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

apparel impact institute

NOVEMBER 2024

content

Methodology

The methodology employed for data gathering in this report encompasses a multi-step approach integrating desk-based research, project assessment, virtual and in-person consultations, and in-country visits to meet key stakeholders.

Initially, extensive desk-based research was conducted to compile existing data, reports, and literature relevant to decarbonization efforts in the apparel and textile sector. Subsequently, a series of phone consultations were undertaken with key stakeholders including industry members and representatives from IFIs to gather insights and perspectives on financing challenges and opportunities.

Additionally, a week-long, in-country visit to New Delhi, Mumbai, and Tamil Nadu was carried out to gain a nuanced and realistic understanding of the specific context, opportunities, and barriers to decarbonization within targeted regions, allowing for the robust analysis and tailored recommendations in the report.

This multi-faceted methodology ensures the comprehensive coverage and reliability of the data and insights presented in this report, enabling stakeholders to make informed decisions and strategies for advancing decarbonization efforts in the apparel value chain.

Through this approach, DFI conducted 25 in-person and virtual consultations with over 35 stakeholders across three cities and identified 15 currently active and pipelined credit lines and revolving government schemes with a financing opportunity valued at close to US$2.5 billion.

This method also created numerous strong, dynamic, and meaningful relationships with key stakeholders, including government officials, industry leaders, and financial institution representatives. These connections have proven instrumental in fostering collaboration, garnering support, and driving momentum toward achieving the shared goals of decarbonizing the apparel value chain in India.

Acknowledgments: The authors extend their gratitude to the industry experts, interviewees, reviewers, and other contributors who generously contributed their time and expertise to the completion of this report: Lewis Perkins (Aii), Ryan Gaines (Aii), Kurt Kipka (Aii), Bryant LaPres (Aii), Laxmikant Jawale (Aii), Leonie Schmid (Aii), Sanjay Sadarangani (Aii), Pauline Op de Beeck (Aii), Kay Bloomberg (Aii), Disha Pande (Aii), Nakia Granberg (Aii), Johanna Björk (J.Björk), Dr. Siva Pariti (BluWin), and Linda Greer (Linda Greer Consulting).

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, Gap, PVH, Lululemon, H&M Group, and Ralph Lauren. Aii has also built a $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 $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) 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 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.

SUPPORTED BY HSBC

HSBC is one of the world's largest banking and financial services organisations. They serve more than 40 million customers through their global businesses: Wealth and Personal Banking, Commercial Banking, and Global Banking & Markets. Their network covers 64 countries and territories in Europe, Asia, the Middle East and Africa, North America and Latin America.

Executive Summary

The textile and apparel sector in India offers a significant opportunity for decarbonization. Apparel Impact Institute, in partnership with Cascale, identified that as of 2023, India is ranked second among the countries with the top 1000 greenhouse gas (GHG) emitting apparel manufacturing facilities. With its considerable size, scale, and growth trajectory, alongside a maturing market for energy efficiency (EE) and renewable energy (RE), India presents an ideal priority region for decarbonization interventions.

This report builds on the findings of the "*Unlocking the Trillion-Dollar Fashion Decarbonization Opportunity*" report by Aii and Fashion for Good, and takes a deep look at the financing landscape for textile and apparel decarbonization in India, with a particular focus on the Tamil Nadu region, a textile and apparel hotspot in the country.

In 2021, the Fashion Industry Charter for Climate Change under the United Nations Climate Change Secretariat set forth a goal of 50% absolute emissions reduction by 2030 and net zero emissions by 2050. Similarly, Aii set its own target of enabling the reduction of global greenhouse gas emissions by 100 million metric tonnes by 2030 to contribute to the industry's ambitious goal. Keeping these in mind, this report presents country-specific opportunities, challenges, interventions, and recommendations.

A key feature of this report is its focus on engagement with International Financial Institutions (IFIs) to accelerate the decarbonization agenda by providing funding, catalyzing further investments, leveraging expertise, and providing technical assistance to support the transition to low-carbon practices.

Through a preliminary quantitative analysis, this report approximates that the financial requirements for achieving this target through renewable energy and energy efficiency interventions sits close to **US$6.5 billion** for India alone. Encouragingly, DFI has identified and confirmed **at least US$1.3 billion** in readily available financing and estimates an additional **US$1.2 billion** being developed.

Realizing a 50% reduction in GHG emissions hinges on swift and comprehensive changes across the entire value chain.

In developing this report, DFI engaged with a number of stakeholders including national and state government agencies, IFIs, state banks, non-governmental organizations (NGOs), energy developers, associations, manufacturers, and individual consultants. Through research and detailed discussions, a number of key findings were identified. These offer an understanding of India's industry landscape.

Key Findings

- The textile and apparel sector is one of the top GHG-emitting industries globally. India is one of the largest contributors with an estimated 6,500 Tier 1-3 facilities.
- There is a strong local and international push for cleaner and more sustainable practices from new energy and sustainability regulations and targets (e.g. CBAM, Scope 3 Emissions Reporting, BRSR, National Solar Mission, emissions reduction, and RE capacity targets).
- Manufacturers face many challenges in transitioning to sustainability due to constraints with financing, infrastructure, internal capacity, and enabling energy policies.
- An estimated US$6.5 billion in financing is required to reduce India's total industry emissions by 50% by 2030 through renewable energy and energy efficiency interventions.
- 15 credit lines and revolving funding schemes have been validated with US$1.3 billion in available funding and US$1.2 billion in upcoming funding from IFIs, federal and state government, and NGOs as of December 2023, leaving a US$4 billion financing gap.
- Collaborating with IFIs offers a significant opportunity to accelerate the transition by tapping into their substantial funding, technical expertise, and networks as they are supporting the decarbonization of the value chain through policy advisory, transaction support, knowledge sharing, and capacity building.
- Non-profit organizations and government agencies are working on developing and scaling up solutions and technologies that are a fit for Aii's Climate Solutions Portfolio.
- There is a mature market of Energy Service Companies (ESCOs), with 135 graded and accredited ESCOs registered under the Bureau of Energy Efficiency, which can support the scaling up of decarbonization efforts.

Having identified key insights into the decarbonization of the textile and apparel industry, the report seeks to ignite a proactive response across the industry value chain and support ongoing efforts in India.

Recommendations and Call to Action:

1. TAP INTO EXISTING FINANCING AND TECHNICAL ASSISTANCE OPPORTUNITIES

With close to US$2.5 billion in financing available and upcoming, the current resources and initiatives should be tapped immediately to generate momentum in climate leadership and create case studies for green investments. Micro, Small, and Medium Enterprises (MSMEs); brands; and energy developers have an opportunity to collaborate and achieve near-term impact.

2. INCREASE ACCESSIBLE FUNDING AND RESOURCES FOR DECARBONIZATION

Given the considerable US$4 billion gap in financing, this report urges all funders — IFIs, public, private, and philanthropic — to increase their climate funding, explore blended finance approaches, and expand collaborations to make financing more accessible and affordable.

3. SHIFT RISK PERCEPTIONS

Perceived high risks by lenders toward MSMEs and green investments can limit financing. Financial institutions are called to review case studies on the proven financial returns of investments into sustainability and MSMEs, adapt their processes to be more accommodating toward them, and offer financing in these areas at reasonable terms.

4. BRANDS TO ACTIVELY INVOLVE THE MANUFACTURERS

Manufacturers face strong pressure to adopt sustainable practices amid evolving demands and regulations. This report urges brands to boost their support for manufacturers and actively involve them in designing solutions that fit their needs and contexts. This may be through price incentives, investment grants, communication, and longer sourcing contracts, among others.

5. ENABLE THE BROADER TEXTILE AND APPAREL VALUE CHAIN

Access to financing and innovative solutions for renewable energy and energy efficiency are not enough to successfully decarbonize the sector. Enabling factors such as the right policies (e.g., net-metering, sustainability reporting, emissions reduction) and technical capacity (e.g. availability and quality of energy auditors) are required. This report calls for a comprehensive effort across the value chain to achieve the sector's objectives in India.

6. CONNECT MANUFACTURERS, BRANDS, IFIS, DEVELOPERS, AND OTHER STAKEHOLDERS

The information gap among stakeholders across the sector shows the essential role Aii plays in this space. This report highlights the significant opportunity to create a matchmaking platform and connect stakeholders with relevant financing opportunities, technologies and solutions, and networks to accelerate the uptake of decarbonization efforts in India.

Introduction

The Trillion-Dollar Fashion Decarbonization Opportunity

Sustainable fashion prioritizes practices that positively impact the environmental and social footprint of the apparel industry. Central to this is decarbonizing the apparel value chain, which involves minimizing carbon emissions across all stages of garment production, from sourcing raw materials to distribution, as part of a broader effort to combat climate change and promote environmental stewardship.

The landscape of sustainable fashion is dynamic, where innovative solutions continually emerge to address environmental and social challenges. The need to accelerate decarbonization efforts within this context is imperative, as the fashion industry aims to reduce its carbon footprint and transition toward a more sustainable future.

This follow-on report focuses on India, particularly in the state of Tamil Nadu, and builds on the insights presented in the report "*Unlocking the Trillion-Dollar Fashion Decarbonization Opportunity*" by Apparel Impact Institute and Fashion for Good which emphasizes the immense financial benefit of transitioning to a low-carbon supply chain and the collaborative efforts needed[1].

The 2021 report by Aii outlines solutions for reducing emissions, underscores the role of finance in driving decarbonization efforts, identifies financing barriers, and recommends industry actions to catalyze private investment and policy support for sustainable transformation.

Objective

This report delves deeper into the financing landscape for decarbonization within the apparel and textile sector, with a specific focus on identifying country-specific opportunities, challenges, and gaps in India, a region essential for achieving the ambitious target of reducing global greenhouse gas emissions from the industry by 50% by 2030. While this report intends to provide a broad look at India, it is not exhaustive and was done with a particular focus on the Tamil Nadu region which is one of the top textile and apparel producing areas in the country.

By examining the financial mechanisms and investment opportunities available, the report seeks to provide actionable insights to stakeholders, underscoring the critical role of blended finance in driving sustainable transformation. Additionally, it highlights the role of International Financial Institutions (IFIs) in accelerating the decarbonization agenda — emphasizing their potential to catalyze investments and provide technical assistance to support the transition to low-carbon practices.

By synthesizing data and best practices from the sector, this report aims to inform policymakers, investors, and industry leaders on strategies to accelerate decarbonization efforts and foster a more sustainable and resilient apparel value chain.

The Role of International Financial Institutions

International Financial Institutions (IFIs) are organizations that support developing countries with funding, technical assistance, policy expertise, and convening power. They provide such support through global-, regional-, country-, and state-specific funded initiatives and projects, and through a variety of instruments channeled by government and private sponsors. These institutions play a pivotal role in the social and economic development of countries and regions.

IFIs typically offer loans, grants, policy advice, capacity building, and other forms of assistance to promote economic development, poverty reduction, and infrastructure projects in regions around the world. In addition to funders, IFIs are also providers of policy expertise; technical assistance; and high-level (e.g. Heads of State, Minister, and Sector Cabinet level) convenings to catalyze action and development for urgent global needs. Globally, IFIs regularly host key events such as annual meetings and general assemblies where leaders and representatives from IFIs, the government, and the private sector gather to discuss policy, share insights, and forge strategic partnerships.

There are multiple types of IFIs, including multilateral development banks, bilateral aid organizations, United Nations agencies, philanthropies and foundations, and banks and other financial institutions. A brief description and some examples of each type can be found in the list below and in the succeeding section. The list and descriptions are not comprehensive of all the organizations in the IFI space.

MULTILATERAL DEVELOPMENT BANKS

- The World Bank Group
- Asian Development Bank (ADB)
- Asian Infrastructure Investment Bank (AIIB)
- International Monetary Fund (IMF)
- European Investment Bank (EIB)
- Inter-American Development Bank (IADB)

BILATERAL AID AGENCIES

- US Agency for International Development (USAID)
- UK Foreign, Commonwealth & Development Office (UK FCDO)
- UK Aid Direct
- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
- Kreditanstalt für Wiederaufbau (KfW)

UNITED NATIONS UNITS

- UN Framework Convention on Climate Change (UNFCCC)
- UN Environment Programme (UNEP)
- Intergovernmental Panel on Climate Change (IPCC)
- World Health Organization (WHO)
- International Labour Organization (ILO)

FOUNDATIONS
LOCAL AND INTERNATIONAL

- Bill & Melinda Gates Foundation
- MacArthur Foundation
- Bloomberg Philanthropies
- The Rockefeller Foundation
- Shakti Sustainable Energy Foundation
- TATA Trusts

BANKS & FUNDS
LOCAL AND INTERNATIONAL

- Green Climate Fund (GCF)
- Global Environment Facility (GEF)
- Climate Investment Funds (CIF)
- Hongkong and Shanghai Banking Corporation (HSBC)
- Citibank
- BNP Paribas
- Small Industries Development Bank of India (SIBI)
- State Bank of India (SBI)

INTERNATIONAL FINANCIAL INSTITUTIONS

The organizations mentioned as examples below offer an illustrative view of the IFI ecosystem and are not representative of an exhaustive list.

Multilateral Development Banks: Financial institutions established by multiple countries to provide loans and grants for development projects in developing 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 Agencies and Programmes: Specialized units within the United Nations system tasked with addressing specific global issues or areas of concern such as environment, livelihood, and labor. Examples of these include the United Nations Environment Programme (UNEP) and the United Nations Framework Convention on Climate Change (UNFCCC).

OTHER DEVELOPMENT INSTITUTIONS

These may have local or international coverage.

Philanthropies and 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.

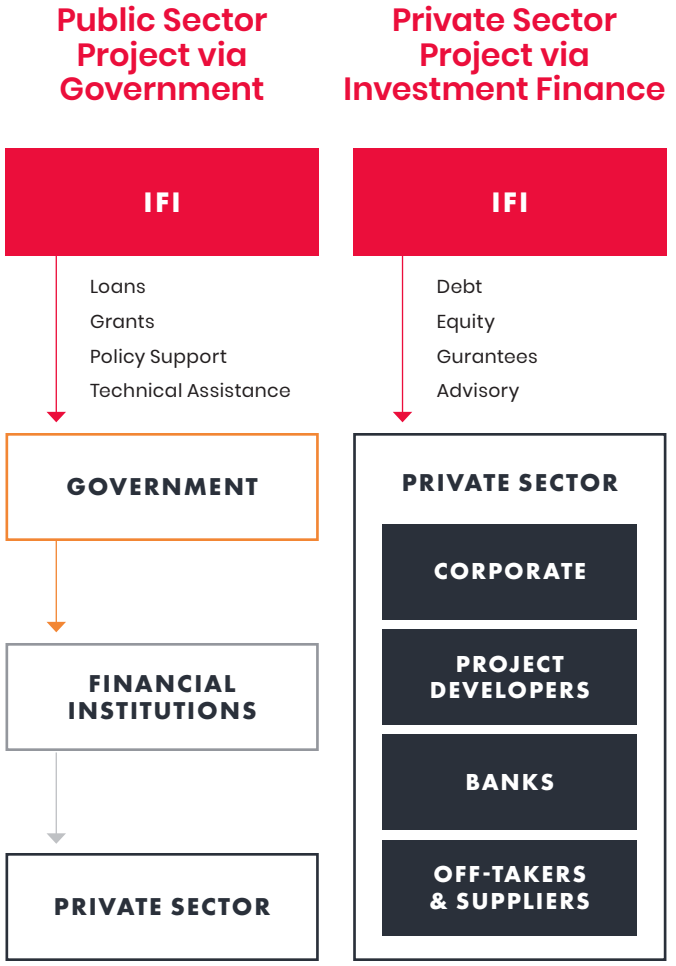
These organizations may have global or regional activities and can collaborate with each other to support shared causes. The Bill & Melinda Gates Foundation and the Rockefeller Foundation are among those with activities internationally. In India, some of the active organizations with local activities include TATA Trusts and the Shakti Sustainable Energy Foundation.

Banks and 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 that are 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 India, local institutions include the Small Industries Development Bank of India (SIDBI) and the State Bank of India, among others.

HOW IFIS WORK: MODES OF FINANCING

IFIs provide external funding to the public and private sectors. This means that their resources can be channeled through national and state governments or directly to companies. Typically, the terms of the arrangements vary greatly between public and private projects.



Decarbonizing the Apparel Industry

India Apparel and Textile Sector

Key textile and apparel hubs and clusters[2]

SPINNING CLUSTERS
Ludhiana, Baddi, Coimbatore, Erode, Guntur

WEAVING CLUSTERS
Surat, Tarapur, Mumbai, Amravati, Ahmedabad

KNITTING CLUSTERS
Delhi, Ludhiana, Tiruppur

APPAREL MANUFACTURING CLUSTERS
Delhi, Bangalore, Mumbai, Kolkata, Vapi, Vishakhapatnam

India Apparel and Textile Sector

The textile and apparel industry is one of the oldest sectors in the Indian economy. Over the years, the industry has flourished into a cornerstone of the country's economic landscape due to a rich abundance of plant-based materials such as cotton, wool, silk, and jute, alongside an ample supply of skilled and cost-effective labor.

Today, India ranks among the leading countries in textile and apparel manufacturing, recognized for its fine craftsmanship across the production process.

As a whole, the Indian textile and apparel sector is characteristically diverse, encompassing various segments from traditional handloom and handicrafts to silks, wools, and the modern organized textile and apparel industry.

India is the second largest producer of textiles and garments globally, with projections indicating continued robust growth. By 2028, the industry is expected to surpass US$387 billion in value.[3] Making substantial contributions to the national economy, the sector represents 2.3% of the GDP annually and constitutes 13% of total industrial output.[4]

It also serves as a vital source of employment, serving as the second-largest employer after agriculture. The sector directly hires 45 million workers and indirectly supports the livelihoods of an additional 100 million individuals.[5]

In terms of exports, India also ranks as the world's fourth-largest textile and apparel exporter with a 4.4% share of the global market.[6] In 2023, India's textile and apparel exports totaled US$36.7 billion, with the ready-made-garments subsector contributing US$16.2 billion[3] and projections suggest this subsector will exceed US$30 billion by 2027.[4] Key importers of Indian textiles and apparel include the United States of America, Bangladesh, the United Kingdom, the United Arab Emirates, and Germany.[3]

Aii and local manufacturing associations estimate that there are 6,500 facilities operating within the textile and apparel industry throughout India, engaging in a wide range of activities from raw material processing to the production of ready-made garments. These manufacturing units are distributed across various regions, with notable concentrations in key apparel hubs such as Tamil Nadu, Gujarat, Maharashtra, Uttar Pradesh, Madhya Pradesh, Bihar, Jharkhand, and Karnataka. Within these regions, specialized clusters dedicated to spinning, weaving, knitting, and garment manufacturing thrive.[3, 4]

Though the industry's economic impact is evident, the sector also contributes heavily to environmental degradation due to its high consumption of energy, water, and chemicals across the value chain. Textile and apparel production occurs through long and complex supply chains that span all the way to include growers and processors of raw materials, weavers, knitters, dyers and finishers, product manufacturers, and distributors.

At every stage, fossil fuels such as coal and natural gas dominate as the primary energy source for most activities, resulting in extremely high carbon emissions.[7] Given the scale of production in India, the textile and apparel industry ranks among the highest carbon-emitting industries in the country.

