to deploy such decarbonization upgrades.

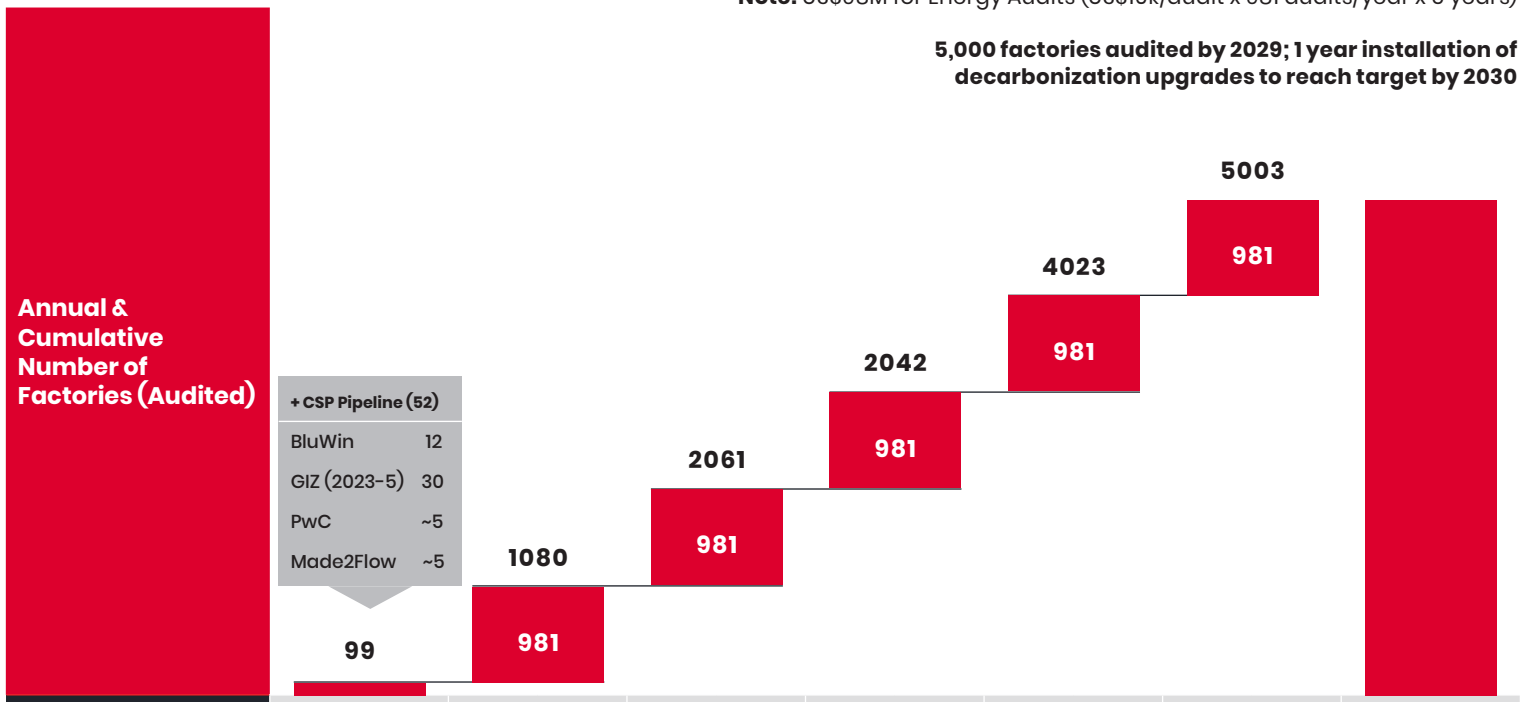
Cumulatively, close to US$6.4 billion in financing is required to reach the 2030 target of 50% emissions reduction. Including the facilities converted from audits done in 2022-2024 would bring this total up to nearly US$6.6 billion.

In addition to financing capital expenditure for these upgrades, further financing is required for facility energy audits. Assuming each audit costs US$10,000 and 4,905 facilities will be audited per year from 2025 to 2029, the annual cost for audits amounts to US$9.8 million. Over the five-year period from 2025-2029, the total cost of conducting these audits would be US$49 million.

Decarbonization Timeline

Note: US$98M for Energy Audits (US$10k/audit x 981 audits/year x 5 years)

5,000 factories audited by 2029; 1 year installation of decarbonization upgrades to reach target by 2030



Year	2022-24		2025		2026		2027		2028		2029		2030	
RE/EE Funding Req. per Year & Cumulative 5 Year (US$M) (Deployed)	NA	US$ 130	US$ 1,416	US$ 1,416	US$ 1,286	US$ 2,702	US$ 1,286	US$ 3,989	US$ 1,287	US$ 5,275	US$ 1,287	US$ 6,563	NA	US$ 6,563

Bangladesh's Projected Decarbonization Chart (Development Finance International Inc.)

Financing

For Local and International Financial Institutions

After estimating the significant financing required to achieve the targeted reduction in greenhouse gas emissions, the next step is to identify strategies and financial instruments that can overcome these barriers and fulfill these resource needs. A variety of financial instruments must be considered, ranging from loans and equity to grants, subsidies, and guarantees.

This section explores a range of financing mechanisms relevant to the textile and apparel sector, including loans, equity, grants, subsidies, and guarantees. It also analyzes the roles of key financiers involved in sustainability initiatives, spanning both public and private sectors.

Additionally, the section highlights some available options alongside complementary interventions and mechanisms designed to enhance the effectiveness of financing efforts.

Financing

TYPES OF FINANCING

Debt

Debt financing involves borrowing money from lenders, such as banks or financial institutions, with an agreement to repay the borrowed amount over time with interest. For example, taking out a loan is typically done by businesses to finance their expansion plans. Manufacturers can take loans to finance the installment of rooftop solar panels or energy-efficient boilers and spinning machines.

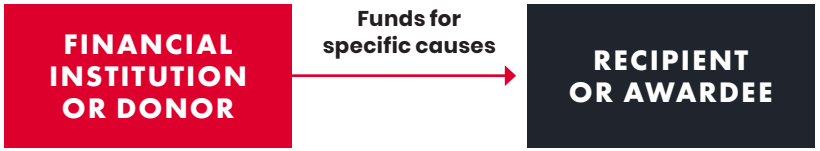
Equity

Equity financing entails raising funds by selling a portion of ownership in a company to investors, who become shareholders. In return for their investment, shareholders receive ownership in the company and may have a say in its management decisions. This method is often used by energy service companies (e.g. ESCOs and RESCOs) looking to raise growth capital without taking on debt.

Grants

Grants are funds provided by governments, foundations, and other organizations to support specific projects, initiatives, or research efforts. Unlike loans, grants do not need to be repaid, making them an attractive source of financing for those seeking financial assistance for endeavors such as projects aiming for sustainability or development impact.

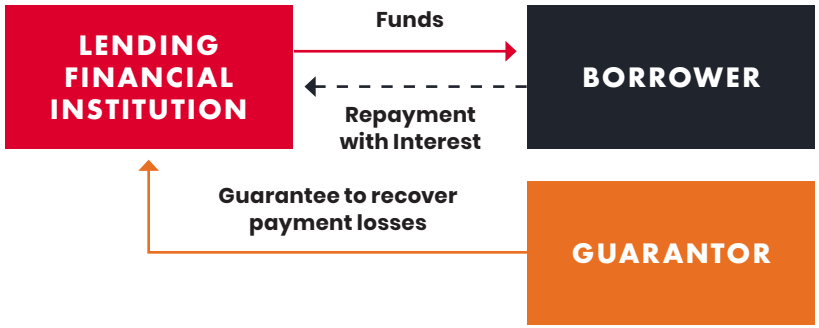
Organizations, including Aii, offer grants to solution providers to help develop and scale innovative solutions and programs with strong potential to decarbonize the industry.



