

Challenges and Opportunities of Green Financing for MSMEs in India

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Abstract

Micro, Small, and Medium Enterprises (MSMEs) are central to India’s economic development due to their substantial contribution to employment generation, export growth, and inclusive development. However, the sector is also characterized by high energy consumption and environmental impact, largely arising from dependence on carbon-intensive technologies and inefficient production processes. In the context of India’s climate commitments and decarbonization goals, promoting environmentally sustainable practices among MSMEs has become a policy priority. Green financing, encompassing financial instruments, incentives, and risk-sharing mechanisms that support environmentally responsible investments, offers a critical pathway to facilitate this transition.

This paper examines the key challenges faced by MSMEs in accessing and utilizing green finance, including limited awareness and technical capacity, high upfront investment costs, lack of collateral, information asymmetry between lenders and borrowers, product mismatches, and regulatory constraints. At the same time, it highlights emerging opportunities such as cost savings from energy efficiency, access to green markets, supportive government initiatives, blended finance mechanisms, digital finance platforms, and growing technical assistance frameworks. The study is based on secondary data drawn from government policy documents, multilateral agency reports, and academic literature published during the period 2020–2025.

The findings suggest that while recent initiatives—such as SIDBI’s green financing schemes, national credit guarantee programs, and increasing regulatory attention by the Reserve Bank of India—have created a supportive foundation, the scale of green investment among MSMEs remains limited. The paper argues that wider adoption will require targeted concessional finance, effective risk-sharing instruments, standardized green eligibility frameworks, and enhanced capacity-building support. The study provides policy-relevant insights for policymakers, financial institutions, MSME associations, and development partners seeking to accelerate an inclusive and sustainable green transition within India’s MSME sector.

Keywords: MSMEs; green finance; climate finance; India; SIDBI; RBI; green transition; credit guarantee; capacity building.

Introduction

Micro, Small, and Medium Enterprises (MSMEs) constitute the backbone of the Indian economy, accounting for a substantial share of employment generation, industrial output, and export earnings. By offering livelihoods to millions and supporting regional and inclusive development, MSMEs play a critical role in India’s growth trajectory. However, a significant proportion of these enterprises continue to rely on legacy technologies and production processes that are energy- and resource-intensive. This not only increases operating costs for MSMEs but also contributes to environmental degradation and carbon emissions, thereby exposing the sector to growing climate-related and regulatory risks.

Climate change, rising energy prices, and increasing environmental compliance requirements are reshaping the competitive landscape for enterprises worldwide. For Indian MSMEs, investments in energy efficiency, renewable energy, wastewater treatment, waste management, and cleaner production technologies offer a dual benefit: reducing environmental impact while simultaneously improving productivity and cost efficiency. Despite these potential gains, the adoption of green technologies within the MSME sector remains limited, primarily due to financial constraints and risk perceptions. Mobilising adequate finance to support environmentally sustainable investments has therefore emerged as a strategic priority for both sustainable development and long-term competitiveness.

Green finance broadly refers to financial investments and instruments that support environmentally sustainable development, including renewable energy, energy efficiency, pollution control, clean transportation, waste management, and climate-resilient infrastructure (Agarwal & Rai 2025). Since the adoption of the Paris Agreement in 2015, green finance has expanded rapidly at the global level, supported by regulatory frameworks, policy incentives, and the growing involvement of financial institutions in climate-aligned lending and investment. Governments, development finance institutions, and private lenders have increasingly recognised the role of green finance in facilitating the transition to a low-carbon economy.

In India, both public and private actors have introduced a range of green financing mechanisms, such as dedicated green loans, concessional credit lines, blended finance arrangements, credit guarantees, and specialised schemes aimed at supporting low-carbon investments. Notable initiatives include the Small Industries Development Bank of India’s (SIDBI) MSE Green Investment and Financing for Transformation (MSE GIFT) programme, increasing engagement by development agencies and climate funds in MSME decarbonisation, and the Reserve Bank of India’s growing focus on climate-related financial risks and the greening of the financial system. These developments signal a strong policy intent to integrate sustainability considerations into MSME financing.

However, despite this evolving policy and institutional landscape, a large number of MSMEs continue to face difficulties in accessing green finance (Rai ET AL.,2024). Barriers such as limited awareness and technical capacity, high upfront investment costs, inadequate collateral, information asymmetry between lenders and borrowers, and mismatches between financial products and MSME needs hinder the effective translation of policy initiatives into on-the-ground investments. As a result, the uptake of green technologies remains uneven and concentrated among relatively larger and more formal enterprises.