TIRUPPUR

The City of Tiruppur in the southern region of Tamil Nadu is the largest apparel manufacturing cluster in India. The area has a number of knitwear and apparel hubs and industrial parks, and contributes over 50% of the country's total exports.[8]

Policy and Regulations

The textile and apparel industry in India is witnessing a pivotal shift as current and upcoming regulations exert profound impacts on business operations. The national government has set ambitious targets to promote renewable energy and energy efficiency across the country, reflected in a range of national-level policies and government programs.

These policies aim to drive the growth of renewable energy sources and enhance energy efficiency standards and performance nationwide. Manufacturers must comply not only to meet regulatory standards but also to remain competitive in the market.

While international and national policies set overarching standards for sustainability across the nation, the intricate web of local state policies on energy and sustainability adds a layer of complexity. As such initiatives and changes gain traction, textile and apparel manufacturers must anticipate and adapt to these evolving regulatory landscapes to remain competitive and sustainable in the long term.

To understand these changes, DFI conducted consultations and discussions with a number of stakeholders, supplemented by independent research. Among those engaged were local and international financial institutions, industry experts and associations, and foundations.

The following two parts focus on applicable policies and regulations pertaining to sustainability and energy and the impact that these have on textile and apparel manufacturers. Part one discusses local and international sustainability policies, and part two describes local energy regulations and government schemes.

Part One: Sustainability

Amidst the global push for decarbonization and cleaner industrial practices, new policies are being enacted both locally and internationally. These regulatory frameworks reflect a growing trend toward incorporating environmental considerations into trade policies and underscore the increasing importance of sustainability in global commerce.

The national and state governments of India actively launch schemes and initiatives to support the clean transition and sustainable development of the industry. Progressive states and stakeholders like the Tamil Nadu Industrial Investment Corporation (TIIC) and the Facilitating MSMEs in Tamil Nadu (FaME TN) see these regulations as an opportunity to create a comparative advantage for their local industry. Brands should leverage TIIC and FaME TN's vision and available supporting instruments and recognize them as an invitation to collaborate and achieve meaningful impact in the state, and given the region's relevance in the sector, nationally.

Some notable policies, regulations, and government schemes include:

- **Business Responsibility and Sustainability Report (BRSR)** (Local)
  The BRSR is the Securities and Exchange Board of India's corporate reporting framework for environmental, social, and governance reporting. It requires the top-listed Indian companies to provide and highlight quantitative metrics on sustainability-related factors including emissions, energy, and waste. The report aims to promote transparency and the adoption of responsible business practices. This mandate came into effect in 2023.[9] The BRSR encourages the uptake of quantitative metrics for sustainability among Indian companies, including those in the textiles and garments sector.

- **Carbon Border Adjustment Mechanism (CBAM)** (International)
  CBAM is a tool of the European Union (EU) to address carbon emissions associated with the production of goods entering the EU market. Under this mechanism, importers are required to declare the emissions coming from the production of their imported goods and pay a fee corresponding to the emissions released through the purchase and surrender of CBAM certificates. CBAM is gradually being introduced in selected carbon-intensive sectors. The full implementation across a wider scope of sectors will begin in 2026.[10] Through the CBAM, EU-based international brands in the textiles and garments sector need to encourage and support their suppliers in India to reduce their carbon intensity and GHG emissions.

- **Project Sustainable Resolution (SU.RE)** (Local)
  The Ministry of Textile's SU.RE project is an initiative launched in 2019 to promote sustainable fashion practices within the Indian textile industry. It aims to develop and implement a robust roadmap for the sector, encouraging brands and retailers to adopt environmentally-friendly processes and circularity. The project focuses on reducing resource consumption, promoting the use of sustainable raw materials, and minimizing waste production. The SU.RE project encourages collaborative efforts between the government and the fashion industry to address environmental challenges and create a more sustainable future.[11, 12]

- **Mega Integrated Textile Region and Apparel (MITRA) Scheme** (Local)
  The Indian MITRA scheme is a transformative government initiative launched in 2021 designed to boost the textile sector by establishing sustainable, modern, large-scale, and world-class infrastructure for integrated textile production. The scheme aims to create mega textile parks across the country, each equipped with state-of-the-art facilities and sustainable practices. By streamlining the various processes of the entire textile value chain into one location, the MITRA parks are envisioned to maximize the efficiency and cost-benefits of scale. This will enhance the competitiveness of the Indian textile sector and position India as a global hub for textile and apparel manufacturing.

  The scheme intends to generate employment opportunities and attract significant local and foreign investments. To attract investment and ensure the success of the scheme, several financing incentives including capital grants and financial assistance for infrastructure development within the parks have been put in place. These are designed to lower the barriers to entry for investors and promote the rapid development of the parks, thereby achieving the scheme's objective of creating a robust and sustainable textile ecosystem in India.[13]

  As of 2023, the Government of India has approved the construction of seven MITRA parks sites in Tamil Nadu, Telangana, Gujarat, Karnataka, Madhya Pradesh, Uttar Pradesh, and Maharashtra.[14]

- **Greenhouse Gas Protocol (GHGP):**
  Scope 1, 2, and 3 Emissions Reporting (International)
  The GHGP is a widely used global standard for accounting and reporting greenhouse gas emissions. Various reporting frameworks around the world recommend or require its use.

The newly enacted Corporate Sustainability Reporting Directive requires all European companies to report on sustainability.[15] Regulations in other countries similarly mandate sustainability reporting and emission reduction target-setting. By creating an emissions inventory, businesses are able to understand their value chain emissions and target the most carbon-heavy segments. EU-based corporations are compelled by the Corporate Sustainability Reporting Directive to report, and consequently reduce, their GHG emissions. This includes Scope 3, which covers these corporations' partners in India.

SCOPE 1:
Direct emissions from an organization's own operations and assets

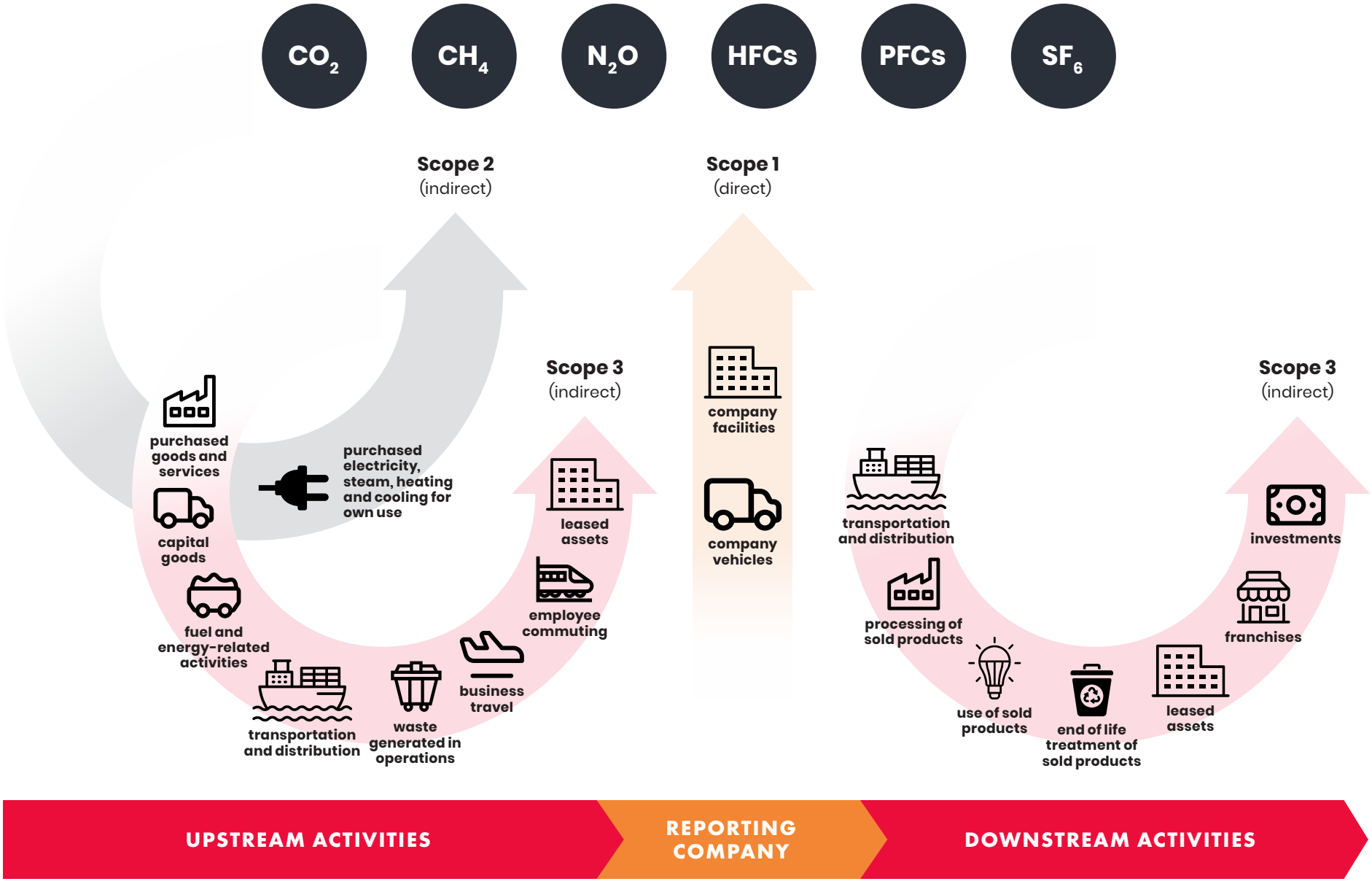
SCOPE 2:
Indirect emissions from the purchase of electricity, heat, cooling, and steam

SCOPE 3:
Indirect emissions from all other activities occurring throughout the organization's value chain (e.g. from suppliers, goods transportation, waste processing)

Typically, the largest amount of emissions comes from Scope 3. The final standards and guidance will be released in 2025 with implementation expected to begin soon afterwards.[16]

Overview of GHG Protocol Scopes and Emissions Across the Value Chain[17]

(International Labour Organization, 2022)



Part Two: Energy

In 2022, India updated its Nationally Determined Contribution (NDC) and announced targets to reduce emissions by 45% versus 2005 levels, increase non-fossil fuel electric power installed generation capacity to 50% by 2030,[18] and achieve Net Zero emissions by 2070.

An internal World Bank decarbonization analysis suggests that India's final energy demand is expected to double, fueled by an 11-fold increase in Gross Domestic Product (GDP) over the same period.[19] The government of India has identified the textile and apparel industry as a high emission intensity sector caused largely by the industry's high energy consumption and heavy reliance on coal for electricity and heat generation.[20, 21] Similarly, internal research by Aii on Higg Facility Environmental Module (FEM) data points to India as the second largest emitter in the global textile industry.[22]

For India to achieve its target by 2070, the national government has several widespread initiatives to boost renewable energy and energy efficiency adoption within industries. Government schemes such as the Technology and Quality Upgradation Support (TEQUP) for MSMEs, Perform Achieve and Trade (PAT) scheme for energy efficiency in industries, and the Production Linked Incentives (PLI) scheme for solar modules and battery manufacturing are helping India in its shift toward lowering emissions.[23, 24, 25, 26]

Likewise, regulatory requirements such as building efficiency standards and Renewable Purchase Obligations (RPO) for electricity help decrease emissions. To achieve and sustain India's GHG emission mitigation goals amidst its economic growth plans, introducing additional policies will be crucial. By implementing new measures, India can positively alter current trends, which with existing policies, are projected to result in a 41% rise in total emissions by 2030.[27, 28] In order to reconcile this trajectory with the long-term emissions reduction target, additional mitigation policies will be needed.

While strong efforts are being made by the government at the national level, differences in regional frameworks and policies complicate the situation.[29]

For instance, the national government has a National Solar Mission which aims to position India as the global leader in solar energy.[30] However, only 17 out of India's 28 states allow net metering,[31] and there are few policies and mechanisms in place to manage surplus renewable energy, leaving excess solar or wind energy uncompensated.[32] Concerns such as these are among those being tackled by the UK FCDO's technical assistance aid policy program *Supporting Structural Reform in the Indian Power Sector* which aims to improve the efficiency, reliability, and sustainability of the electricity supply in India.[33]

Similar variations apply to other broad policies, like power purchase agreements and open access. The lack of harmonization and frequent changes of frameworks and policies across states make it difficult for everyday users to keep up with regulations and affect the ability to scale up renewable energy and energy efficiency.

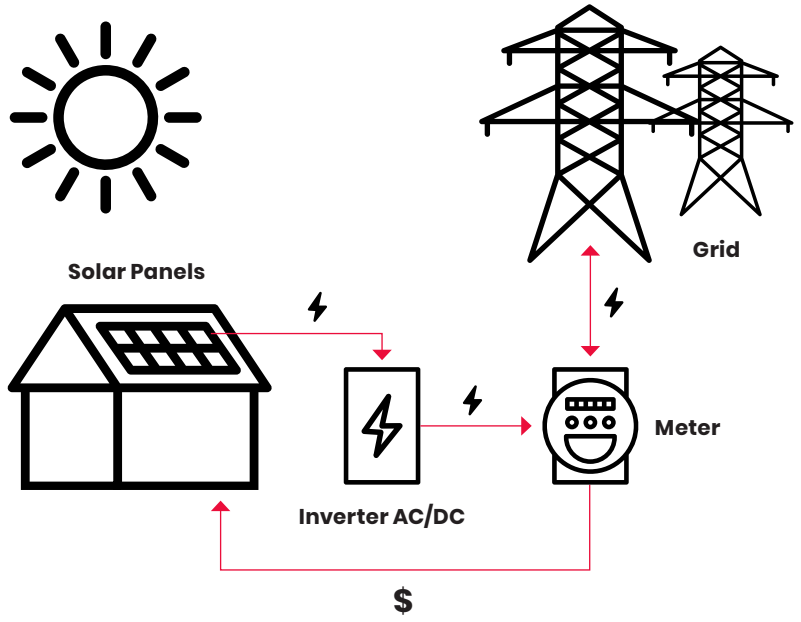
For alternatives to coal and oil fuel, IFIs continue to support biomass and bioenergy projects; however, there is limited and declining support for natural gas projects. In 2023, the ADB approved a US$121.5 million project to build five biomass power plants in India utilizing agricultural residue as feedstock.[34]

On the other hand, ADB has put in a policy stopping support for any natural gas exploration and drilling activities, although the bank continues to support downstream natural gas, such as for industrial energy applications, only if it is demonstrated that the projects displace more polluting fuels.[35] The World Bank has also stopped funding for upstream natural gas operations since 2019 and will only assess other gas projects on a case-by-case basis.[36]

Net Metering

Net metering is a billing mechanism in which electricity produced by renewable energy producers (e.g. owners of rooftop solar PV) is credited when it contributes to the grid. Electricity producers who are also consumers from the grid can be compensated by only being billed for their "net" electricity use, which is electricity use from the grid minus the electricity they generate. This lowers their electricity bill from the grid.

This mechanism results in electric utility expense savings for the owners and is one of the key incentives to invest in renewable energy installations.



Flow of Electricity

$ Flow of Billing

Manufacturers' Perspective

As sustainability regulations continue to gain prominence on the global stage, manufacturers are faced with the pressing need to adapt their practices to remain competitive and sustainable in the evolving marketplace. These global and local regulations are reshaping the landscape of industrial production.

However, as manufacturers endeavor to meet these standards, they encounter a host of internal and external challenges. From the complexities of decarbonizing their operations through infrastructure changes and equipment upgrades to the hurdles of accessing the resources necessary for sustainable transitions, manufacturers navigate a landscape full of obstacles. Transitioning to cleaner practices requires significant investment and innovation, and barriers often impede progress in this regard.

Delving into the perspectives of manufacturers on sustainability and their struggles to adapt, it is evident that addressing these challenges is key to the industry's long-term viability and competitiveness.

This section discusses the engagement opportunity and challenges of the manufacturers based on the DFI's consultations with industry experts and associations including the Tiruppur Exporters' Association (TEA), the Clothing Manufacturers Association of India (CMAI), the Confederation of Indian Industry (CII), and the Madras Chamber of Commerce (MCC).

The Opportunity

Amidst the challenges, there are opportunities for manufacturers: A small but increasing number recognize the financial and economic value of embracing renewable energy and energy-efficient practices. However, while there is a slow and steady growing awareness of the benefits of sustainability investments, manufacturers often require incentives to transition, substantial financial and transaction advisory support, and continuous persistent engagement to maintain and translate interest into action.

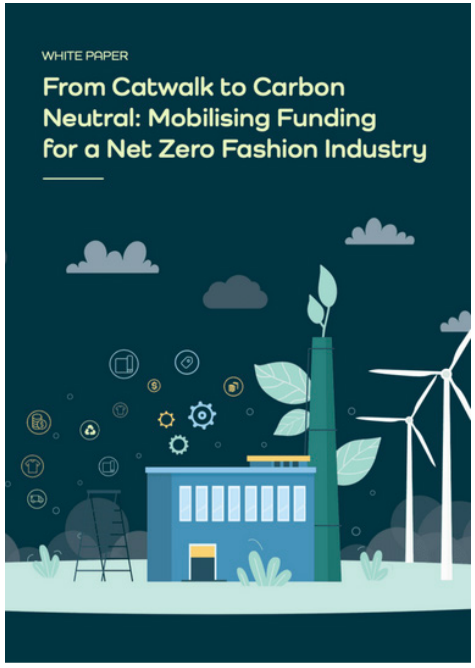
Discussions with industry stakeholders reveal a willingness to explore sustainable practices, yet the need for additional guidance and support is apparent. Bridging this gap between awareness and action is crucial for manufacturers to capitalize on the opportunities presented by sustainability initiatives and drive meaningful progress.

The Challenges

A report, *From Catwalk to Carbon Neutral*, commissioned by a number of South Asian manufacturers and supported by German development agency GIZ GmbH (Deutsche Gesellschaft für Internationale Zusammenarbeit) and other associations and partners, was recently published in March 2024.

The findings of this report for Indian manufacturers echo the insights presented by the GIZ report above in terms of pain points and the business and financing barriers faced by the manufacturers in decarbonizing their operations.[37]

Primary sector challenges include prioritizing short-term gains over long-term sustainability, limited financial capacity to cover investment costs, decreasing cost-competitiveness due to increasing operating costs, limited access to equitable financing and terms, limited awareness and familiarity with financing and financing processes, the need for continuous engagement and dialogue, the need for various types of support, and differences in state regulations and policies.



From Catwalk to Carbon Neutral (2024)

In order to move the decarbonization agenda forward, it is key to get the willing involvement of manufacturers to adopt sustainable practices and technologies. Overcoming these obstacles requires collaborative efforts across the entire value chain, particularly from the brands contracting the manufacturers, to foster a supportive environment conducive to sustainable practices and innovation.

Priority on Short-Term Gains

There is a prevalent focus on prioritizing survival and expansion over making sustainability investments. This is caused in part by manufacturers' uncertainty over their long-term business operations given typically short contracts (1-3 years) with their customers, the brands. The lack of visibility creates an aversion toward new and unfamiliar investments where the returns may be uncertain or could take a number of years. The unpredictability of their cash flows leads to concerns that they may find themselves unable to repay the loans in a timely manner, or at all, if their contracts are not renewed or extended.