Guarantees

Guarantees are commitments made to back the repayment of a loan or fulfill certain obligations in case the borrower is unable to do so. They provide assurance to lenders, reduce their risk, and increase bankability to make it easier for borrowers to obtain financing or negotiate better terms. Guarantees can enhance access to financing for businesses or projects that may otherwise struggle to secure it.

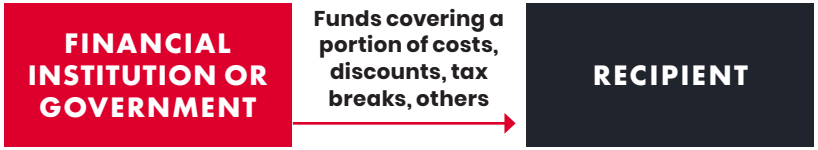
The World Bank is working with the Bangladesh Bank on piloting a Green Credit Guarantee Fund (GCGF), which will support investments to reduce pollution, including rooftop solar PV systems.[55]



Subsidies

Subsidies are a form of financial assistance provided by governments or organizations to reduce the cost of certain goods, services, or activities. They are often used to incentivize behaviors, such as adopting sustainable practices. Subsidies can take various forms, including direct payments, tax breaks, or reduced fees.

Bangladesh's Renewable Energy Policy of 2008 and its ***Energy Efficiency and Conservation Master Plan up to 2030*** mentions consideration of subsidies for renewable energy and energy efficiency, respectively. [53] [54]



Profile of Financiers

A variety of financial institutions contribute to sustainability initiatives through both debt and non-debt financing options. These include public entities, such as government bodies, and private organizations like banks and financial institutions.

Each offers tailored products and services designed to meet the unique requirements of the textile and apparel sector. In preparing this report, DFI engaged with multiple financiers in both the public and private sectors. While not exhaustive, the following list provides an overview of some of the key financiers involved in supporting these efforts.

The Bangladesh Bank

The Bangladesh Bank is the central bank and regulatory authority overseeing the country's financial system. It manages monetary policy, regulates banks, and promotes financial stability. The bank actively supports green financing through initiatives such as the Green Transformation Fund (GTF) and the Sustainability Finance Policy, which encourages investments in environmentally friendly projects.

Green Climate Fund (GCF)

The GCF is a financial mechanism established to assist developing countries in their efforts to mitigate and adapt to climate change. Launched in 2010, the GCF mobilizes funds from both public and private sources to support projects and programs that promote low-emission and climate-resilient development pathways.

The World Bank Group

The World Bank Group is a global development institution dedicated to reducing poverty and promoting sustainable growth. It supports countries through financing, policy advice, and technical assistance tailored to their specific needs. The group includes other institutions such as the International Development Association (IDA) and the International Finance Corporation (IFC), among others. In Bangladesh, the World Bank is actively engaged in several projects targeting sectors including climate resilience and renewable energy.

The Asian Development Bank (ADB)

The ADB is a regional development bank that promotes inclusive and sustainable development across Asia and the Pacific. It provides loans, grants, and technical assistance to foster social and economic progress. ADB leverages policy dialogue, advisory services, and co-financing to mobilize additional resources and enhance the impact of its efforts.

Kreditanstalt für Wiederaufbau (KfW)

KfW is a German government-owned development bank that specializes in financing projects to promote economic growth, environmental sustainability, and social progress. KfW is mandated to promote global development and supports innovative initiatives domestically and internationally.

Agence Française de Développement (AFD)

AFD is the government-owned development agency of France, funding projects globally to promote sustainable development and achieve the Sustainable Development Goals. AFD supports initiatives in climate, biodiversity, education, health, and urban development, operating in France's overseas territories and 150 other countries.

Japan International Cooperation Agency (JICA)

JICA is Japan's government-owned development agency which provides technical cooperation, concessional loans, and grant aid to advance economic stability, recovery, and international cooperation in developing regions. JICA's work emphasizes innovation, capacity building, and strengthening the resilience of communities.

Delegation of the European Union (EU) to Bangladesh

The European Union works with Bangladesh to promote sustainable development, good governance, and economic progress. Its 2021-2027 Multi-Annual Indicative Programme prioritizes green development, education, and energy efficiency.[56] It also supports Bangladesh's efforts to integrate sustainable practices into its trade and industrial sectors.

Available Financing

Bangladesh offers a wide range of local and international financing options for different types of borrowers. These include targeted support from the national government, which offers provisions based on industry, technology, enterprise size, and geographic region. The following section highlights several financing programs identified during the preparation of this report.

Green financing programs in Bangladesh share common objectives, such as increasing the availability of funding for sustainable projects, reducing GHG emissions, expanding RE capacity, encouraging the purchase of renewable electricity, and lowering energy consumption.

For micro, small, and medium enterprises (MSMEs), specialized programs aim to address key challenges by enhancing access to financing, incentivizing green investments, improving competitiveness, and fostering business growth.

While this overview is not exhaustive, it provides a snapshot of some of the financial instruments currently available. More detailed descriptions of the individual projects can be found in Annex B.

Project or Fund	**Project Implementer / Fund Vehicle**	**Est. Project Cost** (US$ as of Sep. 2024)	**Description**
Green Transformation Fund (GTF) - USD and EUR[57]	Bangladesh Bank, through Participating Financial Institutions (PFIs)	~US$390 M (Revolving Fund)	Revolving refinancing scheme for export-oriented industries to invest in sustainable and resource-efficient technologies, including RE and EE.
Green Transformation Fund (GTF) - Local Currency[58]	Bangladesh Bank, through PFIs	~US$410 M (Revolving Fund)	Same as above, but disbursed in Bangladeshi Taka.
Technology Development and Upgradation Fund (TDF)[59]	Bangladesh Bank, through PFIs	~US$82.4 M (Revolving Fund)	Revolving refinancing scheme for process and machinery upgrades in export-oriented industries; has priority sectors including RMG. See Annex C for list of priority sectors.
Refinance Scheme for Environmental Friendly Products, Projects, and Initiatives[60]	Bangladesh Bank, through PFIs	~US$82.4 M (Revolving Fund)	Revolving refinancing scheme for investments in RE, EE, and other sustainable projects.
Green Climate Fund (GCF) Promoting Private Sector Investment through Large-Scale Adoption of Energy Saving Technologies and Equipment for Textile and RMG sectors[61]	IDCOL	US$250 M	Two green credit lines for energy efficiency investments by textile and ready-made garments (RMG) industries.