Against this backdrop, the present study seeks to examine the challenges and opportunities associated with green financing for MSMEs in India. By synthesizing recent

policy documents, multilateral reports, and academic literature, the paper aims to identify key constraints, assess emerging financing pathways, and propose pragmatic recommendations to strengthen the green finance ecosystem for MSMEs. The study contributes to the existing literature by offering policy-relevant insights that can support the design of inclusive, scalable, and risk-mitigated financing solutions for accelerating the green transition of India’s MSME sector.

Objectives of the Study

1. To identify and synthesise the main challenges MSMEs in India face when accessing green finance.
2. To map the key opportunities and existing instruments that can catalyse green investments in MSMEs.
3. To review recent literature (2016–2025) and major policy initiatives relevant to green finance for MSMEs.
4. To propose actionable policy and market recommendations to scale green financing for MSMEs in India.

Research Methodology

This is a descriptive and analytical study based on secondary sources. Data and insights were compiled from:

1. Official documents and schemes from SIDBI, RBI and the Government of India;
2. Multilateral reports and working papers (World Bank, AFI, Climate Policy Initiative);
3. Peer-reviewed journal articles and working papers on MSMEs and green finance;
4. Industry and sectoral reports on MSME financing and green technology adoption.

Sources were systematically searched (2020–2025) and evaluated for relevance and credibility. Key themes were extracted and synthesized qualitatively to identify cross-cutting challenges, documented opportunities and best-practice recommendations. No primary fieldwork or primary survey was conducted.

Limitations of the Study

This paper relies on secondary sources and does not present primary empirical data from field surveys or firm-level audits. The pace of policy change means some schemes and regulatory developments may continue to evolve (e.g., RBI guidance, state-level programmes). Future empirical work with firm-level panel data would strengthen causal claims about which instruments work best in which sectors.

Literature Review

Science it one of the contemporary issues in the Indian government so very less work has been done in this regard which provide great scope of further studies with suggestions of reforms and their impact on Indian environment. The efforts of few have been briefed out below:

SIDBI — MSE GIFT circular and programme note (2024–2025)

This circular describes the “MSE Green Investment and Financing for Transformation” (MSE GIFT) scheme to catalyse green investments for small enterprises and estimated impacts for solar rooftop potential and emissions reduction. Useful for program design examples.

Climate Policy Initiative - “Mobilizing Green Finance while Managing Climate Finance Risks in India” (2022) - Analyses barriers in mobilising private green capital in India

and offers policy instruments such as blended finance and guarantees to de-risk private investment.

AFI (Alliance for Financial Inclusion) -“Green Transition Measures for MSMEs” (2021/2024) —It explains measures for green transition (finance innovations, policy tools) targeted at MSMEs and the need for capacity building.

IIM Calcutta working paper - “A Review of Literature on Sustainability in Indian Micro, Small and Medium Enterprises” (2023) have mentioned Systematic literature review on sustainability adoption barriers and drivers in Indian MSMEs, stressing awareness and resource constraints.

Manage Journal article - “Green finance in India: Trends and challenges” (2025) — In this journal recent synthesis of green finance trends and obstacles within the Indian market context. Provides timely examples and definitions.

IFC / SME Finance Forum - “MSME Finance Gap” (2025) —This article presents data on finance constraints and market sizing for MSMEs, relevant to understanding unmet demand for green investments.

Aditya Bhuyan - “Green Growth for MSMEs: Overcoming Barriers and ...” (2024) in his paper Sectoral case studies and capacity-building needs for MSME green transition. Emphasises technical assistance and low-risk instruments.

SSRN / academic articles on sustainable finance and MSMEs (2022) this article discusses sustainable finance mechanisms and applicability to SMEs (e.g., green loans, concessional finance, ESG frameworks). Useful for instrument typologies.

ResearchGate study - “Fostering Green Finance through MSMEs for Sustainable India” (2025) -A descriptive study mapping government initiatives and recommendations for scaling green finance across MSMEs in India.

Challenges

Based on the literature and policy reviews, the major barriers to green financing for MSMEs are:

1. High upfront capital costs and long payback perceptions

Green technologies (solar, efficient machinery, pollution control) often require significant capital outlay that MSMEs struggle to finance from cash flows or conventional loans. Even where lifecycle savings exist, MSMEs and lenders perceive high upfront cost and uncertain paybacks.