Decreasing Cost-Competitiveness Due to Increasing Operational Costs

Adapting to the evolving regulations, which require greater due diligence and resource management, often leads to increased operational costs that are seldom passed on to the customers for fear of losing them to other competitors. Manufacturers in India are at a disadvantage versus those in other countries where regulations have yet to be enforced. Manufacturers located in other countries can offer products at equal or cheaper prices with lower cost of goods.

Though discussions are ongoing, India is still not a recipient of the EU's tax and quota exemptions and benefits for textiles. This places India behind its neighbors Bangladesh, Sri Lanka, and Pakistan, which benefit from favorable EU trade agreements and preferences.[39, 40, 41, 42, 43]

Limited Financial Capacity to Cover Investment Costs

While the few larger manufacturers may have robust balance sheets, most other manufacturers are smaller in size and do not have the financial capabilities and flexibility to cover the required upfront costs of new investments. Also, their financial standing makes it difficult for them to secure external funding for capital expenditures, especially for solutions that are not yet proven within the country and, as such, are perceived as high-risk by lenders.

In India, enterprises are classified into sizes based on their annual turnover or their investments in plant and machinery. Micro, small, and medium-sized enterprises have annual turnovers not exceeding approximately US$500,000, US$5 million, and US$30 million respectively. Business enterprises with total annual incomes above US$30 million are considered to be large.[38]

A recurring sentiment of manufacturers is that grant provisions or guarantees should be more commonplace to reduce the risks of investing in these new solutions. This is particularly true for larger and more costly investments like infrastructure, retrofitting, and machinery replacements.

Limited Access and Challenging Terms

While there are financing options available from multiple banks and lenders, they often have challenging terms for manufacturers including high interest rates, short payback periods, tight payment schedules, and strict collateral and guarantee requirements which limit the manufacturers' ability to access funding.

This is mostly due to the risk perception toward MSMEs and green investments, which have only grown in popularity in more recent years.

Limited Awareness and Familiarity with Financing and Financing Processes

There is a gap in awareness of green financing options among smaller manufacturers. This information asymmetry puts options out of reach. There is a tendency for lending institutions to favor larger, more established enterprises for their credibility. As such, they do not exert huge efforts to market their options to smaller MSMEs, which are in more need of their financing support.

Another major barrier is inadequate literacy and financial literacy, especially in rural areas where many manufacturers are situated. Many application processes are complicated and lengthy, adding further difficulty for applying manufacturers right from the onset. Strong hand-holding is necessary to guide them through navigating the forms and transaction processes to secure resources.

Variations in State-Level Policies

Despite strong commitments from the Indian government to achieve ambitious sustainability goals on a national scale, differences in state-level policies counteract efforts, hinder the achievement of targets, and further complicate the landscape for manufacturers and developers.

Variations are frequent in state financial schemes and tariffs, land acquisition policies, and energy policies related to open access, net metering, and power purchase agreements. These regulations are also constantly changing, effectively discouraging manufacturers, investors, and developers from adopting new solutions due to unpredictability and complexity.

Need for Continuous and Persistent Engagement and Proper Incentives

A widespread perception among manufacturers is that there is a lack of understanding between them and their customers, the brands. International regulations are applying pressure on brands to make their supply chains more green and sustainable. Brands then pass this pressure on to the manufacturers, with generally little to no support or incentive for adapting to the new requirements. Manufacturers often feel that they are unable to voice out their concerns to their customers and are left struggling to keep up with demands.

Persistent engagement between the manufacturers and their customers is vital in order to raise and maintain the support and willingness of manufacturers. Brands must also go beyond applying regulatory pressure and offer incentives to their supplying manufacturers such as longer-term contracts and higher prices to encourage their transition. These efforts and market signals will greatly reduce resistance and backlash from both sides and foster stronger partnerships.

Need for Customized and Varied Types and Levels of Support

There is no one-size-fits-all package of support that can be provided to cater to all manufacturers. Manufacturers have varying levels of maturity and capability. Solutions and approaches need to be tailored to match manufacturers' specific circumstances in terms of awareness, skill, infrastructure, and financial capacity in order for them to be effective.

Established manufacturers are well aware of developments in the industry, actively pursue interventions that can improve their operations, and therefore need minimal support. Less established manufacturers are somewhat informed but will need technical support on the solutions' details to encourage them to adopt new solutions. Smaller, more informal, and unestablished manufacturers are behind in all areas and need significant technical, infrastructure, advisory, and financial support to bring them to the state where they can adopt enhancements.

To attain tangible results, customized, yet parallel, approaches targeting all types of manufacturers need to be applied concurrently. Otherwise, targeting only one group will lead the industry to face considerable lags in driving positive impact.

Icons from FlatIcon.com. Full references in endnotes.

Available Solutions

In moving toward making the industry sustainable, innovative solutions that take into account the nuances of the textile and apparel industry, the local landscape, and the pain points of the manufacturers are needed.

Aii's ultimate overarching goal is to achieve a zero-carbon fashion industry. The working paper "Roadmap to Net Zero" published by the World Resources Institute and Aii in 2021 identified six interventions that can deliver the carbon reductions necessary to limit global warming to 1.5°C.

These interventions form the focus areas of Aii's solutions.[44] To drive impact in these areas, Aii deploys a number of programs such as its **Clean by Design Energy & Water Efficiency Program**, the **Fashion Climate Fund**, and the **Climate Solutions Portfolio**. In 2023, Aii offered programs in 31 regions worldwide, including India.[45]

AII KEY INTERVENTIONS FOR REDUCING EMISSIONS TOWARD 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 looks to scale the most cost-effective solutions based on the cost per ton of CO_2 reduction. Aii recognizes that in order to achieve the industry's goal of a 50% reduction in CO_2 by 2030, there is no single solution that will fit all of the industry's factories. Combinations of interventions spanning areas such as energy efficiency and renewable energy will be needed to decarbonize manufacturers effectively and efficiently.[46]

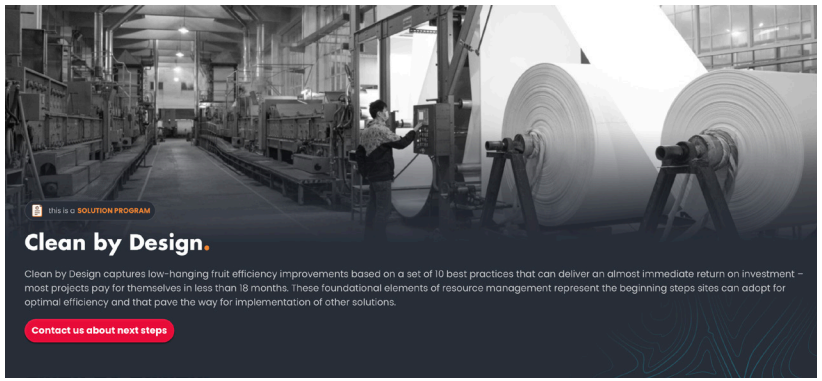
In line with some of the challenges faced by the industry, Aii launched the **Climate Solutions Portfolio** to address three key questions:

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

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

AII CLIMATE SOLUTIONS PORTFOLIO (CSP)

Aii's Climate Solutions Portfolio is a collection of vetted and proven climate programs, solutions, and funding opportunities for the apparel and textile industry. These solutions have been identified by Aii as having the potential to be high-impact and fit-for-purpose in reducing energy demand, energy losses, emissions, or waste. Each solution targets at least one tier in the supply chain. The online CSP platform details the solutions' outcomes through real-life case study applications, thereby informing and providing visibility to potential investors and customers.



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

Since 2023, Aii through its Climate Solutions Portfolio, has provided grant funding to support the development of a number of innovative solutions targeting energy efficiency, renewable energy, and sustainable materials and practices across various countries.

Each of the solutions has shown cost-effective and substantial environmental impact reduction potential. The goal is to develop these solutions from the concept and testing level to the scalable level where they are proven to be commercially viable and market-ready.

The table shows an overview of Aii's CSP grantees with implementation sites in India.[47]

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 *(opportunity to implement in India)*	7.78%	$6.01
Clean by Design Direct to Manufacture 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 Manufacture recruitment approach	Bangladesh *(opportunity to implement in India)*	12%	$0.46
Cleaner Production Systems Program	Energy Efficiency	Various measures to reduce GHG emissions in T2 and T3 materials processing facilities	India Bangladesh	8%	$0.76
Software Recommendation Engine	Energy Efficiency	Automated facility impact measurement software to detect and develop resource efficiency recommendations	India Bangladesh China Pakistan Sri Lanka Vietnam	11-21.43%	$0.52
Leaf Color Charts	Sustainable materials & practices	Management tool to reduce fertilizer use in cotton production	India	19%	$4.21

This table is not exhaustive, as beyond these, Aii also supports the deployment of other solutions and technologies that target Aii's six focus areas and ultimately reduce consumption, emissions, and waste. These include heat recovery from hot water and steam, pigment dyeing approaches, fault detection machinery, and others.

Moving forward, Aii is looking to continue expanding its roster of solutions to broaden its reach and impact across the textile and apparel value chain activities. In particular, it will increase its focus on low-carbon thermal energy and increased deployment of renewable electricity.

The Big Financing Challenge

In the transition to decarbonizing the textile and apparel sector in India, financing is needed to successfully implement the proposed solutions. These interventions hold the key to achieving the goal of a 50% reduction in greenhouse gas emissions by 2030. However, it is imperative to recognize that such transformative initiatives come with associated costs that must be accounted for to propel the sustainability agenda forward.

Following is a preliminary analysis of the financial requirements, aligning with a strategic decarbonization timeline that delineates the deployment of these solutions across facilities within specified timeframes. This approach not only underscores the urgency of the mission but also ensures a structured and transparent pathway toward achieving overarching sustainability objectives. This section of the report goes over the assumptions and computations, and provides a visual representation of the financing requirements ahead and the facility engagement timeline leading up to the 2030 target.

ASSUMPTIONS

In order to calculate the financial requirements for decarbonization in India's textile and apparel sector, a series of assumptions were employed to provide a structured framework for the analysis. The assumptions used are as follows:

1. There are 6,500 textile and apparel factories in India based on research and in-country discussions.

2. Energy audits are estimated at US$3,000 per audit based on discussions with government regulatory bodies and industry experts.

3. The average costs of energy efficiency and renewable energy interventions per facility are as follows based on Aii studies:[48]

   - 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)
   - Energy efficiency and renewable energy: US$1.5 M to US$6 M (ave. $3.75 M)

4. The average GHG emissions reduction of energy efficiency, renewable energy, and coal phaseout interventions per facility are as follows, based on the reduction potential of all global facilities that have completed a carbon target setting program at Aii from 2018 until June 2024.

   - Energy efficiency: 0.11% to 77.00% (ave. 9.00%)
   - Renewable energy: 0.02% to 75.17% (ave. 17.6%)
   - Coal phase out: 10.00% to 30.00% (ave. 20.00%)
   - Energy efficiency, renewable energy, and coal phase out: Average 46.6% (sum of averages)

5. The conversion rate of Aii's programming, going from one stage to the next, is 35%. This means that for every 100 action plans created, 35 facilities will carry on to the implementation and monitoring stage.

CALCULATIONS

STEP 1: Pareto Principle

Based on the Pareto Principle, if there are a total of 6,500 textile and apparel facilities in India which contribute to all industrial emissions, then 1,300 facilities (representing the top 20%) account for an estimated 80% of the sector's emissions. This is the key group to target.

Aii, in partnership with Cascale, has identified the top 1,000 Tier 2 GHG-emitting apparel manufacturing facilities globally which contribute an estimated 70% of all industry emissions. This report's calculations align with Aii's findings as a large portion of emissions can be traced back to only a number of facilities.

STEP 2: GHG Reduction from Deployment

If energy efficiency, renewable energy, and coal phase out interventions are deployed to all 1,300 facilities (which represent 80% of industry emissions), a 46.6% reduction in emissions for these facilities would result in a 37.3% reduction in total industry emissions.

STEP 3: Facilities to Deploy

The number of facilities that need to have interventions deployed to achieve the targeted 50% reduction in total emissions can be extrapolated from the previous step. If 1,300 engaged facilities contribute to a 37.3% reduction, a 50% reduction would require sustainability interventions at 1,743 facilities.

STEP 4: Facilities to Audit

To find how many facilities need to be audited to convert 1,743 facilities, the computations can be worked backwards with 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 4,980 facilities to be audited.

Steps		Calculation	Number of Factories	Emissions (%)
0		Baseline	6,500	100.0
1		Pareto principle (top 20% of factories = 80% of emissions)	1,300	80.0
2		GHG reduction (46.6% reduction per deployment)	1,300	37.7
3		To deploy	1,743	50.0
4		To Audit (35% conversion rate)	4,980	50.0

As the installment period of the decarbonization upgrades takes approximately one year, the industry would need to have converted all 1,743 facilities by 2029 to reach the 2030 decarbonization target. By the end of 2023, Aii had audited 40 facilities in India and deployed interventions at 22 facilities.

To reach 1,743 facilities, the industry needs to deploy interventions to an additional 1,721 facilities. Applying the 35% conversion rate for Aii's audit-to-deployment indicates that 4,918 facilities need to be audited to achieve a deployment to 1,721 facilities. Dividing this equally across a six-year period (2024-2029) gives a count of 820 facilities to be audited and, in turn, 287 facilities to deploy interventions to annually.

The annual facility count and intervention deployment cost will vary per facility based on factors including their location, current state, 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, approximately US$1 billion is needed per year to deploy such decarbonization upgrades. **Cumulatively, close to US$6.5 billion in financing is required to reach the 2030 target of 50% emissions reduction.**

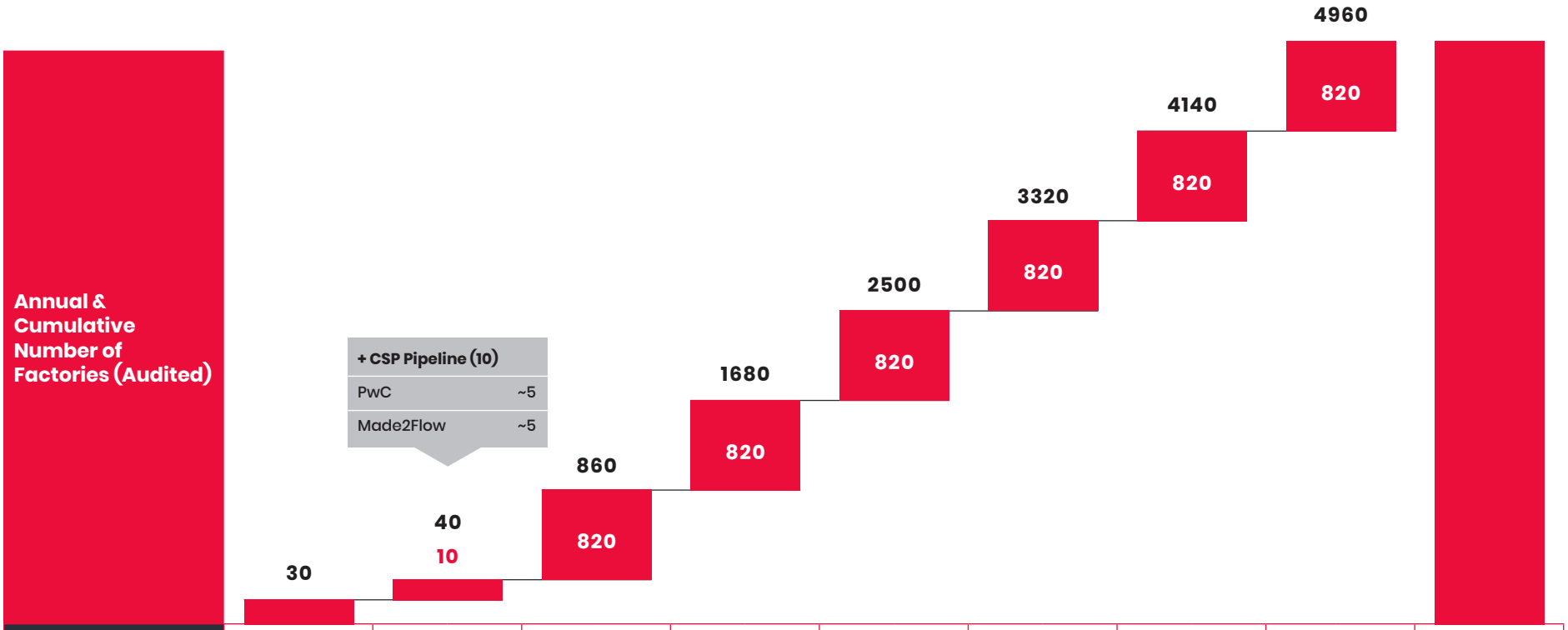
Aside from financing for capital expenditure, additional financing is also necessary to conduct audits for these facilities. Assuming a cost of US$3,000 per energy audit and 820 facilities to be audited per year, the cost of conducting energy audits equates to approximately US$2.46 million per year and US$14.8 million in total across the six-year period.

REACHING 50% GHG REDUCTION BY 2030

India Decarbonization Progression

Note: $15M for energy Audits ($3k/audits x 820 audits/year x 6 years)

4,960 factories audited by 2029; 1 year installation of decarbonization upgrades to reach target by 2030



Year	2022		2023		2024		2025		2026		2027		2028		2029		2030	
RE/EE Funding Req. per Year & Cumulative Funding Req. (US$M) (Deployed)	NA	$64	$19	$83	$1,076	$1,159	$1,076	$2,235	$1,076	$3,311	$1,076	$4,388	$1,076	$5,464	$1,076	$6,540	-	$6,540

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

Financing

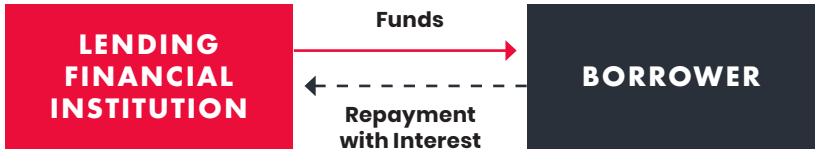
After calculating the significant financing needed to reach greenhouse gas emission reduction targets, it is crucial to explore the available avenues to overcome financial barriers and meet these financial requirements.

This section discusses the different types of financing instruments through the context of the textile and apparel sector. These can range from traditional loans to grants, subsidies, and guarantees. It analyzes the profiles of financiers involved in sustainable initiatives, including public and private entities. This chapter also outlines various available options and supporting interventions and mechanisms in place to effectively complement financing efforts.

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.



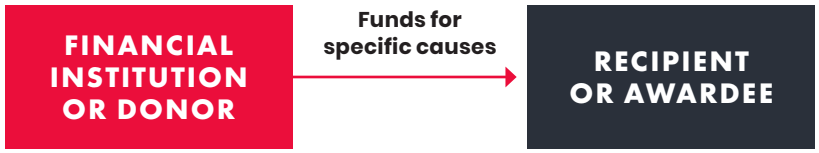
Equity

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, organizations, or foundations 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 sustainability projects or development initiatives.