Fund or Program	Funder	Est. Project Cost (US$ as of Dec. 2023)	Description
WB Bangladesh Scaling-up Renewable Energy Project[62]	IDCOL	US$95 M	Green concessional credit line for renewable energy, specifically for rooftop solar PV in industrial facilities (not only RMG/textile).
AFD / EU Programme to Finance Safety Retrofits and Environmental Upgrades[63]	Bangladesh Bank and BIFFL	US$42 M	Green concessional credit line for RMG factories for safety improvements and environmental and social upgrades.
KfW Energy Efficiency in the Industry[64]	IDCOL and BIFFL	US$34 M	Green concessional credit line for the extension and/or replacement of existing machinery and equipment for more energy efficiency substitutes.
JICA Energy Efficiency and Conservation Promotion Financing Project (Phase 2)[65]	IDCOL and BIFFL	Revolving Fund	Green concessional credit line for investments in energy efficiency and conservation equipment.
ADB Third Public-Private Infrastructure Development Facility[66]	IDCOL	US$232 M	Green credit line for investments in battery energy storage and energy efficiency, with a set limit for the RMG industry.
AIIB Infrastructure Development Financing Facility (Proposed)[67]	Eastern Bank	US$50 M	Pending loan facility expected to support multi-sector infrastructure projects including subprojects in power generation and renewable energy.
Other expected IFI-financed credit lines (Pipeline)	Eastern Bank	US$125 M	Pending credit lines for green finance based on discussions with Eastern Bank.

Interventions

While a range of domestic and international financing options exists, manufacturers, particularly smaller ones, often encounter barriers in accessing these resources. Many of these challenges, as discussed in the section on the Manufacturer's Perspective, stem from stringent requirements, limited awareness, and financial constraints.

To address these issues, various interventions have been introduced to improve existing financial initiatives and support decarbonization efforts. These efforts focus on streamlining processes, improving accessibility, and offering more favorable financial terms. Adjustments include lowering interest rates, extending repayment periods, and reducing requirements like collateral and guarantees often associated with loans.

Concessional loans are a prominent example of such interventions. A concessional loan is financing offered at below-market interest rates or with more favorable terms. These loans allow manufacturers to finance RE and EE projects more easily. IFIs partner with local financial institutions to channel these loans while providing technical assistance to ensure their accessibility.

Another such initiative is the Green Credit Guarantee Fund which the World Bank is supporting the Bangladesh Bank to establish. This fund is designed to provide credit guarantees to participating financial institutions and banks to incentivize greater private sector investment into green projects, including rooftop solar PV systems.[68]

Technical assistance (TA) is another common method of support that offers various forms of aid to enhance project success. Many initiatives, including the projects mentioned earlier, integrate a TA component to support their implementation. Many TA programs focus on knowledge sharing, helping lenders, borrowers, policymakers, and other stakeholders build awareness and understanding of green financing opportunities.

The Green Climate Fund (GCF) has a project that provides support to manufacturers to be more energy efficient through training and other forms of support, coupled with a green credit line.[69] Further details on the role of TA can be found in the chapter titled "Adopting a Value Chain Approach."

There are several interventions and risk-sharing instruments that could be explored and introduced in Bangladesh to address financial barriers and encourage commercial banks to expand green financing. Some of the approaches Aii has been exploring include:

- **Impact-linked instruments:**
  These loans or notes convert to grants upon maturity if specific financial and GHG reduction targets are met. Interest accrues and is paid semi-annually.

- **Order-linked instruments:**
  Financing where repayment terms, including interest and principal amounts, vary based on confirmed orders from a facility's top buyers or brand partners. Interest accrues and is paid annually.

- **Variable interest rate instruments:**
  Interest rates adjust based on factors like confirmed orders from brand partners or macroeconomic changes, such as local currency devaluation.

- **Success-linked instruments:**
  Loans that convert to grants if facilities meet pre-negotiated financing and deadline targets. These instruments are tied to key performance indicators (KPIs) and include reporting requirements.

- **Guarantees:**
  Risk mitigation mechanisms that protect against borrower defaults and adverse macroeconomic conditions, such as currency fluctuations or unpredictable market shifts.

These instruments offer flexible and adaptive solutions to share risks, enhance stability and predictability for lenders and borrowers alike, build confidence among financial institutions, and enable greater access to green financing for manufacturers.

Enhancing Solution Deployment

Given the diverse but ultimately insufficient pool of available funding, it is crucial to adopt proactive measures to scale efforts. In this context, exploring alternative pathways is essential.

One promising approach is collaborating with energy developers to combine resources, pool demand, and maximize impact. These partnerships can help alleviate financial constraints, broaden the reach of initiatives, and accelerate progress toward sustainability goals.

This chapter provides an overview of the energy landscape by looking at the current state of the energy service market in Bangladesh, types of energy developers, engagement models, and potential aggregation models that can be used to enhance the deployment of energy solutions in the industry. It also highlights the challenges these service providers face and suggests targeted interventions to support their growth and effectiveness.

To prepare this report, DFI consulted with SREDA and three leading developers to gather valuable insights on these topics.

Developers

While the industrial sector provides significant opportunities for energy efficiency, there is a notable gap between potential and realized EE. Many industries recognize the need for energy improvements but lack the capacity to implement solutions effectively. This is where energy developers come in. Energy developers are expert providers of energy services and solutions that can bridge this EE gap.[70]

In Bangladesh, the market for energy developers is still emerging, with limited technical capacity slowing the deployment of energy projects. While some renewable energy service companies operate in the country, most use a model that focuses on project design and construction (CAPEX) over service-based models (OPEX) which require strong technical expertise and long-term management capacity.

While Bangladesh has set ambitious energy efficiency targets, the lack of experienced service providers continues to impede progress. The shortage of qualified developers has also hindered manufacturers' ability to implement cost-effective energy solutions at scale. Nonetheless, partnering with energy developers still opens the door for significantly enhanced and maximized impact.

ESCOs vs RESCOs

Types of Energy Developers:

Energy Service Companies (ESCOs) and Renewable Energy Service Companies (RESCOs) both provide tailored energy solutions under the OPEX model.