2. Information asymmetry and low awareness

Many MSME owners lack awareness of available green technologies, their costs and benefits, and related financing products. Lenders also lack standard appraisal tools to evaluate small-scale green projects, increasing perceived risk.

3. Technical and capacity constraints

MSMEs often lack in-house technical capacity to prepare bankable project proposals, perform energy audits, or implement and maintain new technologies — increasing transaction costs for lenders and raising project failure risk.

4. Product mismatch and high transaction costs

Mainstream bank products (short-term working capital, asset loans) are not always aligned with the needs of green investments (which may need longer tenors, technical assistance, or blended concessional capital). For small-ticket green investments, per-loan transaction costs are high relative to loan size.

5 Collateral and credit constraints

MSMEs frequently lack sufficient collateral; even where programmes exist (e.g., credit guarantee schemes), coverage for green investments is limited or the guarantees are not tailored to green project risk profiles.

6. Fragmented ecosystem and coordination gaps

Multiple schemes and actors (banks, NBFCs, DFIs, government ministries, MSME clusters) operate with limited coordination, creating fragmentation and confusion among MSMEs and lenders about which incentives apply.

Opportunities

Despite the challenges, there are strong opportunities to accelerate green finance for MSMEs:

1. Cost savings and competitiveness

Energy efficiency and renewable energy investments often yield quick operational savings, improving cash flows and competitiveness a strong commercial case for green investments at firm level when properly financed and supported.

2. Policy programmes and dedicated schemes

Recent initiatives (SIDBI’s MSE GIFT, government credit guarantee and budget measures) and multilateral programmes provide concessional funding, partial risk guarantees, and incentives specifically targeted at greening MSMEs - these can be scaled and better targeted.

3. Blended finance and de-risking instruments

Blended finance structures (concessional capital + private loans), first-loss guarantees, and energy-service company (ESCO) models can reduce perceived risk and transaction costs, making small green investments bankable.

4. Digital platforms and aggregation

Digital lending platforms, aggregated lending pools, and product standardization can reduce per-loan transaction costs and allow lenders to offer tailored green products for small-ticket MSMEs. Marketplace lenders and TReDS-like systems may be adapted for green receivables and supplier financing.

5. Technical assistance and capacity building

Providing energy audits, technical assistance providers, and templates for bankable project proposals (potentially subsidized) can increase project success rates and lender confidence. Public–private partnerships and development agencies can finance technical assistance.

Policy and Market Recommendations

Drawing on the evidence, the following interventions can help scale green finance for MSMEs:

1. Design tailored finance products

Offer longer-tenor green term loans and working capital tied to verified energy/cost savings profiles.

Reduce administrative friction for micro-ticket green loans via simplified documentation.

2. Strengthen credit guarantees and blended instruments

Expand credit guarantee schemes specifically to cover small green investments and consider first-loss tranches to attract private capital.

Use concessional capital to subsidize interest or principal for early adopters in high-impact clusters.

3. Scale technical assistance (TA) and standardization

Fund standardized energy audits, create bankable-project templates and certify vendors/ESPCs to lower lender due diligence costs.

Encourage capacity-building programs by industry associations and cluster-level centers.

4. Leverage aggregation and digital platforms

Encourage aggregation of small projects into portfolios for financing; use digital platforms for origination and servicing to lower costs per loan.

Link green finance eligibility to simple indicators (e.g., verified energy savings) to standardize underwriting.

5. Improve policy coordination and clarity

Create a single-window information portal listing green finance schemes, technical partners, and certification processes for MSMEs. Align scheme incentives (tax breaks, subsidies) with finance instruments to create predictable signals for MSMEs and lenders.

Case examples

MSE GIFT (SIDBI) - subsidized interventions and financing to catalyse rooftop solar and other green investments in small enterprises; useful as a replicable program model combining finance and TA.

Blended finance windows - concessional or first-loss capital provided by development finance institutions to reduce risk for private lenders; recommended to be deployed in cluster-level MSME portfolios.

Conclusion

Green finance can be a transformative lever for India’s MSMEs by enabling investments that reduce operating costs, improve productivity and lower pollution. While policy initiatives and development partner instruments create important opportunities, barriers — especially awareness, capacity, product mismatch, and risk perceptions — must be addressed through a combination of tailored finance products, blended finance, capacity building, aggregation and better coordination across stakeholders. Scaling green finance for MSMEs will require pragmatic policy design that lowers transaction costs, reduces perceived risks, and supports MSMEs through technical assistance so that the promise of a just and inclusive green transition can be realised across India’s vast MSME sector.

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