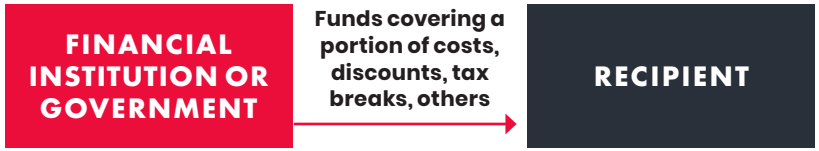
Organizations, including Aii, offer grants to solution providers to help develop and scale up innovative solutions and programs that have strong potential for decarbonizing the industry.



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 sustainable practices. Subsidies can take various forms, including direct payments, tax breaks, or reduced fees.

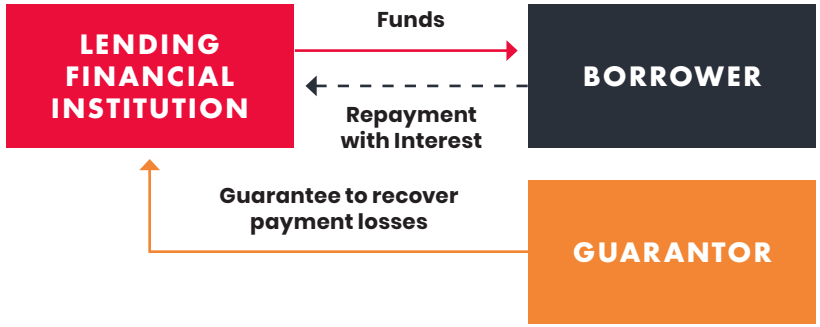
Indian government agencies offer subsidies eligible for manufacturers to reduce lenders' interest rates for energy efficiency upgrades and rooftop solar installation.



Guarantees

Guarantees are commitments made by third parties, such as governments or financial institutions, 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 and reduce their risk, making it easier for borrowers to obtain financing or negotiate better terms. Guarantees can enhance access to capital for businesses or projects that may otherwise face difficulties in securing financing.

In the World Bank project *Rooftop Solar Guarantee Facility for MSMEs*, the Credit Guarantee Fund Trust for MSEs (CGTMSE) will provide guarantees to the participating banks to back the solar loans that the banks are providing to MSMEs and energy developers.

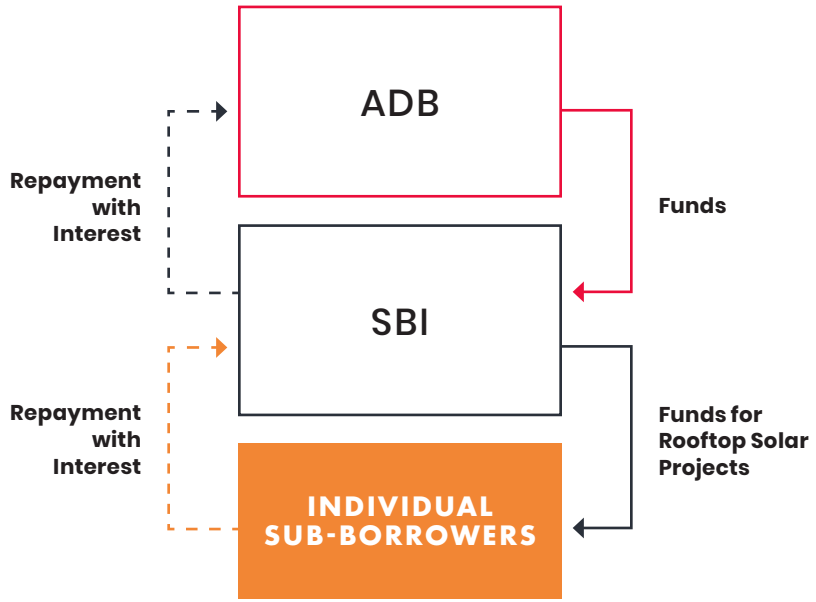


ASIAN DEVELOPMENT BANK SOLAR ROOFTOP INVESTMENT PROGRAM (TRANCHE 2)[49]

The ADB Solar Rooftop Investment Program is a **debt instrument** intended to finance standalone or aggregated solar rooftop systems on primarily commercial and industrial buildings across India. Smaller scale installations may also be funded if market maturity and uptake demand are there.

In this program, ADB is the originating financier providing the funding. The State Bank of India (SBI) is the local participating financial institution that received the funding from ADB as a borrower. SBI is disbursing the funds in smaller amounts to individual sub-borrowers looking to fund solar rooftop projects.

Upon reaching term, the sub-borrowers will repay SBI and SBI will repay the ADB at their respective and agreed upon lending interest rates (often internal and confidential)..



Profile of Financiers

There are numerous financial institutions offering various types of debt and non-debt financing to support sustainability. During the preparation of this report, DFI had thorough discussions with multiple financial institutions that provide decarbonization options for the Indian textile and apparel sector.

Ranging from public entities, such as government agencies, to private institutions like banks and financial organizations, these financiers offer a diverse array of products and services tailored to meet the sector's specific needs. The list below provides a look into some of the financiers in the country that were engaged; it is not exhaustive.

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.

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.

Small Industries Development Bank of India (SIDBI)

SIDBI is a public financial institution dedicated to fostering the growth of SMEs across India. Since 1990, SIDBI has provided various financial and developmental services to support the MSME ecosystem and promote economic development. The bank has rich experience with sustainability and has many active green projects.

State Bank of India (SBI)

SBI is India's largest public sector bank, providing a wide range of banking and financial services to individuals, businesses, and institutions. With history dating back to 1806, SBI has a vast network of branches domestically and internationally. The bank has strong sustainability goals and has multiple active green programs.

Tata Cleantech Capital Limited

Tata Cleantech is the first private sector green bank in India offering end-to-end financing solutions in the areas of renewable energy, energy efficiency, and clean technology. It was founded in 2011 under a joint venture of the International Finance Corporation (IFC) and Tata Capital of the Tata Group, India's largest conglomerate.

Bureau of Energy Efficiency (BEE)

The BEE is a governmental agency in India responsible for promoting energy efficiency and conservation across various sectors of the economy. Established in 2002 under the Ministry of Power, BEE develops policies, initiatives, schemes, and standards aimed at reducing energy consumption and GHG emissions.

Tamil Nadu Industrial Investment Corporation (TIIC):

TIIC is a state-owned financial institution in India, primarily focused on facilitating industrial development in Tamil Nadu. TIIC provides financial assistance, including direct term loans, working capital, subsidies, and infrastructure funding to promote entrepreneurship, economic growth, and sustainability in the state.

Facilitating MSMEs in Tamil Nadu (FaME TN)

FaME TN is a government department dedicated to facilitating the growth and development of MSMEs in the state. Through various initiatives such as skill development programs, financial assistance, and technology support, it aims to enhance the competitiveness and sustainability of MSMEs and promote trade, investments, and exports in the sector.

Available Financing

Relative to other countries, India has a host of local and international financing options available for all types of borrowers. Support from the national government is plentiful and targeted, with provisions based on industry, technology, enterprise size, and region. The table below presents a number of financing options that were mapped throughout the course of this report's preparation.

Generally, these green and MSME programs have similar objectives: increase installed capacity for renewable energy, increase the purchase of renewable electricity, reduce energy consumption, reduce GHG emissions, and increase availability of green funding in the country.

Programs with a focus on MSME support look to increase financing available to small enterprises, incentivize green investments, enhance competitiveness, and promote growth.

This list is not comprehensive, but seeks to provide a snapshot of the financial instruments in place. More detailed information on the individual programs can be found in Annex C.

Fund or Program	Funder	Est. Project Cost (US$ as of Dec. 2023)	Description
Grid-Connected Rooftop Solar Program[50]	World Bank	$115 M	Green credit line to finance grid-connected rooftop solar PV loans.
Rooftop Solar Financing Facility [51, 52]	Green Climate Fund	$60 M	Green credit line to finance the construction of 250 MW of rooftop solar capacity across commercial, industrial, and residential roofs.
Partial Risk Sharing Facility for Energy Efficiency Projects[53]	World Bank	$60 M	Financial facility providing backing to energy efficiency projects and loans to encourage investments.
Rooftop Solar Guarantee Facility for MSMEs[54]	World Bank and KfW	$377 M	Upcoming green credit line to finance rooftop solar PV in MSMEs through commercial financing with guarantees.
Interest Subvention Scheme[55]	Bureau of Energy Efficiency	$265 M	Government scheme under the ADEETIE program to provide grants to lending institutions to enable loans for EE investments at discounted lending rates.
Solar Rooftop Investment Program (Tranche 2)[56]	Asian Development Bank	$90.5 M	Green credit line to finance solar rooftop systems on residential, industrial, and commercial rooftops.
Credit Line for Solar PV Projects[57]	KfW	$76 M	Green credit line to finance loans to solar farms to expand solar infrastructure.
Green and Sustainable Finance Facility[58]	KfW	$150 M	Upcoming project providing financing to green initiatives with a focus on energy efficiency and electric mobility.

Fund or Program	Funder	Est. Project Cost (US$ as of Dec. 2023)	Description
Credit Guarantees for Green MSME Loans	CGTMSE & FaME TN	$12 M	Upcoming credit guarantee program to back MSME loans to activate further on-lending.
Scheme for Promotion of Energy Audit and Conservation of Energy (PEACE)[59]	FaME TN	TBD	Revolving scheme offering MSMEs subsidies via reimbursements for energy audits and energy efficient machinery & equipment upgrades.
SIDBI Term-Loan Assistance for Rooftop Solar PV Plants (STAR) Scheme[60]	SIDBI	$300+ M	Revolving scheme providing direct loans to MSMEs covering 100% of total project costs for rooftop solar PV.
End-to-End Energy Efficiency (4E) Scheme[61]	SIDBI	TBD	Revolving government scheme offering direct loans to MSMEs for energy efficiency investments and upgrades.
Solar Power Project Scheme[62]	TIIC	TBD	Revolving government scheme offering direct loans for various activities related to the establishment of solar PV power plants (rooftop or land, off-grid or grid-connected).
Equipment Finance Scheme[63]	TIIC	TBD	Revolving government scheme offering direct loans for plant and machinery upgrades.
Equipment Finance Scheme – Fast Track[64]	TIIC	TBD	Revolving government scheme offering direct loans with higher limits to well-established MSMEs for plant and machinery upgrades.

Interventions

Despite the variety of domestic and international financing options available to manufacturers, many still encounter challenges in accessing these resources due to several factors, including those described in the chapter *Manufacturer's Perspective*. Small manufacturers are particularly vulnerable to these obstacles.

To mitigate these barriers, various interventions have been introduced to complement existing initiatives and create a more enabling environment for manufacturer decarbonization. These interventions aim to streamline processes, enhance accessibility, and provide targeted support to borrowers.

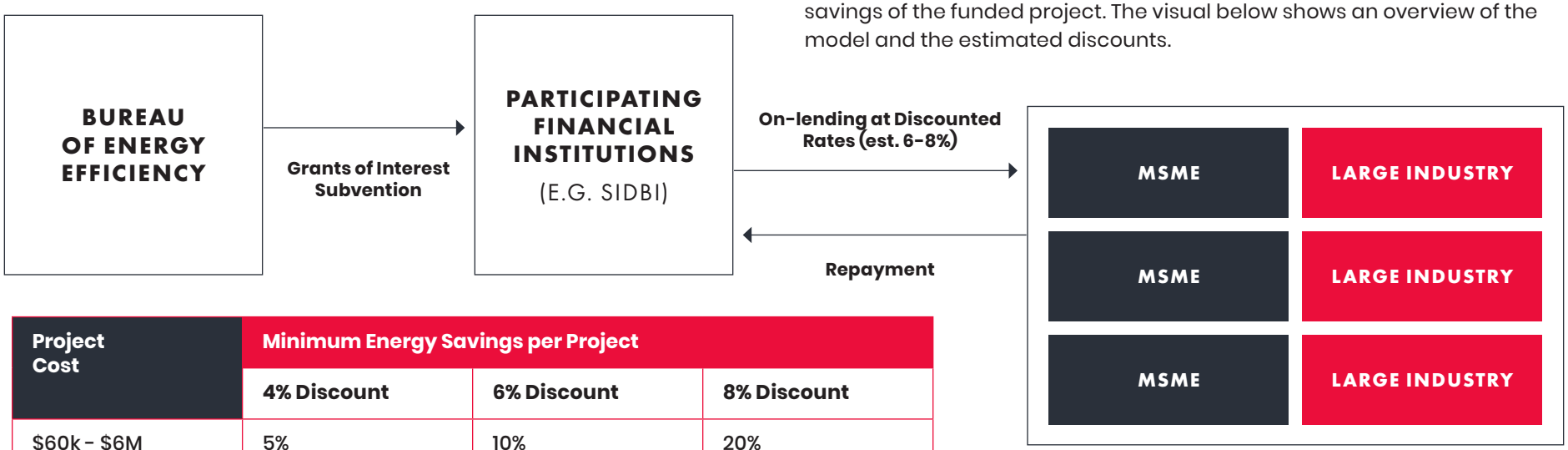
Some instruments work to improve accessibility by improving the financial terms. This means that they aim to lower the interest rate; lengthen the payback period; and reduce the requirements, such as collateral and guarantees that are typically necessary to apply for the loans.

Examples of these are risk sharing facilities and interest subvention schemes. A risk sharing facility is a loss-sharing arrangement between two organizations where one member provides a financial product, typically a loan, and the other member agrees to bear a portion of the investment risk. This means that in the event of a loss, the other member will pay for a portion of the losses accumulated.

This model is helpful as financial markets and institutions have traditionally been reluctant to invest in new areas, sectors, industries, and technologies such as solar or MSMEs. Through this, the lenders are typically able to ease their lending terms or expand their total lending amount as they have more flexibility given the reduced risk on their end.[65]

An interest subvention scheme is a program whereby grants are provided to partially subsidize the costs of a loan in order to reduce the interest rate of the loan. A lower interest rate makes a loan more attractive to borrowers, especially smaller borrowers with more limited cash flows.

According to discussions with the Bureau of Energy Efficiency (BEE), the Indian government has plans to soon launch an interest subvention scheme as part of its Assistance in Deploying Energy Efficient Technologies in Industries and Establishments (ADEETIE) program. Under this scheme, the BEE will provide grants to lending financial institutions that will then offer loans to MSMEs and industries for energy efficiency project loans at discounted rates. The discount is directly linked to the projected energy savings of the funded project. The visual below shows an overview of the model and the estimated discounts.



Project Cost	Minimum Energy Savings per Project		
	4% Discount	6% Discount	8% Discount
$60k - $6M	5%	10%	20%
$6M+	10%	15%	25%

BEE Interest Subvention Scheme (Development Finance International)

Another common support instrument is technical assistance. Technical assistance comes in various forms and offers multiple types of support. Most projects, such as the ones listed in the *Available Financing* table, include a component of technical assistance to aid in the success of the project.

Some technical assistance focuses on sharing knowledge to build awareness and understanding among lenders, borrowers, policy makers, and other key stakeholders. Some examples of this include the BEE's Facilitation Centre, Aii's Climate Solutions Portfolio, and the UK FCDO's SAMEEKSHA Platform.[66, 67] These platforms showcase innovative and fit-for-purpose solutions and their potential impact, providing manufacturers emission-reducing options.

Other technical assistance providers offer transaction advisory support aimed at increasing financing uptake through assisting borrowers throughout the loan application process. Moreover, there are also initiatives that train financial institutions to enhance their capabilities in assessing risk in MSMEs. The topic of technical assistance is further discussed in a subsequent chapter — *Adopting a Value Chain Approach*.

BUREAU OF ENERGY EFFICIENCY FACILITATION CENTRE[66]

The BEE Facilitation Centre is an online one-stop shop and information hub for energy efficiency financing in India. The platform contains comprehensive data on energy efficiency financing schemes, energy efficient technologies, participating financial institutions, accredited energy developers, and more. Through this, BEE aims to further activate financing for energy efficiency and raise awareness of existing financing and technological options.

Enhancing Solution Deployment

Recognizing the diverse, but ultimately insufficient, pool of available funding underscores the need for proactive measures to scale efforts. In this context, exploring alternative pathways becomes key. One promising avenue lies in collaborating with developers to magnify impact. By leveraging their resources and expertise, it is possible to extend the reach of initiatives, ease the burden of overcoming financial constraints, and drive meaningful change.

This chapter examines the role of energy developers, provides a look at the energy service industry in India, introduces the corporate aggregation model, and discusses some of the challenges and interventions in place for service providers.

For this report, DFI engaged with a handful of developers and consulted with the Bureau of Energy Efficiency to gather their perspectives.

Developers

Energy Service Companies, or ESCOs, are providers of energy services and solutions. They offer a range of services including energy audits, project design and construction, energy efficiency upgrades, operation and maintenance (O&M), monitoring and verification (M&V), power generation and supply.[68] Renewable Energy Companies, or RESCOs, function similarly to ESCOs, but with a focus on transitioning to renewable energy sources.

ESCOs and RESCOs operate by providing an energy savings guarantee to customers through improving energy efficiency, reducing consumption, and implementing renewable energy solutions. They identify areas with energy savings potential, design a custom solution, and then implement these measures.

The market for ESCOs and RESCOs in India has been steadily growing in recent years, driven by growing energy demands, increasing awareness of energy efficiency, and expanding government sustainability initiatives. A 2017 report by the Alliance for an Energy Efficient Economy (AEEE) estimates the market potential of India's energy efficiency market is between US$10 billion and US$35 billion.[69] During DFI's consultation with some developers, there was strong interest in tapping into financing options from IFIs for growth capital and expansion. This is a clear indication that there is a significant opportunity to finance this sector.

With rising energy costs and a growing focus on sustainability, the market is poised for further expansion, presenting significant opportunities for developers and clients to reduce energy consumption and contribute to environmental conservation.

The BEE leads in moderating this market as it oversees the implementation of all energy efficiency policies and programs. It accredits and grades ESCOs based on their history, capabilities, experience, risk, and adherence to quality standards and also moderates the market by setting guidelines, standards, and best practices to promote transparency and fair competition.

Through its empanelment process, BEE identifies and lists accredited ESCOs, providing a reliable resource for customers seeking energy efficiency solutions.

The BEE uses a set of 100-point weighted parameters to score and assess ESCO capabilities on a scale of Grade 1-5, with Grade 1 being the highest.[70]

Grading	Definition	Score
Grade 1	**Very High**	85-100
Grade 2	**High**	70-84
Grade 3	**Good**	55-69
Grade 4	**Average**	40-54
Grade 5	**Poor**	0-39

BEE currently has 135 registered ESCOs of different grade levels with accreditation valid through 2024 and 2025 (see Annex D).[71, 72] India's market for these energy companies is relatively mature, offering customers a wide selection of provider options.

On the side of RESCOs, they are similarly given ratings and accreditation under the National Ministry of New and Renewable Energy (MNRE). As part of its National Solar Mission, the MNRE provides support for renewable energy developers and users to enhance the commercial viability of solar projects through interest rate subsidies and financial assistance.[73, 74]

The MNRE requires renewable energy developers such as RESCOs to be graded by an MNRE-accredited rating agency to qualify for the ministry's support. Credit Rating Information Services of India Limited (CRISIL), Investment Information and Credit Rating Agency (ICRA), CareEdge Ratings (CARE), SME Rating Agency of India, Fitch India, and Brickwork Ratings are among the MNRE's registered rating agencies. These agencies use an analytical framework to assess and assign grades.