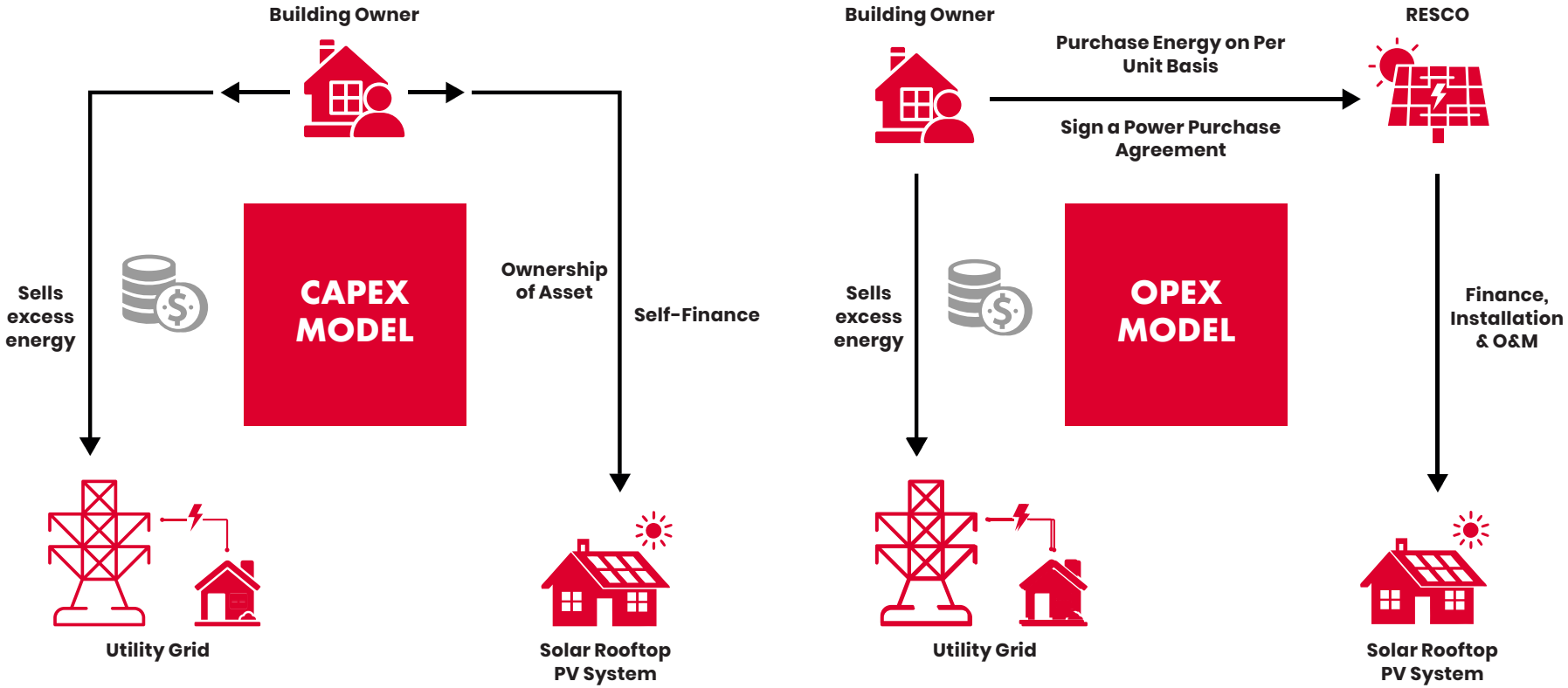
- **ESCOs:** Provide energy audits, project design and construction, EE upgrades, operation and maintenance (O&M), and monitoring and verification (M&V) of energy savings.
- **RESCO:** Operate similarly to ESCOs, but they focus specifically on providing renewable energy supply services. They typically finance projects with a mix of commercial debt and their existing resources. As RESCOs retain partial ownership of projects, the shared arrangement ensures accountability while supplying renewable electricity to manufacturers at pre-agreed prices.

Both ESCOs and RESCOs guarantee their customers a specific level of energy savings or renewable energy supply and take on operational responsibilities like maintenance and performance monitoring. They identify opportunities for EE or RE solutions, design tailored solutions, and implement these measures to achieve the desired outcomes.

CAPEX vs OPEX

Engagement Models: Manufacturers can work with energy developers to adopt solutions for RE and EE. These developers handle the planning, financing, and construction of energy projects and offer two main models: the Capital Expenditure (CAPEX) model and the Operational Expenditure (OPEX) model.

- **CAPEX Model:** Manufacturers pay upfront for EE upgrades and own the assets from the beginning.
- **OPEX Model:** The developer covers the upfront costs, and the manufacturer pays based on realized energy savings. Ownership of the assets is typically transferred to the manufacturer over time. In Bangladesh, OPEX models often involve a three-way agreement between the developer, the customer, and the local electricity distribution company. This model is particularly effective in Economic Zones, where clusters of facilities can be managed collectively.



CPPAs and VPPAs

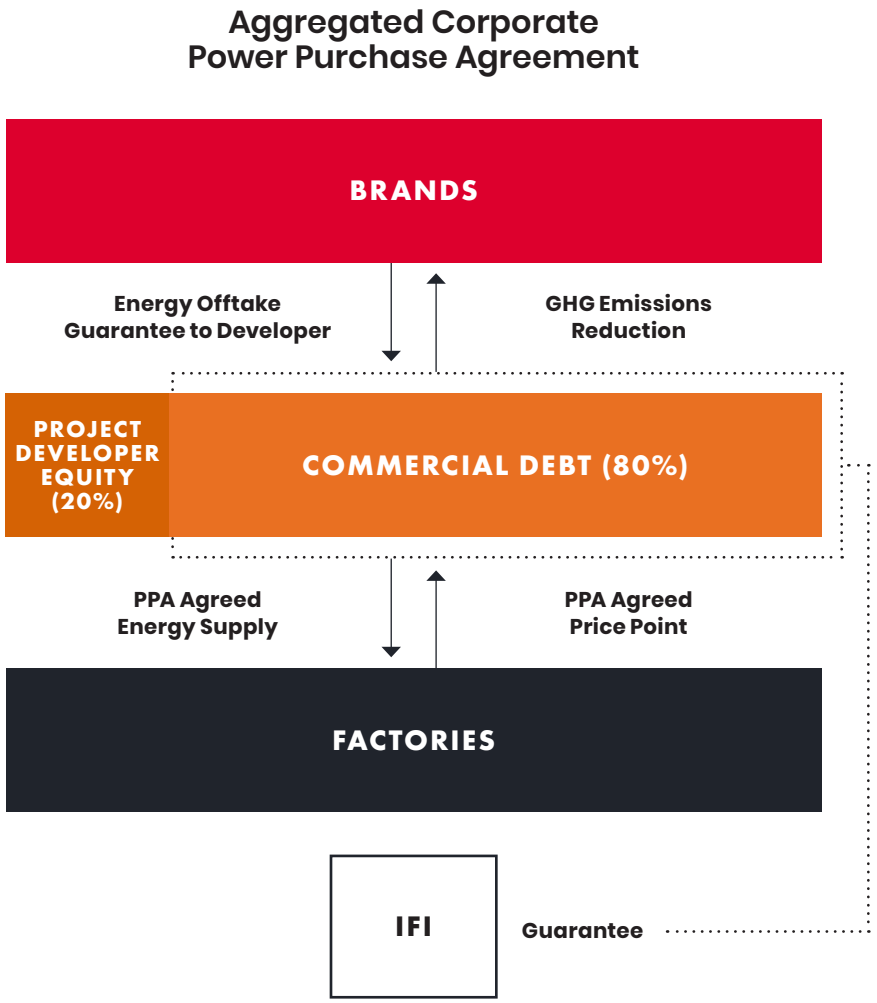
Aggregation Models: Corporate Power Purchase Agreements (CPPAs) and Virtual Power Purchase Agreements (VPPAs) provide innovative ways to aggregate energy demand across multiple facilities.

- **CPPAs:** Brands or groups of brands aggregate factories and sign agreements directly with energy developers to supply electricity to the facilities.
- **VPPAs:** A similar approach, where agreements between brands and developers secure renewable energy without direct physical delivery, using financial mechanisms instead.

Both CPPAs and VPPAs can be established through the help of brands that aggregate facilities. Either of these two models guarantees the developer a steady market for their renewable energy and helps brands decarbonize their supply chains. Neither framework is currently available in Bangladesh.

These models effectively distribute risk, reducing the financial burden of any individual brand or manufacturer and offering brands flexibility since the agreement is directly between power producers and the brands, not with individual manufacturers. Facilities can also be replaced with others in the same region if their contracts with the brands expire, without the facilities being locked into long-term payment arrangements.

This report recommends considering the application of the OPEX model and CPPAs or VPPAs further down the line when already permitted and fitting for existing grid conditions. These can help the industry leverage Bangladesh's concentration of manufacturing clusters and maximize decarbonization. However, before doing so, policies enabling these arrangements must be properly developed to fully capitalize on their potential.