The framework measures two primary parameters: technical performance capability and financial strength. Specific grading criteria include track record, project management capability, customer quality, net worth, financial flexibility, and financier feedback. For each parameter, companies are graded on a scale of 1 to 5 for their technical strength, and A to E for their financial strength. The combined grade reflects the energy company's overall capabilities and capacity, with Grade 1A being the highest.[75]

The assigned grades are then converted and assigned a broader final category rating of A, B, C, and "*New Entrepreneur*", with A as the highest-ranking category.[76]

MNRE RESCO Grading Matrix		**Financial Strength**				
		Highest	**High**	**Moderate**	**Weak**	**Poor**
Technical Strength	**Highest**	SP 1A	SP 1B	SP 1C	SP 1D	SP 1E
	High	SP 2A	SP 2B	SP 2C	SP 2D	SP 2E
	Moderate	SP 3A	SP 3B	SP 3C	SP 3D	SP 3E
	Weak	SP 4A	SP 4B	SP 4C	SP 4D	SP 4E
	Poor	SP 5A	SP 5B	SP 5C	SP 5D	SP 15

The grades and corresponding categories serve to recommend the types and sizes of projects that the RESCOs are best suited to take on based on their overall capabilities.

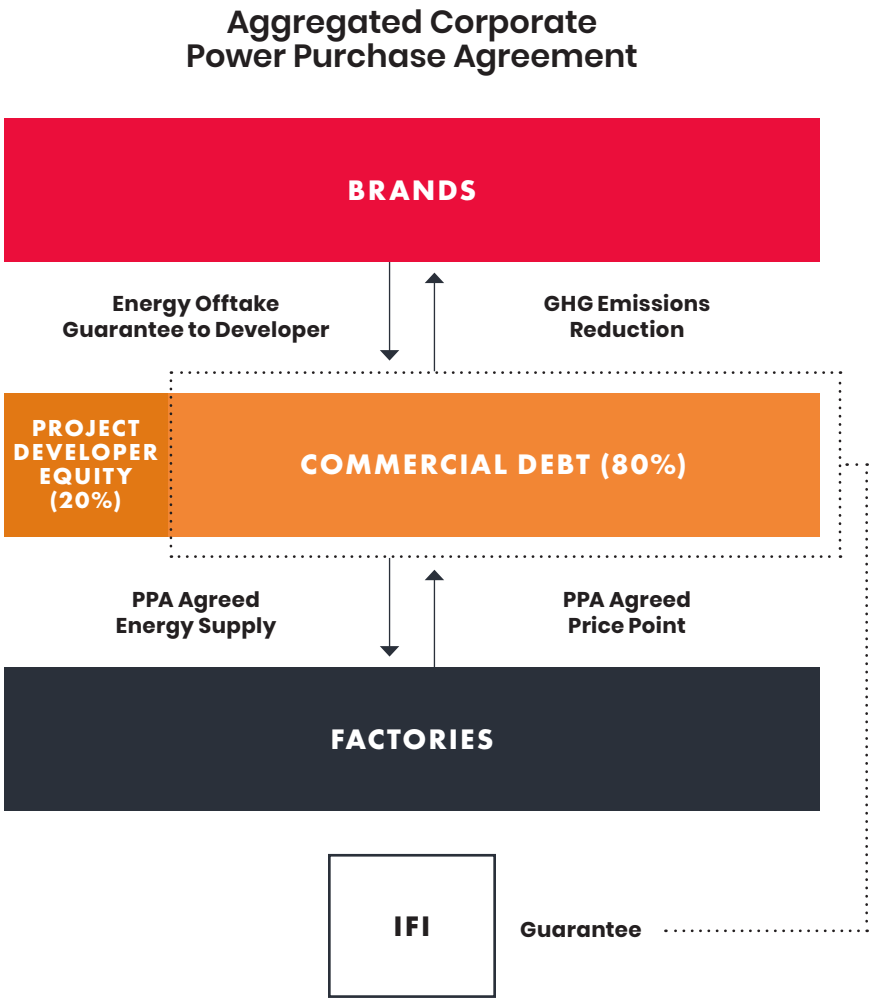
While RESCOs are not mandated to undergo grading and accreditation to operate, receiving an official grade and empanelment opens their access to MNRE resources and ensures their quality, credibility, competence, and reliability.

This system helps align the capabilities of RESCOs with the requirements of solar projects and gives potential customers, such as manufacturers, a reference to use when selecting their ideal provider.

There are many variations of models and agreements that customers can enter into with energy developers. The first model is the Operational Expense (OPEX) model wherein the developer covers the upfront costs and clients pay the developer based on realized energy savings — often with an agreed-upon timeline for asset transfer from developer to the customer. The second is the Capital Expenses (CAPEX) model, where customers make the upfront investment in efficiency upgrades and have ownership of the assets from the start.

Category	Ratings
A	1A, 1B, 1C, 2A, 2B, 2C
B	3A, 3B, 3C
C	1D, 1E, 2D, 2E, 3D, 3E, 4A, 4B, 4C, 4D, 5A, 5B, 5C
New Entrepreneur	4E, 5D, 5E

In some cases, it is not feasible or ideal to place new renewable energy installations on-site or near the manufacturing facility due to the facility's geographical location and existing infrastructure. For instance, facilities located in taller buildings typically have limited usable rooftop space and may be too small for the necessary installations. If the building is shared with other tenants, the manufacturers may not be able to use the rooftop space at all.



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

This is where innovative approaches, such as aggregating multiple facilities' energy demands through corporate power purchase agreements (CPPA), provide promising alternatives. In India, this approach has been used by Brookfield Renewable Partners, Nellai Renewables Private Limited, and Watsun Infrabuild Private Limited.[77, 78]

In this aggregated approach, brands enter into a long-term CPPA with a developer and provide an energy offtake guarantee ensuring the developer that the brands will continually purchase a set amount of renewable electricity from them to decarbonize their supply chains.

The developer develops the project through funding from a mix of mostly commercial debt and the developer's own resources. This shared financing structure ensures performance and due diligence from the developer as they are part-owners of the project.

Once set up, the developer provides a steady supply of renewable electricity to a cluster of factories supplying the brand. In return, the manufacturers pay for the energy at a previously agreed-upon price point.

Involving IFIs to provide guarantees that would partially cover potential losses can help reduce the lenders' risk.

This model spreads out risk allocation, limiting financial burden, and gives brands flexibility as they oversee the agreement - not the manufacturers. This means that individual manufacturers are not bound to the arrangement throughout the duration of the CPPA. If a manufacturer's contract with the brand expires, the agreement can be switched out with other manufacturers within the same region. This frees manufacturers from concerns about being in long-term payment agreements during which they might not always have stable incoming cash flows from their customers, the brands.

This report recommends exploring the possibility of applying this model to the textile apparel industry to leverage the country's concentration and clustering of manufacturers within regional belts.

Challenges and Barriers

According to the World Bank, the financing and institutional dimensions of energy efficiency have been the most difficult problems to overcome for customers in India.[79] While the introduction of energy developers has addressed these to some extent by providing alternative options to achieving energy impact, ESCOs and RESCOs themselves are faced with their own set of challenges. The 2017 AEEE report thoroughly discusses this in detail.

Similar to manufacturers, ESCOs and RESCOs also have difficulty accessing growth capital from lenders due to the risk perception associated with them despite their technical capacity and proven track record. The main concerns generally stem from lenders' overall lack of understanding of the business.

Discussions with industry players also uncovered a trend favoring large multinational companies as customers over smaller and local companies. RESCOs expressed concerns over local MSMEs' ability to follow-through with the implementation program and payment schedule.

From the lens of the apparel and textile industry, the process of being selected as a service provider is complicated. The sector has many nuances, such as highly differentiated textile production processes and energy consumption patterns. Understanding these complexities requires industry-specific knowledge and experience that newer or smaller energy companies might not have.[80, 81, 82] Altogether, these issues slow down the growth of the ESCO and RESCO industry in India.

Interventions

Over the years, efforts to resolve the concerns with financial access have shown significant results. IFIs have launched projects and instruments with the aim of de-risking energy efficiency for lenders to promote its uptake and, in turn, increase demand and financing for developers.[82]

The Partial Risk Sharing Facility launched by the World Bank in 2015 provides partial guarantees backing loans taken by ESCOs from commercial banks for energy efficiency projects. Since then, the project has added more financial institutions willing to offer loans to ESCOs, unlocking lending equivalent to four times the initial investment amount. This points to a positive shift in risk and viability perception of energy efficiency loans among financial institutions.

Other initiatives, such as technical assistance, focus on building capacity amongst banks and ESCOs to enhance banks' assessment abilities and ESCOs' creditworthiness to further reduce risk perceptions.

Adopting a Value Chain Approach

In addition to leveraging existing credit lines and collaborating with energy developers, engaging all stakeholders — from policy makers to lenders, developers, and manufacturers — is crucial for developing and enhancing the entire textile and apparel value chain.

This report takes a holistic look at the value chain as a series of interconnected systems rather than individual players. It is vital to foster coordinated and comprehensive efforts between brands, manufacturers, IFIs, governments, developers, and other stakeholders to maximize impact, foster innovation, and promote widespread adoption of sustainable practices throughout the value chain.

Using information provided by IFIs and the government, this report mapped a range of support mechanisms and strongly recommends tapping into these avenues to fortify the textile and apparel industry value chain. By strategically accessing these initiatives, stakeholders can access the necessary financial resources, technical expertise, and regulatory frameworks needed to accelerate the industry's transition.

This chapter goes into the components of the textile and apparel industry, presents the available types of enabling assistance, and discusses how these assistance opportunities can be tapped into.

This report recognizes the industry's landscape is deeply interconnected and for energy efficiency and renewable energy interventions to be implemented successfully, the environment must be conducive for the solutions. Beyond the availability of financial resources and solutions, other enabling factors — such as project preparatory support, transaction support, policy advisory, training and capacity building, and knowledge sharing — must be in place to ensure intervention effectiveness and sustainability.

A range of support activities are provided to communities, organizations, and individuals to help overcome specific challenges and achieve particular goals. These are designed to enhance capabilities, address knowledge gaps, and facilitate the successful implementation of projects and initiatives.

Assistance providers include IFIs, NGOs, regional development banks, consulting firms, and academic institutions. These entities offer expertise in various sectors and domains, providing tailored support to address specific needs and challenges and strengthen the value chain. Each type of assistance has a distinct set of goals and objectives.

Listed below are the different types of assistance, some activities that each type supports, and some examples of efforts in India.

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

Climate Policy Initiative

Example: Climate Policy Initiative, a global advisory organization specializing in climate finance, designed a US$100 million pilot model for a project known as *Rooftop Solar Private Sector Financing Facility* that aims to install 500 MW of rooftop solar. It also includes an innovative securitization mechanism to leverage 5x in debt and equity investments to reach US$500 million.[83]

TRANSACTION SUPPORT

Objective: Assist during financing, 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

Small Industries Development Bank of India (SIDBI)

Example: Complementing its financial products, SIDBI also offers transaction support to its borrowers, particularly MSMEs. In 2018, SIDBI launched the PSB59, a fully digital loan platform that matches loans with borrowers and enables simpler and more efficient loan processes with average loan application screening and approval in as fast as 26 minutes.[84, 85]

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, policy reform recommendations

Shakti Sustainable Energy Foundation

Example: In 2022, Shakti Sustainable Energy Foundation published a report on the feasibility and potential of solar applications for MSMEs. The report recommended the launch of a solar PV scheme for MSMEs and the conversion of state power subsidies into one-time capital subsidies.[86]

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

KFW

Example: German development bank KFW is contributing US$4 million to the World Bank project *Rooftop Solar Guarantee Facility for MSMEs* to build the capacity of financial institutions in screening solar loan applications by RESCOs and MSMEs to increase the number of loan approvals.[54]

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

UK Foreign, Commonwealth & Development Office (UK FCDO)

Example: UK FCDO created the *Industrial Decarbonization and Energy Efficiency Knowledge Sharing (iDEEKSHA)* Platform which lists 133 industry-specific decarbonizing technologies and solutions, their providers, and contact details.[87]

SUBSIDIES

Objective: Promote energy efficiency by encouraging energy audits and incentivizing the adoption of energy-efficient upgrades

Activities: Subsidies for energy audits, subsidies for machinery upgrades and retrofitting based on audit recommendations (via reimbursement)

Facilitating MSMEs in Tamil Nadu (FaME TN)

Example: State government agency FaME TN implements government programs such as the PEACE scheme which offers MSMEs subsidies for up to 75% of total energy audit costs (max. US$1,200) and up to 50% of investment costs (max. US$12,000) for energy-efficient machinery upgrades.[88]

PROJECT EXAMPLE:

World Bank Rooftop Solar Guarantee Facility for MSMEs

To demonstrate how support for enabling factors in the value chain can be integrated into IFI financial schemes, DFI created a conceptual framework using the pipelined World Bank *Rooftop Solar Guarantee Facility for MSMEs* which is expected to be approved in 2024.

The US$628 million project aims to increase the installed capacity of grid-connected rooftop solar in the MSME sector by 820 MW. It includes a guarantee covering 50% of the loan amount to help mitigate creditworthiness risks and facilitate MSME access to $US503 million in commercial financing for rooftop solar projects.

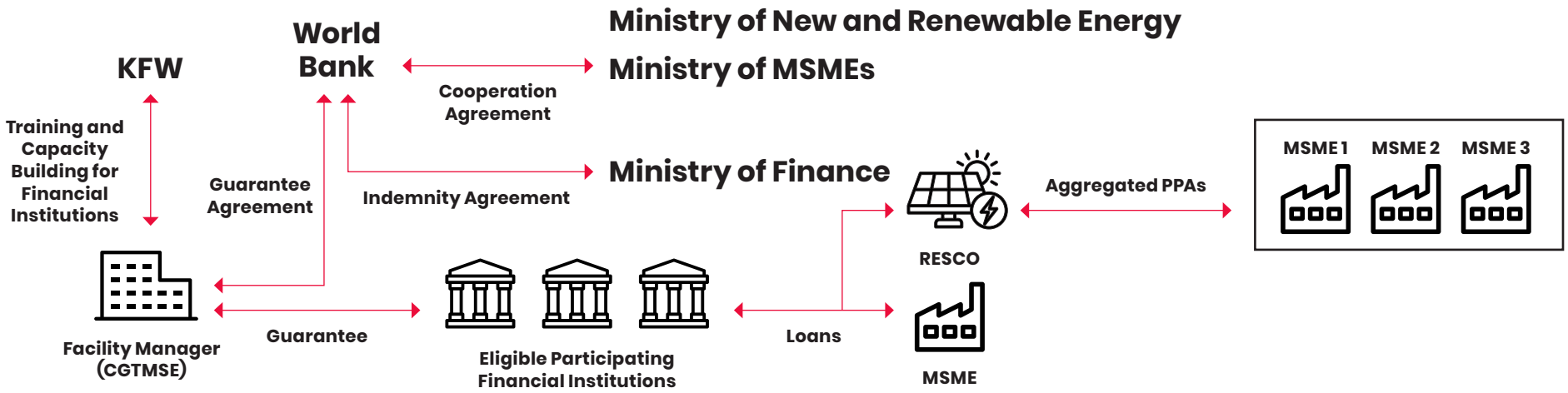
As mentioned, the project includes a US$4 million training component funded by KfW. This training aims to guide and build the capacity of participating financial institutions so they may adapt their screening processes and financing applications to better serve RESCOs and MSMEs.

Additionally, KfW is also providing US$21 million in a second-loss tranche investment to further improve project viability.

This report explores the possibility of engaging the UK FCDO and central and state agencies, like BEE and FaME TN, to further complement the project with ongoing assistance efforts. The UK FCDO can provide policy advisory to the national ministries to help shape more accommodating policy frameworks for MSMEs and renewable energy. BEE and FaME TN can offer MSMEs transaction support and capacity building to enhance their access to financing and their ability to effectively implement and manage their solar projects.

The diagram below is a visual representation of the World Bank project schematics.

World Bank - Rooftop Solar Guarantee Facitlity for MSMEs



Need for Information Sharing and Matchmaking Platform

In the pursuit of textile and apparel industry decarbonization, a notable challenge is the information gap among stakeholders involved in various activities within the sector. Manufacturers often lack awareness of available technologies and financing mechanisms that could facilitate their transition to more sustainable practices. This knowledge gap inhibits their ability to make informed decisions regarding the adoption of energy-efficient machinery and renewable energy solutions.

The lack of standardization across financial institutions' requirements for accessing loans also adds another layer of complexity. Varied criteria and procedures across banks can create confusion and deter businesses from pursuing decarbonization initiatives. Additionally, there may be a disconnect between lenders and borrowers, resulting in challenging terms and conditions that impede the uptake of subsidies and financing options for green projects.

This report recommends exploring matchmaking platforms tailored to the needs of the textile and apparel sector. These platforms can serve as intermediaries, bridging the gap between stakeholders by providing access to relevant data, funding opportunities, and networks. By facilitating communication and collaboration among manufacturers, financial institutions, and energy service providers, these platforms can accelerate the adoption of energy-efficient and renewable energy solutions, thereby contributing to the textile and apparel industry's decarbonization.

Call to Action

This report acknowledges the strong efforts that the various stakeholders across the textile and apparel industry value chain are exerting to promote the transition to sustainability. Implementing sustainable practices and embracing innovative technologies is a pivotal step toward mitigating the industry's carbon footprint, and the continuation of these concerted efforts to drive further progress in the decarbonization agenda is encouraged.

With a **US$6.5 billion financing requirement** to achieve a 50% reduction in emissions and a **US$4 billion financing gap**, engaging with IFIs offers a critical pathway to access funds, expertise, and networks necessary for large-scale change. Manufacturers, grappling with financial constraints and limited access to technology, require collaborative approaches to surmount these challenges.

In tandem, collaborating with energy developers provides an alternative avenue, enabling manufacturers to overcome barriers like upfront costs and technical complexities. By forging partnerships with energy developers and pooling demand among regional manufacturers, the industry can expedite the adoption of renewable energy and energy efficiency measures.

Moreover, harnessing available assistance is pivotal, offering tailored guidance and capacity-building initiatives to empower stakeholders throughout the value chain. By consolidating assistance efforts, synergistic programs can be created, amplifying impact and efficacy in advancing decarbonization.

This report presents a series of calls to action to translate these insights into tangible strategies and initiatives that create meaningful progress toward decarbonizing the textile and apparel industry.

Beyond these, this report recommends expanding the research to encompass other states in India where there is high concentration of textile and apparel manufacturing facilities, such as Gujarat and Maharashtra. Given the focus of this report on Tamil Nadu, a deeper analysis of additional regions will provide a more comprehensive examination of the country's industry and offer valuable insights into the sector's dynamics across the nation.

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

Within the landscape of decarbonization, there is an overwhelming amount of information being exchanged and transactions being processed between stakeholders.

This report calls for organizations to step into the role of matchmakers and clearinghouses, connecting stakeholders with the data, opportunities, and networks pertinent to them, and moderating transactions to ensure all parties are fulfilling their commitments and agreements.

Events such as FaME TN's International MSME Day, which features activities such as a seminars and networking sessions that connect manufacturers with private entities to foster an exchange of knowledge for potential procurement contracts, and Aii's upcoming regional events will serve as convening platforms for various stakeholders and enable a cross-value chain information exchange.[88]

2. Enable the Textile and Apparel Value Chain

Launching effective and impactful decarbonization efforts on a large scale requires several enabling factors such as standardized policies and regulations promoting decarbonization (e.g., net-metering, open access, sustainability reporting, emissions reduction) and sufficient technical capacity (e.g., quality and availability of energy auditors).

Greening the industry goes beyond financing access and innovative solutions; it also requires participation from all stakeholders. This report calls for comprehensive and aligned efforts across the value chain to create positive and systematic changes to the landscape and enable the successful implementation of initiatives.

Aii actively works to enable and enhance the industry value chain through its work on the Climate Solutions Portfolio which increases access to viable and vetted solutions for decarbonization. Aii also collaborates with organizations such as BluWin that offer technical support to, and advocate for, manufacturers across South Asia.

3. Shift Risk Perceptions

A number of barriers can be attributed to the perceived risks associated with climate solution and MSME investments. All stakeholders can benefit from shifting their perspectives through an Educate-Adapt-Invest strategy. Data registries showcasing the financial returns of investments in green technology, energy efficiency, and MSMEs are abundant and easy to access.

This report calls for stakeholders to take initiative and inform themselves of these real-life cases, adapt their perceptions and processes, and invest in these areas with reasonable terms for borrowers. Stakeholders can also improve risk perceptions by contributing to the available resources documenting the success of green investments.

Aii is developing a number of papers that serve to inform stakeholders and shift perceptions toward investing in sustainability. Examples of this include this report and their Brand Finance Playbook.

4. Actively Involve the Manufacturers

Manufacturers are the cornerstone of the textile and apparel industry. With changing demands and regulations, they are disproportionately bearing the burden of growing pressures to transition to sustainable practices.

This report calls for brands to increase their involvement and support for their manufacturers through price incentives, investment grants, regular and active two-way communication, longer contracts, and improved order pipeline visibility. If not offering financial assistance, alternative forms of support may be provided to ease the transition.

In China, some of Aii's affiliated brands support their contracted manufacturers by linking them with reputable solar developers that can provide their facilities with solar installations. Due to the brands' existing relationships, these may be available at lower rates compared to commercial market rates.

5. Tap into Existing Financing and Technical Assistance Opportunities

While insufficient, the resources and initiatives currently offered should be utilized to signal relevance and interest to lenders, create case studies for future reference, and kickstart momentum in climate leadership.

This report encourages MSMEs and energy developers, with the appropriate support, to take the step and invest in sustainability even through partial and gradual changes.

Aii actively and continually looks for attractive, accessible financing options that manufacturing facilities are eligible for. Facilities are encouraged to contact Aii to receive support in accessing these financing options.

Beyond this, Aii, in partnership with local organizations and government agencies, is developing a pilot program in Tamil Nadu to demonstrate the viability of supporting decarbonization in 50-100 textile and apparel MSMEs through a cluster-based approach. The program will offer manufacturing facilities financial support through existing government subsidies and capacity-building through knowledge sharing.

6. Increase Accessible Funding and Resources for Decarbonization

As discussed in the Financing chapter of this report, while there are a number of supplementary resources and financing options from various public and private financiers, there are simply not enough accessible resources available to support decarbonization initiatives.

This report calls on all funders — public, private, and philanthropic — to further increase their climate funding and disbursements to local financial institutions; explore alternative instruments and approaches, such as concessional and blended financing; and collaborate with other organizations to make the financing landscape more accessible and affordable to smaller borrowers and manufacturers.

Aii's Sustainable Finance Working Group takes a leading role in engaging with various funders and financial institutions and bringing the issue of insufficient funding to the forefront. Part of their upcoming work involves creating a database of financing options to increase awareness and developing new blended capital funding instruments that can steer more funding into the green space.

Blended Finance encourages risk-taking at manageable levels, promoting investment and financing without disrupting market operations. Philanthropies are called upon to finance junior loans or tranches as they are best positioned to absorb the highest risks in a blended fund. By structuring the fund with varying levels of risk exposure, other participants are incentivized to join and select positions that match their risk tolerance.

Annex

Acronyms & Abbreviations

&	And
~	Estimated
ADB	Asian Development Bank
ADEETIE	Assistance in Deploying Energy Efficiency Technologies in Industries and Establishments
AEEE	Alliance for an Energy Efficient Economy
Aii	Apparel Impact Institute
Ave.	Average
B	Billion
BEE	Bureau of Energy Efficiency
BRSR	Business Responsibility and Sustainability Reporting
C	Celsius
CAPEX	Capital Expenditure
CBAM	Carbon Border Adjustment Mechanism
CGTMSE	Credit Guarantee Fund Trust for Micro and Small Enterprises
CO_2	Carbon Dioxide
CPI	Climate Policy Initiative
CSP	Climate Solutions Portfolio
DFI	Development Finance International
E.g.	Example Given
EE	Energy Efficiency
ESCO	Energy Service Company
Est.	Estimated
EU	European Union
FaME TN	Facilitating MSMEs in Tamil Nadu
FCDO	Foreign, Commonwealth & Development Office
FI	Financial Institution
GCF	Green Climate Fund
GHG	Greenhouse Gas
GHGe	Greenhouse Gas Emissions
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit, a German Development Agency
ICT	Information and Communication Technology
IFC	International Finance Corporation
IFI	International Financial Institutions
k	Thousand
kW	Kilowatt
KFW	A German Development Bank
M	Million
M&V	Monitoring and Evaluation
MSME	Micro-, Small-, and Medium-sized Enterprises
MW	Megawatt
NDC	Nationally Determined Contribution
NGO	Non-Governmental Organization
No.	Number
O&M	Operations and Maintenance
OPEX	Operational Expenditure
PPA	Power Purchase Agreement
PV	Photovoltaic
CPPA	Corporate Power Purchase Agreement
RE	Renewable Energy
RESCO	Renewable Energy Service Company
RPO	Renewable Purchase Obligations
SBI	State Bank of India
SIDBI	Small Industries Development Bank of India
TA	Technical Assistance
TBD	To Be Determined
TIIC	Tamil Nadu Industrial Investment Corporation
UK	United Kingdom
US$	US Dollar
USAID	United States Agency for International Development
WB	World Bank
X	Times (Multiplier)

Glossary

Technology and Upgradation Support (TEQUP) Scheme
One of India's many schemes supporting MSMEs with a focus on encouraging the adoption of energy-efficient technologies to enhance productivity and reduce costs and emissions. MSMEs will receive bank loans and supplementary government subsidies covering up to 25% of project costs for investments in energy-efficient machinery and equipment.

Perform, Achieve, and Trade (PAT) Scheme
A mechanism for energy-intensive industries that promotes energy efficiency and an overall reduction of energy consumption. Industries are given three-year energy reduction targets. Industries that exceed targets are provided energy-saving certificates which can be traded or sold to industries that fail to reach their set targets. Industries that fail to meet targets are charged with financial penalties.

Production-Linked Incentives (PLI) Scheme
India's solar module manufacturing incentive program aimed at enhancing domestic manufacturing capabilities of high-efficiency solar PV modules to reduce imports and increase self-reliance. Solar PV module manufacturers are assessed, selected, and awarded financial grants in amounts correlated to their manufacturing capacity, production process stages, module efficiency, and sales.

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 lead to large, disproportionate 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.

Operational Expenditure (OPEX) Model
This model allows customers to pay for energy services over time instead of making a big upfront investment. Developers cover the initial costs for equipment and installation and customers gradually repay based on energy savings or set monthly fees. It can be thought of as renting energy efficiency with the developer owning the assets. This model makes it more accessible for businesses to upgrade their energy systems without upfront expenses.

Capital Expenditure (CAPEX) Model
This model involves customers making an upfront investment in energy projects. Customers make a one-time payment for the entire project, and the developer provides their expertise and construction services. Developers can be contracted for the O&M of the installation. 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.

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.

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.

Profiles of International Financial Institutions (IFIs)

The World Bank

The World Bank (WB) is a global multilateral development bank and part of the World Bank Group. It provides loans and grants to governments of low- and middle-income countries for projects aimed at reducing poverty and promoting sustainable development. The World Bank also offers technical assistance and policy advice to support economic growth and poverty reduction efforts.

Asian Development Bank

The Asian Development Bank (ADB) is a regional development bank dedicated to fostering inclusive and environmentally sustainable economic growth and cooperation in Asia and the Pacific. It provides financial assistance, technical expertise, and policy advice to its member countries to support infrastructure development, poverty reduction, and sustainable development initiatives.

United Kingdom Foreign, Commonwealth, & Development Office

The UK Foreign, Commonwealth, and Development Office (FCDO) is a bilateral aid agency and the government department responsible for promoting the United Kingdom's interests overseas and supporting international development efforts. It oversees the country's diplomatic relations, manages foreign aid programs, and works to advance global security, prosperity, and sustainable development goals through diplomatic missions and partnerships, foreign policy, and humanitarian assistance.

Details on Financing Opportunities

Credit Line or Fund	Grid-Connected Rooftop Solar Program	Estimated Project Cost	US$115 Million
Funder or Manager	World Bank and State Bank of India	**Other Details**	• Est. Interest Rate: ≥11% (based on prevailing market rate, project risk profile, and other factors) • Tenor: 6 months - 5 years • Timeline: Closing 2024 • Models: RESCO and CAPEX • Ticket Size: No limit • Loan/Equity Ratio: 70/30 - 80/20 • Minimum Capacity: - Aggregated RESCO: 1 MW - Individual RESCO: 100 kW - CAPEX: No limits
PFI(s)	State Bank of India		
Status	Active		
Description	Green credit line to finance grid-connected rooftop solar PV loans.		

Credit Line or Fund	Rooftop Solar Financing Facility	Estimated Project Cost	US$60 Million
Funder or Manager	Green Climate Fund and Tata Cleantech Capital Limited	**Other Details**	• Est. Interest Rate: 12-14% (based on prevailing market rate, project risk profile, and other factors) • Grace Period: 9-12 months • Ticket Size: $500,000 and up • Generally prefers larger ticket sizes for projects • Additional flexible financing available from Tata Capital at market rates
PFI(s)	Tata Cleantech Capital Limited		
Status	Active		
Description	Green credit line to finance the construction of 250 MW of rooftop solar capacity across commercial, industrial, and residential roofs.		

Credit Line or Fund	Partial Risk-Sharing Facility for Energy Efficiency Projects	Estimated Project Cost	US$60 Million
Funder or Manager	World Bank	**Other Details**	• Modality: Guarantees to PFIs on-lending to ESCOs • Portfolio: $122M • Ticket Size: - Max $3.6M per project - Max $10.8M per ESCO • Guarantee Coverage: Up to 75% of ESCO loan amount • Annual Guarantee Fee: 0.5-1% of ESCO loan amount • Additional support through due diligence in screening
PFI(s)	14 participating financial institutions *(see Annex C.1)*		
Status	Active		
Description	Financial facility providing backing to energy efficiency projects and loans to encourage investments.		

Credit Line or Fund	Rooftop Solar Guarantee Facility for MSMEs	Estimated Project Cost	US$377 Million
Funder or Manager	World Bank and KfW	**Other Details**	• Expected approval in 2024 • Est. Interest Rate: 11-14% (based on prevailing market rate, project risk profile, and other factors) • Tenor: Up to 10 years • Guarantee: 50% from CGTMSE • Second-loss tranche: $21M from KfW • TA: $4M from KfW • Ticket size: $6,000 - $600,000 but can do $1M as needed • Eligibility: RESCOs and MSMEs • Other details to be determined with PFIs once approved
PFI(s)	Guarantees: CGTMSE Loans: TBD		
Status	Pipeline		
Description	Green credit line to finance rooftop solar PV in MSMEs through commercial financing with guarantees.		

Credit Line or Fund	Interest Subvention Scheme	Estimated Project Cost	US$265 Million
Funder or Manager	Bureau of Energy Efficiency	**Other Details**	• Expansion of pilot run in 2023 which disbursed $100M • Expected approval following 2024 National Elections • Est. Interest Rate: 6-8%, dependent on EE reduction (based on prevailing market rate, project risk profile, and other factors) • Modality: Direct loans from PFIs with subsidies from BEE to reduce interest rate up to 8%
PFI(s)	27 participating financial institutions *(see Annex C.2)*		
Status	Pipeline		
Description	Government scheme under the ADEETIE program to provide grants to lending institutions to enable loans for EE investments at discounted lending rates.		

Credit Line or Fund	Solar Rooftop Investment Program (Tranche 2)	Estimated Project Cost	US$390.5 Million
Funder or Manager	ADB and SBI	**Other Details**	• Expected approval in 2024 • Timeline: 2024 - 2028 • Other details to be determined with SBI as discussions are currently ongoing
PFI(s)	SBI		
Status	Pipeline		
Description	Green credit line to finance solar rooftop systems on residential, industrial, and commercial rooftops.		

Credit Line or Fund	Credit Line for Solar PV Projects	Estimated Project Cost	US$76 Million
Funder or Manager	KfW and SBI	**Other Details**	• Agreement signed on December 14, 2023 • Est. Timeline: 2024 • Other details to be determined
PFI(s)	TBD		
Status	Pipeline		
Description	Green credit line to finance loans to solar farms to expand solar infrastructure.		

Credit Line or Fund	Green and Sustainable Finance Facility	Estimated Project Cost	US$150 Million
Funder or Manager	KfW and SIBDI	**Other Details**	• Agreement signed on December 9, 2023 • Est. Timeline: 2024 • Other details to be determined
PFI(s)	TBD		
Status	Pipeline		
Description	Project providing financing to green initiatives with a focus on electric mobility and MSME investments in energy efficiency.		

Credit Line or Fund	Credit Guarantees for Green MSME Loans	Estimated Project Cost	US$12 Million
Funder or Manager	CGTMSE and FaME TN	**Other Details**	• Estimated to catalyze 3x in on-lending from PFIs • Guarantee Coverage: - Up to 90% for loans less than $50,000 - Up to 50% for loans greater than $50,000 • Other details to be determined
PFI(s)	TBD		
Status	Pipeline		
Description	Upcoming credit guarantee program to back MSME loans to activate further on-lending.		

Credit Line or Fund	Scheme for Promotion of Energy Audit and Conservation of Energy (PEACE)	Estimated Project Cost	US$300+ Million
Funder or Manager	FaME TN	**Other Details**	• Modality: Reimbursement • Eligibility: MSMEs with completed energy audits and 15% energy savings achieved • Subsidy Coverage: - Up to 75% of energy audit cost (max $1,200) - Up to 50% of machinery upgrade cost (max $12,000) • Scheme has the potential to expand to include solar, wind, water, and waste-generated energy (covering audits and auditor training)
PFI(s)	FaME TN		
Status	Active		
Description	Revolving scheme offering subsidies to MSMEs for energy audits and energy-efficient machinery & equipment upgrades.		

Credit Line or Fund	SIDBI Term-Loan Assistance for Rooftop Solar PV Plants (STAR) Scheme	Estimated Project Cost	US$300+ Million
Funder or Manager	SIDBI	**Other Details**	• Est. Interest Rate: 7-8.5% (based on prevailing market rate, project risk profile, and other factors) • Tenor: 5 years • Grace Period: 6-12 months • Modality: Direct loans • Ticket Size: $12,000 - $420,000 • Capacity: 25 kW - 1 MW • Eligibility: - > 3 years of operations - Profitable operations - Onsite project
PFI(s)	SIDBI		
Status	Active		
Description	Revolving scheme providing direct loans to MSMEs covering 100% of total project costs for rooftop solar PV.		

Credit Line or Fund	End-to-End Energy Efficiency (4E) Scheme	Estimated Project Cost	TBD
Funder or Manager	SIDBI	**Other Details**	• Est. Interest Rate: 10-12% (based on prevailing market rate, project risk profile, and other factors) • Tenor: 3-5 years • Grace Period: 6-12 months • Modality: Direct loans • Ticket Size: $12,000 - $600,000 • Loan Coverage: Up to 100% of project costs • Additional Support of up to 70% reimbursement of energy audit costs and guarantees through a risk-sharing facility • Eligibility: - > 1 year of operations - No history of default
PFI(s)	SIDBI		
Status	Active		
Description	Revolving government scheme offering direct loans to MSMEs for energy efficiency investments and upgrades.		

Credit Line or Fund	Solar Power Project Scheme	Estimated Project Cost	TBD
Funder or Manager	TIIC	**Other Details**	• Est. Interest Rate: 11-14% (based on prevailing market rate, project risk profile, and other factors) • Tenor: Up to 9 years • Grace Period: Up to 1 year • Modality: Direct loan • Ticket Size: Flexible • Loan/Equity Ratio: 65/35 up to 75/25 • Collateral: 35-50%
PFI(s)	TIIC		
Status	Active		
Description	Revolving government scheme offering direct loans for various activities related to the establishment of solar PV power plants (rooftop or land, off-grid or grid-connected).		

Credit Line or Fund	Equipment Finance Scheme	Estimated Project Cost	TBD
Funder or Manager	TIIC	**Other Details**	• Est. Interest Rate: 11-14% (based on prevailing market rate, project risk profile, and other factors) • Tenor: 3-5 years • Grace Period: 3-6 months • Modality: Direct loan • Ticket Size: $6,000 - $1.2M • Loan/Equity Ratio: up to 85/15 • Collateral: 25% of loan
PFI(s)	TIIC		
Status	Active		
Description	Revolving government scheme offering direct loans for plant and machinery upgrades.		

Credit Line or Fund	Equipment Finance Scheme – Fast Track	Estimated Project Cost	TBD
Funder or Manager	TIIC	**Other Details**	• Est. Interest Rate: 11-14% (based on prevailing market rate, project risk profile, and other factors) • Tenor: 3-5 years • Grace Period: 3-6 months • Modality: Direct loan • Ticket Size: $12,000 - $2.4M • Loan/Equity Ratio: up to 90/10 • Collateral: 25% property or 30% security deposit
PFI(s)	TIIC		
Status	Active		
Description	Revolving government scheme offering direct loans with higher limits to well-established MSMEs for plant and machinery upgrades.		

ANNEX C.1:
List of Registered Participating Financial Institutions for SIDBI Energy Efficiency Guarantee

1. State Bank of India (SBI)
2. Union Bank of India
3. Bank of Baroda (BOB)
4. Canara Bank
5. Bank of Maharashtra
6. HDFC Bank Limited
7. Indus-Ind Bank Limited
8. YES Bank Limited
9. The Federal Bank Limited
10. Indian Renewable Energy Development Agency Ltd. (IREDA)
11. Tata Cleantech Capital Limited
12. PTC India Financial Services Limited (PFS)
13. Electronica Finance Limited
14. Muffin Green Finance Limited

ANNEX C.2:
List of Registered Participating Financial Institutions for BEE Facilitation Centre

1. Bank of Baroda (BOB)
2. Bank of India
3. Canara Bank
4. Central Bank of India
5. CSB Bank Limited
6. Federal Bank Limited
7. HDFC Bank Limited
8. HSBC
9. ICICI Bank
10. IDBI Bank
11. Indian Bank
12. IndusInd Bank
13. Karnataka Bank
14. Karur Vysya Bank
15. Kotak Mahindra Bank
16. Punjab & Sind Bank
17. Punjab National Bank (PNB)
18. RBL Bank
19. State Bank of India (SBI)
20. YES Bank Limited
21. CKers Finance
22. India Infrastructure Finance Company
23. Indian Renewable Energy Development Agency Ltd. (IREDA)
24. Power Finance Corporation Limited (PFC)
25. Tata Capital
26. EXIM Bank of India
27. Small Industries Development Bank of India (SIDBI)

ANNEX C.3:

Sample Application Form for SIDBI Term-Loan Assistance for Rooftop Solar PV Plants Scheme

Appendix - II

To
Branch In-charge, SIDBI

_____

Madam/Dear Sir,

We request SIDBI to sanction loan for installation of SIDBI Term-loan Assistance for Rooftop Solar PV Plants[STAR] for our MSME unit as per details given below :

A. Project details				Amt in Rs. lakh
Cost of Project [Equipments/installation/Others]	Qty.	Supplier	Total Amt	Advance already paid
Total				
How many years the unit has been in operations				**_____ Years**

Proforma invoice for the equipment and other costs is attached where applicable.