Source: Apparel Impact Institute. (September 2, 2023). Sustainable Finance Workshop, Climate Week NYC

Challenges and Barriers

There are several issues that slow down the growth of the energy developer market in Bangladesh, such as limited technical capacity, land and space constraints, and gaps in policies and infrastructure.

1. Limited Technical Capacity

There is a shortage of skilled professionals needed to support the expansion of RE and EE projects. This lack of expertise affects the ability of developers to deliver high-quality projects. While some renewable energy developers provide OPEX models, most are still focused on CAPEX projects. Additionally, ESCOs for EE projects are not yet operating in Bangladesh, as confirmed by SREDA in October 2023.

"There is a lack of technically qualified organizations that can implement quality renewable energy projects for the commercial and industrial segment to meet the gap in the market's demand for these projects."

- GIZ Adviser

2. Land and Space Constraints

Available space and land, particularly for RE installations,[71] is limited. Facilities in high-rise buildings often have insufficient or shared rooftop space, making on-site installations unfeasible. Similarly, off-site RE projects are limited by land scarcity in the country.

However, innovative solutions like floating solar PV and offshore wind farms are being explored, including a planned pilot initiative supported by an international apparel brand.

3. Policy and Infrastructure Gaps

As discussed in the Manufacturers' Perspective section, developers also see opportunities to enhance policies that could further accelerate renewable energy adoption, such as revising the 70% net metering cap and expanding its application to economic industrial zones, revising feed-in tariff rates, and exploring formal frameworks for CPPAs and VPPAs. Streamlining and further reducing import duties for solar PV components and strengthening grid infrastructure could also unlock greater potential for RE projects.

4. Financing Challenges

Developers face difficulties navigating the strict due diligence processes required for concessional financing and need greater access to equity investments, potentially from international sources to supplement local resources.

Despite these issues, there is huge potential for developers in Bangladesh to offer RE and EE solutions due to the growing energy demand, rising costs of electricity, and increasing government policies supporting sustainability.

Interventions

IFI-supported efforts to enhance the technical capacity of Bangladesh's workforce are underway. For example, USAID and JICA have partnered with SREDA to provide technical assistance, while the World Bank has launched initiatives to improve skills in key sectors such as garments, textiles, and leather.[72]

The World Bank also collaborates with diploma engineering institutions to drive innovation and contribute to green economy goals, including sustainable energy use. These programs highlight the potential for further targeted capacity-building efforts in the RE and EE industries. Further discussion on training and capacity building in the context of the value chain follows in the next chapter.

IFIs have also supported clean energy development by strengthening the enabling environment. USAID has provided policy advice on competitive procurement mechanisms, while the World Bank has offered recommendations for institutional and regulatory reforms in the electricity sector.[73] [74] Notably, the World Bank has supported the Power Cell under the Ministry of Power, Energy and Mineral Resources in assessing the energy policy landscape and conducting a feasibility study for a utility-scale solar PV plant in Jamalpur.[75]

Adopting a Value Chain Approach

To achieve meaningful decarbonization in Bangladesh's textile and apparel sector, it is vital to engage all stakeholders across the value chain. This includes policymakers, lenders, developers, brands, and manufacturers. Collaborative and coordinated efforts can maximize impact, drive innovation, and encourage the widespread adoption of sustainable practices.

Assistance providers such as IFIs, development banks, NGOs, consulting firms, and academic institutions, offer specialized expertise to address specific needs and challenges within the value chain. They provide tailored support through a variety of programs and support types, each with distinct goals and objectives.

This chapter details the components of the textile and apparel value chain, outlines the types of enabling assistance available, and discusses how these opportunities can be effectively utilized. By strategically accessing the types of assistance, stakeholders can help accelerate the industry's decarbonization and sustainability transition efforts.

Effective implementation requires not only financial resources but also comprehensive support, including project preparation, transaction assistance, policy advice, training, and knowledge sharing.

The following section outlines the various types of assistance, the activities they support, and examples in Bangladesh.

PROJECT PREPARATORY

Objective: Support the development of well-designed projects and assess their viability and potential impact to boost implementation.

Activities: Feasibility studies, financial modeling, project scoping, market and impact assessments, risk mitigation strategies, pilot demonstrations.

Example: Since 2013, IFC has helped textile companies in Bangladesh reduce their environmental impact. Their activities have included organizing technical and financial feasibility studies of rooftop solar PV in textile factories.[76]

TRANSACTION SUPPORT

Objective: Assist during financing and transaction processes, and project implementation.

Activities: Structuring and negotiating deals, applying for financing, preparing lender and regulatory requirements, facilitating partnerships, conducting due diligence, ensuring eligibility criteria fit, procurement.

Example: The Delegation of the European Union in Bangladesh has a project that provides training to local private service providers, which would in turn, train participating financial institutions and garment factories to have easier access to financing.[77]

KNOWLEDGE SHARING

Objective: Facilitate the exchange of information, expertise, insights, best practices, and lessons learned among stakeholders to foster collaboration and innovation.

Activities: Conferences and forums, research publications, case study and data registries, online platforms and communities, peer-to-peer learning and networking.

Example: The World Bank provided analytical activities supporting the Government of Bangladesh and its agencies in their efforts on sustainable energy sector development and transition. The project published a synthesis report that disseminates their key findings[78] as well as knowledge material on Supporting Building Energy Efficiency and Environment Rating (BEEER) System.[79]

POLICY ADVISORY

Objective: Promote effective governance through policy development and reform to create an enabling and conducive environment.

Activities: Analysis of policy implementation and impact, review of case studies and best practices, drafting of policies and regulations, providing policy reform recommendations.

Example: USAID has a project that supports Bangladesh in updating policies to expand access to modern energy services and high-quality power.[80] The project has included developing a policy framework for CPPAs in Bangladesh, with a collaboration between USAID's project implementer, Tetra Tech, and Grameenphone.[81]

TRAINING AND CAPACITY BUILDING

Objective: Enhance the skills, knowledge, and capabilities of individuals and organizations to effectively implement and manage projects.

Activities: Technical training programs, workshops and seminars, mentorship and coaching, preparation of training materials and capacity-building interventions.

Example: JICA provides technical assistance and consulting services to SREDA to help conduct energy auditing and encourage businesses to choose energy-efficient equipment.[82] JICA consultants also helped SREDA in creating their Energy Efficiency and Conservation Masterplan.[83]

Need for Information Sharing and Matchmaking Platform

There are significant challenges to decarbonizing the textile and apparel industry due to information gaps among stakeholders. Many apparel manufacturers, especially smaller ones, are unaware of financing options and available technologies that enhance sustainability, making it harder for them to adopt energy-efficient machinery and renewable energy solutions.

The complexity of varying loan requirements across financial institutions adds to these challenges, often creating confusion and discouraging businesses from pursuing decarbonization. Misperceptions among financial institutions about the maturity and return on investment of energy efficiency and renewable energy technologies can also result in unfavorable financing terms, further slowing progress.

To address these barriers, this report recommends establishing matchmaking platforms dedicated to decarbonizing the textile and apparel sector. These platforms would serve as hubs, providing access to information on proven technologies, funding opportunities, and key networks. By encouraging collaboration and communication among manufacturers, brands, financial institutions, and energy service providers, these platforms can bridge knowledge gaps, improve access to resources, and accelerate the industry's transition to sustainability.

2023 Roundtable Discussion with Manufacturers in Bangladesh

On the sidelines of the inaugural Bangladesh Climate Action Forum held on October 10, 2023, Aii hosted a roundtable discussion with senior representatives of Bangladeshi manufacturers. The discussion yielded valuable input that has been incorporated in this report. The roundtable also featured a representative from IDCOL, a government-owned financial institution, who shared insights from a financier's perspective.

Roundtable Discussion, October 4, 2023

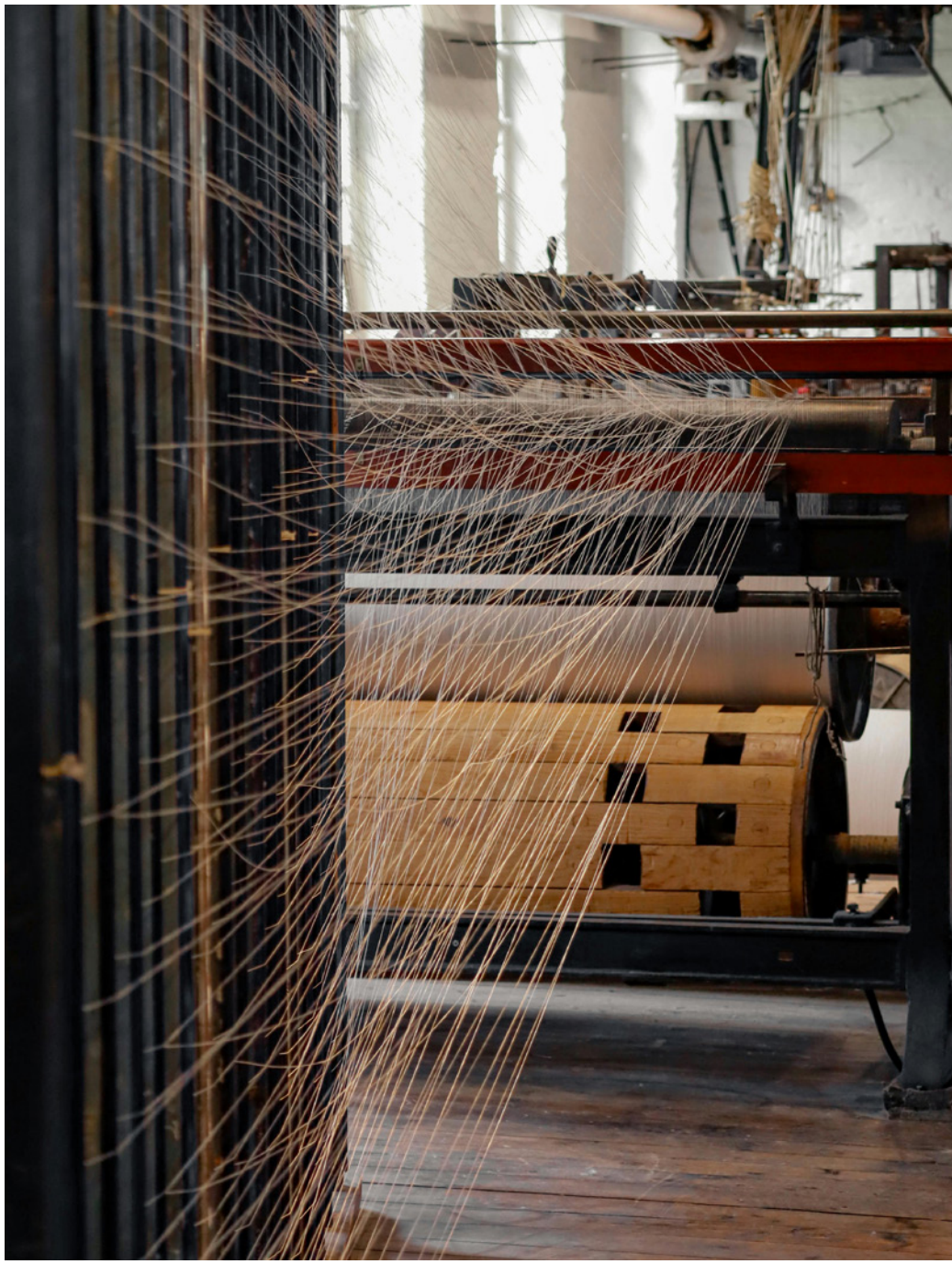
Call to Action and Recommendations

This report recognizes the significant progress and efforts of stakeholders across the textile and apparel industry's value chain in advancing sustainability. However, further collaboration and targeted efforts are essential to accelerate decarbonization.

To achieve a 50% reduction in emissions by 2030, the industry requires an estimated **US$6.6 billion** in financing and faces a current gap of **US$4.8 billion.** Engaging with IFIs is a key strategy that can help bridge this gap, offering not only the funding but also valuable expertise and networks to drive large-scale change.

Manufacturers face financial and technical challenges that require collaborative solutions. Partnering with energy developers can help overcome barriers like high upfront costs by aggregating demand and improving bankability for RE and EE projects. At the same time, leveraging the support of tailored guidance, capacity-building programs, and access to support systems can empower stakeholders to take effective action across the value chain.

The following recommendations outline proactive, actionable strategies to further decarbonization efforts, foster collaboration, and enable meaningful progress for Bangladesh's textile and apparel industry.



1. Connect Manufacturers, Brands, IFIs, Funders, and Other Stakeholders

There is a need for sustainable finance education to improve awareness of financing options and build demand for green investments. Manufacturers, particularly smaller ones, need access to information about sustainability financing and energy-efficient technologies, such as energy-saving equipment, which are less understood compared to solar PV systems.

This report calls on IFIs, brands, and other stakeholders to act as network builders by facilitating connections between manufacturers, funders, and technical experts. These efforts should include creating open-exchange platforms that share data, opportunities, and resources to streamline access to financing and decarbonization solutions.

Stakeholders can draw inspiration from initiatives like Aii's 2023 roundtable discussions and partnerships with the Bangladesh Apparel Exchange, which have engaged multi-level actors through panel discussions, workshops, and keynote sessions. Expanding such collaborative efforts will strengthen the ecosystem of support and accelerate demand for decarbonization technologies.

2. Brand Support and Actively Involving Manufacturers

There are industry-wide risks that affect the capability and confidence of manufacturers to apply for financing. Manufacturers who have high debt levels or limited order visibility have challenges in accessing financing decarbonization and green investments. Financiers have also expressed their hesitations due to the perceived risk in the business cycle of the apparel and textile industry itself.

To address these, brands should take a more active role in supporting their manufacturers. This could include providing producer incentives, project assistance, equity investments in RE, or direct loans for green projects. More details on how brands can specifically support their supply chains can be found in Aii's publication: "The Brand Playbook for Financing Decarbonization."

Aside from financial support, brands can facilitate connections between manufacturers and energy developers with strong ties to financial institutions. For instance, in China, brands have linked manufacturers with solar developers, enabling them to secure RE installations at more favorable rates. Similar approaches in Bangladesh could improve access to financing and accelerate sustainability efforts.

Smaller manufacturers, which may have greater financial limitations and weaker relationships with large apparel brands, are encouraged to participate in decarbonization programs that do not need large capital investments. For example, Aii's Clean by Design program targets low-hanging fruit for process demand and energy efficiency improvements to achieve quick wins that can provide an almost immediate return on investment, shortening the payback period.[84]

3. Shift Risk Perceptions on Green Investments

Accessing financing remains challenging for many manufacturers due to strict collateral or guarantee requirements tied to concessional loans and high interest rates from commercial financiers. These difficulties emerge from a lack of familiarity with borrowers and concerns about the perceived risks of green technologies.