B. Loan requested				
Loan amount (` Lakh)				
Repayment period	Months		Moratorium	12 months after commencement
In case of Unit being housed in Leased / rented Premises	Lease Period Not Applicable	----- Yrs	Un-expired Lease period on date	--------Yrs----- Month
Present Power Consumption of Unit				
Total Power to be generated through Solar Plant				
Whether Proposed Rooftop Solar PV Plant to be Grid Connected	Yes/No NO			
Whether Necessary Clearance from concerned Authority /Power Distribution Company obtained/ Process to obtain Initiated ?	Yes/No [If Yes, please enclose documents in support] Not Applicable			
Whether the unit has necessary borrowing powers clause as per MoA/ Partnership Deed / Trust Deed, etc.	Yes/No [If Yes, please enclose documents in support] Yes			
Whether In-principle approval from psbloansin59minutes.com portal obtained	Yes/No [If Yes, please enclose in-principle sanction letter generated by the portal]			

1

C. Declaration-cum-authorisation	
1	All information furnished by me/us herein along with annexures to this application and documents enclosed is true and correct to the best of my/our knowledge and belief.
2	I/we authorise you to conduct CIBIL searches and make other enquiries about me/us including checking various defaulter/wilful defaulter/fraud lists of RBI/CIBIL/CRILC and all other such lists which are necessary as per your guidelines. I/We have no objection if SIDBI furnishes the information submitted by me/us to other banks / FIs/ CIBIL / RBI/ any other agency as may be deemed fit in connection with consideration of my/our application for financial assistance.
3	I/we have no borrowing arrangements for the applicant enterprise/unit with any other bank/FI/ NBFC/Institution, etc. except as indicated in the enclosure to the application.
4	There are no arrears of statutory dues and no government enquiries/ proceedings/prosecution/ legal action are pending/ initiated against our enterprise/ unit/ associate concerns/ promoters/ directors/ partners/ proprietor except as indicated in the enclosure to the application.

Enclosures : as per check list attached

		(Signature)	
Date		**Name of Authorized Signatory**	
Place		Designation	
		Name of Applicant	
		Name of Co-Applicant if any	
Type->	Company	Partnership	Proprietorship

2

ANNEX C.3:

Sample Application Form for SIDBI Term-Loan Assistance for Rooftop Solar PV Plants Scheme

Document check-list

A. Mandatory Information (MI)

#	List of documents	Enclosed? (Y/N)
1	Proforma Invoice /Quotations for Equipment, installation etc.	
2	KYC documents (as per Bank's guidelines)	
3	Latest Audited Financial Statements (last FY)	
4	Statement of immovable properties of promoter/directors (as per **Appendix**)	
5.	Copy of MoA/Partnership deed/Trust Deed etc.	
6.	Copy of consent to operate from PCB	
7.	Document showing Existing Power load along with last 2 quarter's Electricity Bills	
8.	Certificate from a Certified Engineer on area and load bearing Capacity of the Roof	
9.	Necessary clearance from concerned Authorities /DISCOM etc. where applicable.	
10.	Loans/Limits availed from other banks/FIs which are currently outstanding	

Bank/FI	Type of loan	Amt o/s (Rs.lakh)	Interest rate	Sanct date	EMI/Instalment

11.	**Additional documents required if the proposed Power plant is to be installed in rented premises**
	Copy of rent/lease agreement (self-certified)

B. Additional documents

1	Past three years audited financial statements
2	Udyog Aadhar Memorandum (UAM)
3	GST Registration Certificate (for GST registered units)
4	Copy of sanction letters of other lenders for existing banking arrangement.

Notes:

1. All documents to be self-certified.
2. SIDBI reserves the right to call for any additional information/documents in respect of the loan requested. Calling for documents is not a guarantee for sanction of loan.

Annexure to Loan application

Statement of Immovable Properties owned by promoters/directors

(for information of SIDBI)

#	Owner's name	Nature of property*	Full Address	Area (sq ft)	Approx value
1					
2					
3					

*e.g. residential/commercial/industrial/agricultural etc.

KYC Form (Individuals)

_____ Branch

Know Your Customer (KYC) – APPLICATION FORM (for INDIVIDUALS only) - Initial KYC Compliance / Change / Updation

(A) Identity Details

1. Customer ID :

3. Name of the Person :
4. (as written in the ID proof)

3. Gender : ○ Male ○ ~~Female~~ 4. Date of Birth

5. PAN Number :

6. Unique ID No. (UID)/Aadhaar, etc. (pl. specify), if ~~any~~

7. Father's/Spouse's Name :

Please affix your most recent passport size photograph with signature across it.

8	Status of the person **[pl. tick in the appropriate box; and write NA, if any column is not applicable in this form; and use extra sheets for providing more / additional information]**	:	Proprietor ○ Partner ○ Third Party Guarantor / mortgagor etc. ○ Trustee ○ Authorized signatory ○ Independent individual customer ○ Power of Attorney ○ Others (pl. specify) __ ○
9	Proprietor/Director etc. of (Name of the USTOMER)	:	
10	If Director, Status	:	Non-Exeuctive Director ○ Executive Director ○ Independent Director ○ Managing Director ○ Others (Pl. specify) __ ○
11	DIN No.	:	
12	If Partner, Status	:	Active Partner ○ Sleeping Partner ○ Partner in profits ○ Partner by holding out ○ Minor Partner ○ Others (pl. specify) __ ○
13	Nationality	:	Indian ○ Others (pl. specify) __ ○
14	Residential status	:	Resident Individual ○ Non-Resident ○ Foreign National (pl. specify) __ ○
15	Contact Details (with STD code)	:	Tel. No(s). Mob. No(s) E-mail address(s)
16	Proof of ID submitted for PAN exempt cases	:	N.A
17	**(B) Address Details** Address for correspondence	:	
18	Permanent/Overseas address (mandatory for non-residents)	:	N.A
19	Proof of address submitted	:	
20	**(C) Other Details** Occupation / Sources of income [pl. indicate - name of organization (if in service), name of profession , kind of business etc. accordingly.	:	Private Sector service ○ Public sector/Govt. service ○ Retired ○ Professional ○ Agriculturist ○ Housewife ○ Students ○ Business/entrepreneur ○ (pl. specify) __ Since__ Others(pl. specify) __ ○

ANNEX C.3:

Sample Application Form for SIDBI Term-Loan Assistance for Rooftop Solar PV Plants Scheme

21	Gross Annual Income / Networth	:	Upto `5 lakh ○ `5 lakh to `25 lakh ○ `25 lakh to `1 cr. ○ `1 crore to `5 cr. ○ above `5 cr. ○ **OR** Networth ` _____Lakh as on date _____

DECLARATOIN

SIGNATURE OF THE APPLICANT

I hereby declare that the particulars given herein are true, correct and complete to the best of my knowledge and belief. The documents submitted along with the application are genuine and I am not making this application for the purpose of contravention of any Act, Rules, Regulations or any Statute or Legislation or any Notifications/ Directions issued by any governmental or statutory authority from time to time. I hereby undertake to promptly inform any changes to the information provided herein above. I hereby authorise SIDBI, its authorised agents and representatives to disclose, share, remit in any form, mode or manner all /any of the information provided by me. I hereby agree to provide any additional information/documents that may be required in connection with this application.	Date : Place :

FOR OFFICE USE

KYC Risk Catg. of Customer ☐ HI☐ ☐IUM LOW	Maker	Checker
• Whether all information has been filled up by the applicant	YES / NO	YES / NO
• Verified with originals and self certified copies of all required KYC Documents received.	YES / NO	YES / NO
• The name(s) of the applicant have been checked in the latest updated prescribed list(s) of terrorist individual / organizations and no matches found. • PAN verification has been done, wherever copy of PAN card obtained.	YES / NO	YES / NO
[COPIES OF DOCUMENTS OBTAINED TO BE PLACED/STAPLED/TIED WITH THIS KYC APPLICATION]	(Signature)	(Signature)

21	Factory / Unit address(s)	:	SHREE MTK TEXTILES P LTD, 121A, MONDIPALAYAM ROAD, PASUR POST, ANNUR 641653
22	Address proof submitted	:	

DECLARATOIN

SIGNATURE OF THE APPLICANT

I hereby declare that the particulars given herein are true, correct and complete to the best of my knowledge and belief. The documents submitted along with the application are genuine and I am not making this application for the purpose of contravention of any Act, Rules, Regulations or any Statute or Legislation or any Notifications/ Directions issued by any governmental or statutory authority from time to time. I hereby undertake to promptly inform any changes to the information provided herein above. I hereby authorise SIDBI, its authorised agents and representatives to disclose, share, remit in any form, mode or manner all /any of the information provided by me. I hereby agree to provide any additional information/documents that may be required in connection with this application.	Date : Place :

FOR OFFICE USE

KYC Risk Catg. of Customer ☐ HI☐ ☐IUM LOW	Maker	Checker
• Whether all information has been filled up by the applicant	YES / NO	YES / NO
• Verified with originals and self certified copies of all required KYC Documents received.	YES / NO	YES / NO
• The name(s) of the applicant have been checked in the latest updated prescribed list(s) of terrorist individual / organizations and no matches found. • PAN verification has been done, , wherever copy of PAN card obtained.	YES / NO	YES / NO
[COPIES OF DOCUMENTS OBTAINED TO BE PLACED/STAPLED/TIED WITH THIS KYC APPLICATION]	(Signature)	(Signature)

5

List of BEE-Registered Energy Service Companies

Energy Service Company (with accreditation until 2024)	Grade
PTC India Ltd.	1
Voltas Ltd.	1
Desire Energy Solutions Ltd.	1
Signify Innovations India Ltd.	1
Yantra Harvest Energy Ltd.	1
GA Infra Private Ltd.	1
Tata Power Trading Company	1
Honeywell Automation Ltd.	1
Siemens Ltd.	1
Bosch Ltd.	1
Esmart Energy Solutions Ltd.	2
Development Enviroenergy Services Ltd.	2
Asiatic Traders	2
URS Verification Ltd.	2
Smart Joules Ltd.	2
Kakatiya Energy Systems Ltd.	2
Carrier Airconditioning & Refrigeration Ltd.	2

Energy Service Company (with accreditation until 2024)	Grade
Punjab Renewable Energy Systems Ltd.	2
Samudra Electronic System Ltd.	2
SGS Industrial Controls and Solutions Ltd.	2
Power Grid Corporation of India Ltd.	2
Namdhari Eco Energies Ltd.	2
Thermax Ltd.	2
Atlas Copco India Ltd.	2
Neev Energy LLP	2
SavEn India Energy Management Ltd.	2
Saket Projects Ltd.	2
Johnson Controls (India) Ltd.	2
Mitcon Consultancy and Engineering Ltd.	2
KCP Infra Ltd.	2
Tata Projects Ltd.	2
Inphase Power Technologies Ltd.	3

Energy Service Company (with accreditation until 2024)	Grade
Inphase Power Technologies Ltd.	3
ENCON Energy Management Services Ltd.	3
Swain & Sons Power Tech Ltd.	3
Engineering Facility Services	3
Midas Electricals Ltd.	4
TEX-FAB Industries Ltd.	5
BMNS Services Ltd.	5
Geostat Technologies Ltd.	5
Neev Energy Projects Ltd.	5

Energy Service Company (with accreditation until 2024)	Grade
PTC India Ltd.	1
Voltas Ltd.	1
Desire Energy Solutions Ltd.	1
Signify Innovations India Ltd.	1
Yantra Harvest Energy Ltd.	1
GA Infra Private Ltd.	1
Tata Power Trading Company	1
Honeywell Automation Ltd.	1
Siemens Ltd.	1
Bosch Ltd.	1
Esmart Energy Solutions Ltd.	2
Development Enviroenergy Services Ltd.	2
Asiatic Traders	2
URS Verification Ltd.	2
Smart Joules Ltd.	2
Kakatiya Energy Systems Ltd.	2
Carrier Airconditioning & Refrigeration Ltd.	2

Energy Service Company (with accreditation until 2024)	Grade
Punjab Renewable Energy Systems Ltd.	2
Samudra Electronic System Ltd.	2
SGS Industrial Controls and Solutions Ltd.	2
Power Grid Corporation of India Ltd.	2
Namdhari Eco Energies Ltd.	2
Thermax Ltd.	2
Atlas Copco India Ltd.	2
Neev Energy LLP	2
SavEn India Energy Management Ltd.	2
Saket Projects Ltd.	2
Johnson Controls (India) Ltd.	2
Mitcon Consultancy and Engineering Ltd.	2
KCP Infra Ltd.	2
Tata Projects Ltd.	2
Inphase Power Technologies Ltd.	3

Energy Service Company (with accreditation until 2024)	Grade
Inphase Power Technologies Ltd.	3
ENCON Energy Management Services Ltd.	3
Swain & Sons Power Tech Ltd.	3
Engineering Facility Services	3
Midas Electricals Ltd.	4
TEX-FAB Industries Ltd.	5
BMNS Services Ltd.	5
Geostat Technologies Ltd.	5
Neev Energy Projects Ltd.	5

Energy Service Company (with accreditation until 2024)	Grade
Katyani Energy Solutions Ltd.	3
Applus India Ltd.	3
Salzer Electronics	3
Eqube Energy and Research Services LLP	3
Zenith Energy Services Ltd.	3
Encosym Solutions Ltd.	3
ENER VISION	3
Enspar Energy Solutions Ltd.	3
EKI Energy Services Ltd.	3
Indona Innovative Solutions	3
Krishna Engineers & Consultants	3
G-On Energy Control	3
Somaya Solar Solutions Ltd.	3
NIN Energy India Ltd.	3
Energetic Consulting Ltd.	3
Pricewaterhouse Coopers Ltd.	3
Aspen Enggicon Ltd.	3
Tuv Sud South Asia Ltd.	3
Choice Solutions Ltd.	3
Ganges Consultancy	3

Energy Service Company (with accreditation until 2024)	Grade
Lloyd Insulations India Ltd.	4
Greenserve Energy Management Solutions	4
Foundation for MSME Cluster	4
Schneider Electric India Ltd.	4
RK Infra Electricals Ltd.	4
Aspiration Cleantech Ventures Ltd.	4
Cosmoright Consultancy Services Ltd.	4
Starshield Technologies Ltd.	4
Sangli Samudra Street Lighting Ltd.	4
AAR Consulting and Services Ltd.	4
Energy Solution Company	4
Itify Business Services	4
GMR Warora Energy Ltd.	4
Shree Electricals & Engineers (India) Ltd.	4
Quick Clean Ltd.	4
Delight Electrical and Engineering	5
First ESCO India LTD.	5
Shasi Ansh Udyog Ltd.	5
A2Z Global Energy Solutions	5

Energy Service Company (with accreditation until 2025)	Grade
Blue Star Ltd.	2
Ethan Power Private Ltd.	2
BNN Power	2
Secure Meters Ltd.	2
Akash Engineering Associates Pvt Ltd.	3
Energeia Microgrid Pvt. Ltd.	3
GCKC Projects And Works Private Ltd.	3
Green Frontiers Energy Services Private Ltd.	3
Gujarat Energy Research and	3
Management Institute	3
Murugan Electrical Traders	3
Orient Poles	3
R K Engineers	3
Sahajanand Laser Technology Ltd.	3
Shivam Borwells	3
Surya International Enterprise Pvt. Ltd.	3
V.K Contractors	3
Five M Energy Pvt. Ltd.	3
Siri Exergy & Carbon Advisory Services P Ltd	3

Energy Service Company (with accreditation until 2025)	Grade
GreenTree Building Energy Pvt. Ltd.	3
Beerensgas (India) Pvt. Ltd	3
Operative Save Urja Solutions Pvt. Ltd.	3
Kumaran Industries	3
Greenrich Grow India Pvt. Ltd.	3
Nitcon Ltd.	3
HPL Electric & Power Ltd.	3
Pranat Engineers Pvt. Ltd.	3
Sabhari Electricals	3
Sabs India Sales Corporation	3
Spectrum Tool Engineers Pvt. Ltd.	3
Vikas Electricals	3
Inventum Power Pvt. Ltd.	3
Electroveen Engineering	4
Ecomitram Sustainable Solutions Pvt. Ltd.	4
Epic Energy Ltd.	4
Infrastructure Development Corporation (Karnataka) Ltd.	4
V Best Engineers	4
Niyati Construction Co.	4
Wire Consultancy	4

Energy Service Company (with accreditation until 2025)	Grade
Anukool India Pvt. Ltd.	4
Engineering Staff College of India	4
Nihalchand Jain Infra Projects Pvt. Ltd.	4
R K M Electricals	4
Bhagwat Technologies and Energy Conservation Pvt. Ltd.	4
APITCO Ltd.	5
GRG Infra	5
Citiseek Mangaluru Power Projects Pvt. Ltd.	5
Lotus Enterprises Infra Pvt. Ltd.	5
Flavour Business Solutions	5
Audittech Industrial Services Pvt. Ltd.	5
Jains Electrical Globes	5
Led Geo Lights Pvt. Ltd.	5
Nav Bharat Buildcon Pvt. Ltd.	5
Newspace Research & Technologies Pvt. Ltd.	5
Variate Pune Waste to Energy Pvt. Ltd.	5
Universal Circuits	5
Ohmstronics Lighting Solutions	5

Endnotes

1. Apparel Impact Institute & Fashion for Good. (2021). ***Unlocking the Trillion-Dollar Fashion Decarbonization Opportunity: Existing and innovative solutions***. Available at apparelimpact.org/wp-content/uploads/2024/02/Aii_UnlockingTheTrillion-DollarFashionDecarbonisationOpportunity_Report_v11.pdf.

2. National Investment Promotion and Facilitation Agency. (2023). ***Textiles & Apparel: Data on Map***. Available at investindia.gov.in/sector/textiles-apparel.

3. India Brand Equity Foundation. (November 2023). ***Apparel and Garment Industry and Export***. Available at ibef.org/exports/apparel-industry-india.

4. India Brand Equity Foundation. (March 2024). Textiles and Apparel. Available at ibef.org/download/1716975136_Textiles-and-Apparel-March-2024.pdf.

5. India Brand Equity Foundation. (February 2024). Indian Textiles and Apparel Industry Analysis. Available at ibef.org/industry/indian-textiles-and-apparel-industry-analysis- presentation.

6. Observatory of Economic Complexity. (2023). Historical Data: Exports of Textiles (2022). Available at oec.world/en/profile/hs/textiles.