Shifting perspectives on the returns on investments (ROI) for green investments is needed to reduce overall financing terms and requirements in order to scale up investments in the market. This can be achieved through creating a centralized data registry with case studies and financial outcomes of successful green projects. Sharing real-world examples can help build confidence among lenders and manufacturers.

In line with the first recommendation, **a decarbonization investment platform** could facilitate this effort by serving as a hub for sharing case studies, hosting events, and connecting manufacturers with financing options. This platform could also support discussions on alternative due diligence requirements and train financial institutions to better evaluate green projects.

IFIs, technical assistance providers, and brands are encouraged to support the development of such a platform, engage proactively with financiers, and share knowledge to encourage further investment in sustainability initiatives.

4. Tap into Existing Financing and Technical Assistance Opportunities

Existing financing options, while limited, should be maximized to generate interest in green investments, create successful case studies, and build momentum for scaling up decarbonization financing. Leveraging these can showcase the viability of green projects and encourage further investment in the market.

To improve access, financing processes can be streamlined and expedited. Loan requirements, such as collateral and guarantees, should be differentiated and tailored to fit project types (i.e. large-scale RE installations versus EE machinery upgrades). Simplifying due diligence and application processes can make financing more accessible, particularly for SMEs.

Stakeholders, including IFIs and brands, are called to explore offering third-party guarantees to support manufacturers with limited collateral. Transaction advisory services should also be considered to help manufacturers navigate application processes, prepare required documents, and build the skills needed to secure financing.

Aii remains committed to identifying attractive financing options and providing matchmaking support to help manufacturers access these resources. Facilities are encouraged to reach out directly to Aii for guidance in exploring suitable opportunities.

5. Scale-up Decarbonization Financing

Additional financing windows tailored to the needs of the apparel and textile industry manufacturers, especially those of smaller manufacturers are needed. While existing credit lines provide targeted support for the garments sector, they are insufficient to bridge the financing gap required to meet GHG reduction targets.

This report calls on financial institutions, including both commercial and state-owned banks, and IFIs to expand climate and sustainability financing. New solutions and mechanisms should be explored, such as concessional loans, blended financing approaches, and partnerships with brands to improve access for smaller borrowers. Collaborations between funders and stakeholders can create innovative models that address the unique needs of manufacturers.

Aii, through its Sustainable Finance Working Group, is actively working with funders and financial institutions to highlight the funding gap and catalyze solutions. Their work includes exploring risk-sharing mechanisms to make decarbonization financing more accessible and scalable.

6. Advocate for More Inclusive and Progressive Policies

Successful decarbonization in Bangladesh requires an enabling policy environment and infrastructure upgrades. This report calls for aligned efforts across the value chain to advocate for more inclusive and progressive policies that promote sustainability and energy transition.

Key areas for improvement include revising net metering regulations, enhancing feed-in tariff schemes, lowering import duties on green technologies, and exploring frameworks for Corporate Power Purchase Agreements (CPPAs) and then Virtual Power Purchase Agreements (VPPAs) when suitable with grid conditions. VPPAs allow smaller manufacturers to prove their use of RE through certificates, while CPPAs enable larger businesses to purchase renewable electricity directly from generators through long-term agreements.[85][86] These policies would give manufacturers more flexibility to meet sustainability goals and demonstrate compliance to global buyers.

In addition to policy reforms, publicly-owned infrastructure must be strengthened to support RE adoption. Investments in transmission and distribution networks and grid upgrades are critical to ensuring reliable electricity supply, mitigating outages, and enabling the exchange of RE across regions. Stakeholders should actively support initiatives such as the World Bank's planned project to improve Bangladesh's grid infrastructure and build momentum for scaling renewable energy solutions.[87]

This recommendation calls on brands, manufacturers, IFIs, energy developers, and industry associations to unite in advocating with the Bangladeshi government for more supportive policies and robust infrastructure. This can set a global example for sustainable development.

7. Enhance Technical Capacity in the Value Chain

Launching and scaling effective and impactful decarbonization efforts requires a skilled technical and engineering workforce capable of implementing RE and EE technologies and solutions. A significant gap in technical capacity, particularly for energy auditors and engineering expertise, limits the industry's ability to meet demand for decarbonization projects.

This report calls for coordinated efforts to develop technical skills through partnerships with universities and technical and vocational education and training (TVET) institutes. Expanding these programs can help strengthen the workforce while supporting the growth of ESCOs and RESCOs, which remain underdeveloped in Bangladesh.

Aii actively works to enable and enhance the industry value chain through its work on the Climate Solutions Portfolio which increases access and awareness of viable and vetted solutions. Aii also collaborates with industry experts such as BluWin to provide technical support to manufacturers in Bangladesh and across South Asia.

Annex

A. Glossary

B. Details on Financing Opportunities

C. List of Highest-Priority & Special Development Sectors

D. Endnotes

A. Glossary

Pareto Principle
The Pareto Principle, also known as the 80/20 rule, states that roughly 80% of the effects or results come from 20% of the causes. It suggests that in many situations, a small fraction of efforts often leads to large and disproportionate amounts of results. In turn, focusing on a select portion of the inputs can lead to significant changes in output. This principle is widely applied in various fields, from business management to personal productivity, to prioritize efforts efficiently.

Corporate Power Purchase Agreement (CPPA)
CPPAs are similar to PPAs and are contracts between corporations and renewable energy developers, enabling corporations to directly procure renewable electricity from renewable energy projects and mitigate future price volatility, while providing revenue stability for developers to secure project financing and deployment. CPPAs drive the transition to clean energy by expanding renewable deployment and fostering direct collaboration between corporations and the renewable energy sector.

Power Purchase Agreement (PPA)
PPAs are contracts between a power generator and a buyer, often a utility, where the buyer agrees to purchase electricity at a preset price over a specified period. PPAs provide stability for renewable energy projects by guaranteeing a market for their electricity output, enabling developers to secure financing and reduce project risks. These agreements help accelerate the transition to renewable energy by facilitating investment in clean energy infrastructure while offering long-term cost certainty for buyers.

Virtual Power Purchase Agreement (VPPA)
A VPPA is a financial contract between a renewable energy developer and a buyer. It does not involve the physical delivery of electricity between the two parties. Attribution of renewable energy use by a buyer is secured through renewable energy certificates (RECs) or green certificates. VPPAs drive the transition to renewable energy by enabling facilities that source from the grid or energy market to be recognized as electricity consumers from renewable energy sources without the need to directly and physically source electricity from an off-site renewable energy plant.

This model gives customers ownership of the equipment and any resulting savings. It is like buying energy efficiency outright, providing long-term benefits but requiring a larger initial investment.

B. Details on Financing Opportunities

Although this list is not comprehensive, it provides an overview of available & relevant financing options.

Credit Line or Fund	Project Implementer	Description	Other Details
Green Transformation Fund (GTF) - USD and EUR	Bangladesh Bank, through PFIs	Revolving refinancing scheme for export-oriented industries to invest in sustainable and resource-efficient technologies, including RE and EE.	• Launched in 2016 as a USD-denominated loan, expanded to offer EUR-denominated loans in 2020, and BDT-denominated loans in 2022 • Loan size: Max. 200 crore BDT (BDT loans) • Interest rate: Max. 5% landed rate • Tenor: 5-10 years • Grace period: Max. of 1 year • Debt-to-Equity ratio: Max. 70:30 • PFIs: 30 banks (USD) and 26 banks (EUR) • *Note: As of February 2025, disbursement of foreign curre ncy loans has been limited due to constraints with foreign currency availability.*
Green Transformation Fund (GTF) - Local Currency	Bangladesh Bank, through PFIs	Same as above, but disbursed in local currency	
Technology Development and Upgradation Fund (TDF)	Bangladesh Bank, through PFIs	Revolving refinancing scheme for technological and modernization upgrades (equipment/ process) for export-oriented industries	• See Annex C for a list of priority sectors • Interest rate: Max. 5% landed rate • Tenor: 3-10 years • Grace period: Max. of 1 year • Debt-to-Equity ratio: Min. 70:30, depending on the PFI
Refinance Scheme for Environmental Friendly Products, Projects, and Initiative	Bangladesh Bank, through PFIs	Revolving refinancing scheme for investments in RE, EE, and other sustainable projects.	• Interest rate: Max. 5% landed rate • Tenor: 3-10 years • Grace period: Max. of 1 year • Debt-to-Equity ratio: Min. 70:30, depending on the PFI

B. Details on Financing Opportunities

Although this list is not comprehensive, it provides an overview of available & relevant financing options.

Credit Line or Fund	Project Implementer	Description	Other Details

Green Climate Fund: Promoting Private Sector Investment through Large-Scale Adoption of Energy Saving Technologies and Equipment	IDCOL, and PFIs	Two green credit lines for energy efficiency investments by textile and ready-made garments (RMG) industries	• Dedicated to the textiles and the ready-made-garments (RMG) industry
			• US$100M for the textiles sector disbursed by IDCOL
			  • Interest Rate:
			  • GCF: Max. 4.25-5.0% (USD), 7.0% (BDT)
			  • IDCOL: 90-day SOFR + max. 4.5% (USD), 6-month Treasury + max. 3.0% (BDT)
			  • Currency limits:
			  • GCF: Max. 60% in BDT
			  • IDCOL: No max. limit; prefers to lend USD due to currency exchange fluctuations
			• US$150M for the RMG sector disbursed by four local PFIs: (1) IDLC, (2) BRAC Bank, (3) Southeast Bank, and (4) City Bank Limited
			• Additional eligible PFIs may be added
			• Modality: Direct lending from IDCOL, on-lending from PFIs
			  • Interest rate:
			  • GCF: Max. 4.75% (USD), 8.0% (BDT)
			  • IDCOL: 90-day SOFR + max. 4.5% (USD), 6-month Treasury + max. 3.0% (BDT)
			• PFI Co-financing rate: Cost of financing + max. 3.0% (USD and BDT)

B. Details on Financing Opportunities

Although this list is not comprehensive, it provides an overview of available & relevant financing options.

Credit Line or Fund	Project Implementer	Description	Other Details
World Bank Bangladesh Scaling-up Renewable Energy Project	IDCOL	Green concessional credit line for renewable energy, specifically for rooftop solar PV in industrial facilities (not only RMG/ textile)	• US$95M undisbursed (as of end 2023) • Interest rate: Varying depending on guarantee provided: 5.0% with 75% bank guarantee, 5.5% with 50% guarantee • Tenor: Max. 10 years • Grace period: 1 year
AFD / EU Programme to Finance Safety Retrofits and Environmental Upgrades (SREUP)	BIFFL	Green concessional credit line for RMG factories for safety improvements and environmental and social upgrades	• Includes performance-based grants and technical assistance for borrowers • Dedicated to the RMG industry • EUR 40M (est. US$42M) undisbursed • Loan size: Max. EUR 10M (est. US$10.5M) • Interest rate: 6% landed rate • Tenor: 10 years • Grace period: Max. 1.5 years
KfW Energy Efficiency in the Industry	IDCOL and BIFFL	Green concessional credit line for the extension and/or replacement of existing machinery and equipment for more energy efficiency substitutes	• EUR 32M (est. US$33M) undisbursed, with EUR 10-15 earmarked for disbursement • Loan size: Max. EUR 8M (est. US$8.3M) • Interest rate: 7% landed rate • Tenor: 10 years • Grace period: Max. 1.5 years

B. Details on Financing Opportunities

Although this list is not comprehensive, it provides an overview of available & relevant financing options.

Credit Line or Fund	Project Implementer	Description	Other Details
JICA Energy Efficiency and Conservation Promotion Financing Project (Phase 2)	IDCOL and BIFFL	Green concessional credit line for investments in energy efficiency and conservation equipment	• US$120 M almost completely disbursed, although the revolving fund is still open • Loan size: Min. BDT 5M, Max. BDT 1.5B • Interest rate: Varying depending on guarantee provided: 5.0% with 100% bank guarantee; 5.5% with 75% guarantee; 6.0% with 50% guarantee • Tenor: 7-10 years • Grace period: Max. 1.5 years • Eligible Investments: See BIFFL list here
ADB Third Public-Private Infrastructure Development Facility	IDCOL	Green credit line for investments in battery energy storage and energy efficiency, with a set limit for the RMG industry	• US$232M undisbursed (as of end 2023) • Credit line for energy efficiency, batteries, etc. • Loan size: Max. US$15M for RMG industry
AIIB Infrastructure Development Financing Facility (Proposed)	Eastern Bank	Pending loan facility expected to support multi-sector infrastructure projects including subprojects in power generation and renewable energy	• US$50M credit line • Pending approval as of February 2025

B. Details on Financing Opportunities

Although this list is not comprehensive, it provides an overview of available & relevant financing options.

Credit Line or Fund	Project Implementer	Description	Other Details
Other expected IFI-financed credit lines with Eastern Bank	Eastern Bank	Pending credit lines for green finance based on discussions with Eastern Bank	• US$100M credit line from multiple bilateral agencies for green finance • US$25M credit line from a multilateral development bank for green investment • Pending approvals as of Dec 2023

C. List of Highest Priority and Special Development Sectors (as per Export Policy 2018-21)

Highest Priority Sectors

1. High Value Added Readymade Garment, Denim, and Garment Accessories
2. Software and IT enable services, ICT products
3. Pharmaceutical products
4. Plastic products
5. Footwear (leather, non-leather, and synthetic) and Leather products
6. Jute products
7. Agro-Products & Agro-Processed products
8. Ship & Ocean going fishing trawler
9. Furniture
10. Home Textile & Terry Towel
11. Home Furnishing
12. Luggage
13. Active Pharmaceutical Ingredients (API) and Laboratory Reagents

Special Development Sectors

1. Diversified Jute products
2. Electric & Electronic products
3. Ceramic products
4. Light engineering products (including Auto –parts, Bicycle, Motorcycle, Battery)
5. Value-added frozen fish
6. Pappadum
7. Printing and packaging
8. Rough Diamond & Jewelry
9. Paper & paper products
10. Rubber
11. Silk products
12. Handicrafts
13. Handloom products including Lungi
14. Coir products
15. Photo Voltaic Module (Solar energy)
16. Cashew nut (Raw and Roasted)
17. Live and Processed Crab
18. Toys
19. Agar

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