7. Filho, W., Patsy, P., Hilde H., Pimenta, D., Haruna, M., Eromose, E., & Arminda, P. (2022). ***An Overview of the Contribution of the Textiles Sector to Climate Change. Frontiers in Environmental Science***, 10, doi: 10.3389/fenvs.2022.973102.

8. Business Standard. (June 2022). ***How Can India Replicate the Success of Tiruppur?*** Available at business-standard.com/podcast/economy-policy/how-can-india-replicate-the-success-of-tiruppur-in-75-other-places-122062900071_1.html.

9. EY India. (April 2023). BRSR Reporting and the Evolving ESG Landscape in India. Available at https://www.ey.com/en_in/climate-change-sustainability-services/brsr-reporting-and-the-evolving-esg-landscape-in-india.

10. European Commission. (February 2024). ***Carbon Border Adjustment Mechanism.*** Available at taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en.

11. Government of India, Press Information Bureau. (August 2019). ***Union Textiles Minister launches Project SURE on Sustainable Fashion Day at Lakme Fashion Week***. Available at pib.gov.in/PressReleasePage.aspx?PRID=1582685.

12. Fibre2Fashion. (August 2019). ***Textile Minister Launches Project SURE***. Available at fibre2fashion.com/news/apparel-news/textiles-minister-launches-project-sure-251475-newsdetails.htm.

13. Ministry of Textiles. (2023). ***About PM MITRA Park Scheme***. Available at texmin.nic.in/sites/default/files/mitra_0.pdf.

14. Government of India, Press Information Bureau. (March 2019). ***Seven PM MITRA (Pradhan Mantri Mega Integrated Textile Region and Apparel) Park sites announced***. Available at pib.gov.in/PressReleaseIframePage.aspx?PRID=1908052.

15. European Commission. (February 2024). Corporate Sustainability Reporting. Available at finance.ec.europa.eu/capital-markets-union-and-financial-markets/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en.

16. Greenhouse Gas Protocol. (2023). GHG Protocol Standards and Guidance Update Process. Available at ghgprotocol.org/ghg-protocol-standards-and-guidance-update-process-0.

17. International Labour Organization. (2022). Taking Climate Action: Measuring Carbon Emissions in the Garment Sector in Asia. Available at ilo.org/static/english/intserv/working-papers/wp053/index.html.18

18. Government of India, Press Information Bureau. (December 2023). ***India achieves two targets of Nationally Determined Contribution well ahead of the time.*** Available at pib.gov.in/Press ReleaseIframePage.aspx?PRID=1987752#:~:text=In%20August%202022%2C%20India%20updated,enhanced%20to%2050%25%20by%202030.

19. World Bank. (June 202). ***India - First Low-Carbon Energy Programmatic Development Policy Operation (English).*** Washington, D.C. : World Bank Group. Available at documents.worldbank.org/curated/en/099060623092565311/BOSIB0342f50d505508c7803e3b35fb5c59.

20. Suneja, K. (July 2022). ***Textile companies to draw up plan to cut emissions.*** The Economic Times. Available at economictimes.indiatimes.com/industry/cons- products/garments-/-textiles/textile-companies-to-draw-up-plan-to-cut-emissions/articleshow/93170701.cms.

21. International Labour Organization (ILO). (March 2021). Asia-Pacific DWGSC report. Reducing the footprint? How to assess carbon emissions in the garment sector in Asia (Regional Office for Asia and the Pacific).

22. Apparel Impact Institute. (n.d.). ***Higg FEM data.*** Internal Analysis: unpublished.

23. International Monetary Fund. (October 2023). ***A Framework for Climate Change Mitigation in India.*** Available at A Framework for Climate Change Mitigation in IndiaInternational Monetary Fund imf.org/en/Publications/WP/Issues/2023/10/20/A-Framework-for-Climate-Change-Mitigation-in-India-535854.

24. Ministry of Micro, Small, and Medium Enterprises. (2021). ***Technology Upgradation and Quality Certification.*** Available at msme.gov.in/technology-upgradation-and-quality-certification.

25. Bureau of Energy Efficiency. (2023). ***Perform Achieve and Trade (PAT).*** Available at bee india.gov.in/en/perform-achieve-and-trade-pat-0.

26. Ministry of New and Renewable Energy. (2022). Production-Linked Incentive (PLI) Scheme: National Programme on High Efficiency Solar PV Modules. Available at mnre.gov.in/production-linked-incentive-pli/.

27. Chateau, J., Dang, G., MacDonald, M., Spray, J.A., & Thube, S. (2023). A Framework for Climate Change Mitigation in India. IMF Working Paper No. 2023/218. Available at imf.org/en/Publications/WP/Issues/2023/10/20/A-Framework-for-Climate-Change-Mitigation-in-India-535854

28. Thube, S., Peterson, S., Nachtigall, D., & Ellis, J. (October 2021). The economic and environment benefits from international co-ordination on carbon pricing: a review of economic modelling studies. Environmental Research Letters. Available at iopscience.iop.org/article/10.1088/ 1748-9326/ac2b61.

29. Auroville Consulting. (September 2020). ***Financing Distributed Solar Energy in Tamil Nadu.*** Available at aurovilleconsulting.com/financing-distributed-solar-energy-in-tn/.

30. Ministry of New and Renewable Energy. (2023). ***Solar Overview.*** Available at mnre.gov.in / solar-overview/.

31. Council on Energy, Environment, and Water. (2019). ***Demystifying India's Rooftop Solar Policies.*** Available at ceew.in/sites/default/files/demystifying-india-rooftop-solar-policies. pdf.

32. Auroville Consulting. (October 2023). ***Modeling Time-of-Use Tariffs for Tamil Nadu.*** Available at aurovilleconsulting.com/modelling-time-of-use-electricity-tariffs-for-tamil-nadu/.

33. United Kingdom - Foreign, Commonwealth Development Office. (November 11, 2022). ***Supporting Structural Reform in the Indian Power Sector.*** Available at devtracker.fcdo.gov. uk/programme/GB-1-204059/summary#.

34. Asian Development Bank. (February 2023). Proposed Loans: Special Purpose Vehicles Owned by SAEL Industries Limited. SAEL Biomass Energy Project (India). Available at adb.org/ sites/default/files/project-documents/56276/56276-001-rrp-en.pdf.

35. Asian Development Bank. (June 2023). 2021 Energy Policy of the Asian Development Bank: Supporting Low-Carbon Transition in Asia and the Pacific. Available at dx.doi.org/10.22617/SPR230214-2.

36. World Bank. (December 2017). Press Release: World Bank Group Announcements at One Planet Summit. Available at worldbank.org/en/news/press-release/2017/12/12/world -bank-group-announcements-at-one-planet-summit.

37. Wickramasuriya, R.P. (2024). ***From Catwalk to Carbon Neutral: Mobilizing Funding for a Net Zero Fashion Industry.*** Available at asiagarmenthub.net/fashion-producer-collective/ innovative-financing-models-for-decarbonization.

38. Ministry of Micro, Small, & Medium Enterprises. (July 2020). What's MSME? Available at msme.gov.in/know-about-msme.

39. Mishra, R.D. (March 2024). FTA Talks: India behind hard bargain on non-tariff barriers with EU. The Indian Express. Available at indianexpress.com/article/business/fta-talks-india- begins-hard-bargain-on-non-tariff-barriers-with-eu-9197933/.

40. European Union. (2023). ***Bangladesh: EU Trade Relations with Bangladesh.*** Available at policy.trade.ec.europa.eu/eu-trade-relationships-country-and-region/countries-and-regions/bangladesh_en.

41. European Union. (2023). ***Pakistan: EU Trade Relations with Pakistan.*** Available at policy.trade.ec.europa.eu/eu-trade-relationships-country-and-region/countries-and-regions/pakistan_en.

42. European Union. (2023). ***Sri Lanka: EU Trade Relations with Sri Lanka.*** Available at policy.trade.ec.europa.eu/eu-trade-relationships-country-and-region/countries-and-regions/sri-lanka_en.

43. International Trade Center. (2023). ***Sri Lanka's Access to the EU Market Through GSP+: Opportunities for Investors.*** Available at paen.camcom.gov.it/sites/default/files/ Allegati_Sito/Sri%20Lanka_GSP%2B%20Related%20Benefits%20for%20EU%20Investors_Brochure_2021.pdf.

44. Sadowski, M., L. Perkins, and E. McGarvey. (2021). ***"Roadmap to Net-Zero: Delivering Science-Based Targets in the Apparel Sector."*** Working Paper. Washington, DC: World Resources Institute. Available at apparelimpact.org/wp-content/uploads/2021/11/21_WorkingPaper_RoadmapNetZero_.pdf.

45. Apparel Impact Institute. (April 2024). ***Annual Impact Report 2023.*** Available at apparel impact.org/resources/aii-yearly-reports/2023-yearly-report/.

46. Apparel Impact Institute. (March 2023). ***Annual Impact Report 2022.*** Available at apparel impact.org/resources/aii-yearly-reports/2022-yearly-report/.

47. Apparel Impact Institute. (2024). Climate Solutions Portfolio. Available at csp.apparelimpact.org/.

48. Apparel Impact Institute. (March 2023). Concept Note for Financing Climate Action. apparelimpact.org/wp-content/uploads/2024/03/Aii-Concept-Note-for-Financing-Climate-Action.pdf

49. Asia Development Bank. (2016). India: Solar Rooftop Investment Program — Facility Administration Manual. Available at adb.org/sites/default/files/project-documents//49419-001-fam.pdf.

50. World Bank. (March 2024). Grid-Connected Rooftop Solar Program. Available at projects.worldbank.org/en/projects-operations/project-detail/P155007.

51. Green Climate Fund. (August 2023). ***Line of Credit for Solar Rooftop Segment for Commercial, Industrial, and Residential Housing Sectors.*** Available at greenclimate.fund/ project/fp081.

52. Green Climate Fund. (April 2019). ***GCF Funded India Solar Rooftop Programme Kicks Off.*** Available at greenclimate.fund/news/gcf-funded-india-s-solar-rooftop-programme -kicks-off.

53. World Bank. (2015). ***India - Partial Risk Sharing Facility for Energy Efficiency (PRSF) Project (English).*** Available at documents.worldbank.org/en/publication/documents-reports/documentdetail/968091468048913492/india-partial-risk-sharing-facility-for-energy-efficiency-prsf-project.

54. World Bank. (March 2024). ***Rooftop Solar Guarantee Facility for MSMEs.*** Available at projects.worldbank.org/en/projects-operations/project-detail/P172261.

55. Bureau of Energy Efficiency. (October 2023). ***Energy and Resource Efficiency Action Plan (MSME Sector).*** Available at sameeeksha.org/pdf/presentation/02%20PPT%20of%20BEE.pdf

56. Asian Development Bank. (November 2023). ***India: Solar Rooftop Investment Program (Tranche 2).*** Available at adb.org/projects/49419-003/main.

57. KfW. (December 2023). ***Approximately EUR 1 Billion for the Energy Transition in India: KfW Supports Indo-German Solar Energy Partnership.*** Available at kfw.de/About-KfW/Newsroom/Latest-News/Pressemitteilungen-Details_791360.html.

58. Small Industries Development Bank of India. (December 2023). ***Green and Sustainability Finance Facility with KfW for MSMEs. [Post]. LinkedIn.*** Available at linkedin.com/posts/sidbi-small-industries-development-bank-of-india_sidbi-activity-7139157633319563264-Yb8a/.

59. Government of Tamil Nadu. (2020). ***Scheme for Promotion of Energy Audit and Conservation of Energy (PEACE).*** Available at msmetamilnadu.tn.gov.in/peace.php.

60. Small Industries Development Bank of India. (n.d.) ***Products.*** Available at development.sidbi.in/en/products.

61. Small Industries Development Bank of India. (n.d.). ***Green Loans.*** Available at develop ment.sidbi.in/en/green-loan.

62. Tamil Nadu Industrial Investment Corporation. (n.d.). ***Solar Power Project Scheme.*** Available at tiic.org/solar-power-project-scheme/.

63. Tamil Nadu Industrial Investment Corporation. (n.d.). ***Equipment Finance Scheme.*** Available at tiic.org/equipment-finance-scheme/.

64. Tamil Nadu Industrial Investment Corporation. (n.d.). ***EFS - Fast Track.*** Available at tiic.org/fast-track-efs/.

65. International Finance Corporation. (2023). ***Risk Sharing Facility Product Description.*** Available at ifc.org/content/dam/ifc/doc/2023/ifc-product-description-risk-sharing-facility.pdf.

66. Bureau of Energy Efficiency. (2023). BEE Facilitation Center. adeetie.beeindia.gov.in/bee-facilitation-centre.

67. Industrial Energy Efficiency Division. (2024). SAMEEKSHA Platform. Available at sameeeksha.org/.

68. Bureau of Energy Efficiency. (2019). Energy Saving Companies (ESCO). Available at beeindia.gov.in/en/programmes/escos-0.

69. Kumar, S., Kumar, N., Cherail, K., Setty, S., Yadav, N., Goenka, A. (2017). Transforming the Energy Services Sector in India – Towards a Billion Dollar ESCO Market. New Delhi: Alliance for an Energy Efficient Economy.

70. Bureau of Energy Efficiency. (2019). ***ESCO Grading Process.*** Available at beeindia.gov.in/ sites/default/files/Information%20requirements%20for%20ESCO%20Empanelment.pdf.

71. Bureau of Energy Efficiency. (2023). ***List of 79 Energy Service Companies (ESCOs) empaneled with Bureau of Energy Efficiency (BEE) with validity till August 15th, 2024.*** Available at beeindi a.gov.in/sites/default/files/79%20ESCOs%20with%20validity%20till%2015th%20August%202024.pdf.

72. Bureau of Energy Efficiency. (2023). ***List of 56 Energy Service Companies (ESCOs) empaneled with Bureau of Energy Efficiency (BEE) with validity till August 24th, 2025.*** Available at beeindi a.gov.in/sites/default/files/56%20ESCOs%20with%20validity%20till%2024th%20August%202025.pdf.

73. Ministry of New and Renewable Energy. (2023). ***Schemes.*** Available at mnre.gov.in/ policies-and-regulations/schemes-and-guidelines/schemes/.

74. Gupta, U. (April 17, 2024). MNRE releases draft guidelines for residential rooftop solar subsidy scheme. ***PV Magazine.*** Available at pv-magazine-india.com/2024/04/17/mnre-releases-draft-guidelines-for-residential-rooftop-solar-subsidy-scheme/.

75. Brickwork Ratings. (2022). ***Grading of Renewable Energy Service Providing Companies (RESCOs) and System Integrators (SIs).*** Available at brickworkratings.com/download/ RESCO_gradings.pdf.

76. Ministry of New and Renewable Energy. (August 31, 2015). ***List of Empanelment of Channel Partners, New Entrepreneurs, and Gov't Agencies under Grid Connected Solar Roof Top Programme.*** Available at pushan.in/download/Pushan%2027%20-%20220 %20-%20Second-list-of-Accredited-Channel-Partners-Rooftop-Grid-connected.pdf.

77. Enerdatics. (December 2, 2022). ***Corporate PPA: Brookfield progresses on Indian renewables portfolio, signs second PPA with Amazon.*** Available at enerdatics.com/blog/corporate -ppa-brookfield-progresses-on-indian-renewables-portfolio-signs-the-second-ppa-with-amazon/.

78. S&R Associates. (November 23, 2022). ***The Continued Rise of Renewable Corporate PPAs in India.*** Available atsnrlaw.in/the-continued-rise-of-renewable-corporate-ppas-in-india/.

79. Sarkar, A., & Sundararajan, S. (December 2020). ***Transforming India's energy efficiency market by unlocking the potential of private ESCOs. World Bank Getting Finance Right.*** Available at blogs.worldbank.org/en/ppps/transforming-indias-energy-efficiency-market-unlocking-potential-private-escos.

80. Shakti Sustainable Energy Foundation & Confederation of Indian Industries. (2013). ***Technology Compendium on Energy Saving Opportunities: Textile Sector.*** Available at shaktifoundation.in/wp-content/uploads/2014/02/textile.pdf.

81. Hasanbeigi, A. (September 2010). *Energy-Efficiency Improvement Opportunities for the Textile Industry.* Available at energystar.gov/sites/default/files/buildings/tools/EE_Guidebook_for_Textile_industry.pdf.

82. IEA. (2018). Energy Service Companies (ESCOs). IEA, Paris. Available at iea.org/reports/energy-service-companies-escos-2, License: CC BY 4.0.

83. Climate Policy Initiative. (October 2016). ***Rooftop Solar Private Sector Financing Facility: Lab Instrument Analysis.*** Available at https://www.climatepolicyinitiative.org/wp-content/uploads /2020/07/Rooftop-Solar-Private-Sector-Financing-Facility_Instrument-Analysis-1.pdf.

84. Small Industries Bank of India. (2024). ***Aggregator Platforms.*** Available at development.sidbi.in/en/page/133.

85. Small Industries Bank of India. (2018). ***PSB Loans in 59 Minutes Platform.*** Available at development.sidbi.in/en/msme-focus/psb-loans-in-59-minutes-platform.

86. T E R I. (2020). Study the Feasibility and Potential of Solar Applications in Micro, Small and Medium Enterprises in Rural India. New Delhi: The Energy and Resources Institute.

87. iDEEKSHA. (2022). ***Industrial Decarbonization and Energy Efficiency Knowledge Sharing Platform.*** Available at ideeksha.in/.

88. Facilitating MSMEs of Tamil Nadu. (May 2023). ***Celebration of International MSME Day.*** Available at fametn.com/event/InternationalMSMEDay.

Photo and Icon References:

Icons:

flaticon.com/free-icon/stopwatch_870183

flaticon.com/free-icon/lost_9074050

flaticon.com/free-icon/no-money_2762618

flaticon.com/free-icon/credit_11535962

flaticon.com/free-icon/confusing_4593061

flaticon.com/free-icon/india_706297

laticon.com/free-icon/route_14426556

Images:

pexels.com/photo/worker-packing-clothes-in-a-factory-15520158/

pexels.com/photo/clothes-hanged-on-clothes-rack-3965545/

pexels.com/photo/assorted-color-and-pattern-cloths-2096624/

pexels.com/photo/cash-money-of-dollar-and-euro-banknotes-4386149/

pexels.com/photo/closeup-photo-of-sprout-1002703/

pexels.com/photo/white-windmill-414837/

pexels.com/photo/a-woman-wearing-a-beige-bandana-and-apron-using-a-sewing-machine-4492124/

pexels.com/photo/solar-panel-356049/

pexels.com/photo/gray-and-black-laptop-computer-265087/

pexels.com/photo/numbers-on-monitor-534216/

pexels.com/photo/marketing-exit-technology-business-7414218/

pexels.com/photo/solar-technicians-installing-solar-panels-8853536/

pexels.com/photo/rolled-textile-lot-in-shallow-photo-236748/

pexels.com/photo/concentrated-asian-female-workers-cleaning-cotton-on-farm-ground-6128984/

pexels.com/photo/employee-in-a-manufacturing-plant-6525848/

pexels.com/photo/interior-of-a-textile-factory-16176408/

commons.wikimedia.org/wiki/File:Covid_19_Tiruppur_Tamil_Nadu_IMG_20200420_111930967_BURST001.jpg