NATIONAL/INTERNATIONAL REPORTS: ANALYSIS

ROADMAP FOR GREEN TRANSITION OF MSMEs

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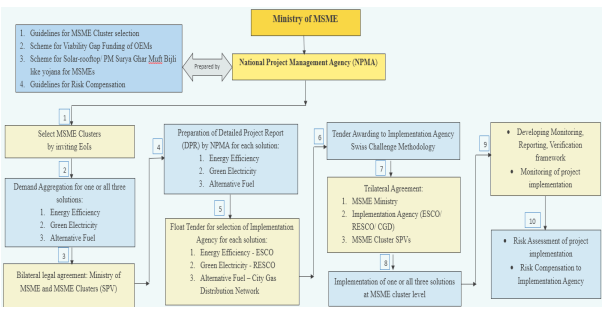
(Please refer the link for complete report)

INTRODUCTION

MSMEs rely heavily on fossil fuels to meet their energy and process requirements, resulting in approximately 135 million tonnes of carbon emissions (MtCO2e) in 2022 alone. MSMEs face a range of challenges in terms of capacity to undertake green projects, access to reliable finance for the energy transition, lack of awareness on policies and schemes, absence of scalable models, and niche market dynamics that create uncertainty in investment decisions. Thus, they seek additional support from governments to cater to the sector's clean energy transition. This report proposes to create a dedicated institutional mechanism that prioritises areas of deployment by establishing incentives and funding opportunities. These interventions are tailored to accelerate an enabling ecosystem leading to a seamless transition of MSMEs towards sustainability. Upcoming regulations may necessitate changes to manufacturing processes or products and reshape long-term marketing strategies, affecting supply chains, insurance costs, and increasing financial and political risks.

The report provides for the implementation of the three levers identified for green transition through different approaches. Under the primary approach, the report recommends setting up a National Project Management Agency (NPMA) to implement the National Programme for Green Transition of MSMEs. Under the secondary approach, the different levers identified for the green transition roadmap will be implemented through the line ministries as detailed in the report under Energy Efficiency, Green Electricity and Alternative Fuels sub-sections.

Figure 1: Operational flow of the National Project Management Agency



NEED FOR A GREEN TRANSITION

India presented its long-term plan to reach 500 GW of renewable energy (RE) capacity by 2030 and net-zero emissions by 2070 at the 27th Conference of the Parties (COP27) to the United Nations Framework Convention on Climate Change (UNFCCC 2022). To meet these climate targets, emission reduction and renewable energy expansion will be necessary across all economic sectors, including MSMEs. Encouraging MSMEs to implement decarbonisation measures is critical for achieving the Sustainable Development Goals (SDGs), particularly SDG 9 (infrastructure, industry, and innovation), SDG 12 (responsible production and consumption), and SDG 13 (climate action). This climate transition risk is becoming evident for MSMEs and thus warrants the government's immediate attention. MSMEs stand to gain several advantages through the green transition.

SCOPE OF THE REPORT

The report provides 10-year implementation strategies that aim to reduce GHG emissions in MSMEs through the enhancement of energy efficiency and adoption of alternative fuels and green electricity. The report also covers the institutional mechanism that will be required to support the transition. The roadmap details the three different levers in the green transition of the MSME sector, covering the technological aspects, implementation mechanism and the financial outlays required to enable this transition.

OBJECTIVES OF THE STUDY

1. Adoption of measures towards clean energy in MSMEs.
2. Development of Institutional Framework for supporting green transition in MSMEs.

METHODOLOGY

Primary research: The research involved conversations with different stakeholders to gather their opinions and suggestions around the core topics that this report has covered. This research focused only on a few specific issues to obtain solutions for them. The purpose of these consultations was to get information about the real-world difficulties associated with the green transition of MSMEs, the viability of suggested solutions, and the possible effects of different policy options. The stakeholders' feedback was crucial in helping narrow the study's scope and ensuring that the suggested recommendations are practical and in line with market demands.

Secondary research: Existing research published in renowned journals, meta-analyses, and databases and datasets from publicly available sources have been

considered and cited in this report. Academic studies, industry reports, government publications, and case studies on decarbonisation strategies, technological advancements, and policy interventions were all included in this review. The literature review served as a basis for identifying important trends, obstacles, and opportunities in the MSME sector, which shaped the study's structure.

MONITORING, REPORTING AND VERIFICATION (MRV) MECHANISM

A comprehensive Monitoring, Reporting and Verification (MRV) mechanism is essential for understanding the impacts of the listed recommendations. The MRV's importance assumes greater significance considering that the risk removal mechanism depends on achieving specific KPIs. Hence, the MRV framework must be designed to capture data in an easy and transparent manner. The roadmap proposes creating a platform and a tool that enables the documentation of these emissions, the stipulated reduction targets, and achievements. This will enable measurement of the roadmap's reach and impact by directly linking the results in terms of emissions reduced, monetary savings achieved, energy saved etc. An effective MRV mechanism will play a critical role in reducing the risk perception among implementing agencies when engaging with MSME units. The MRV tool can track any payment defaults by MSMEs to implementing agencies, which will be compensated as per the stipulated terms and agreements. The proposed funding mechanisms are - Climate Sister Impact Fund (CSIF), Alternate Investment Fund under Securities and Exchange Board of India regulations, 2012. Additionally, a hybrid debt fund is also proposed to be created at concessional terms by either investing in debt/ debt securities of existing entities or through a newly-incorporated Non-Banking Financial Companies (NBFC), as per the directives of SEBI and RBI.

MSME TECHNICAL WORKING COMMITTEE

To access the global markets, MSMEs needs:

- To increase productivity and efficiency through adoption of modern machinery and green energy.
- To improve competitiveness.
- To comply with regulatory standards (CBAM, BRSR, Eco Mark) for avoiding penalties, retaining export eligibility and meeting ESG norms which are increasingly expected by regulators and buyers.

The report outlines terms of reference for the committee.

ROADMAP FOR GREEN TRANSITION: INSIGHTS FROM THE CURRENT SCHEMES

The MSME sector currently benefits from several schemes and programs that address various operational challenges. A comparison of the proposed Roadmap with the different central schemes is provided briefly in Table 1 below:

Table 1: Distinction between existing MSME schemes on green transition and the proposed Roadmap

Scheme name	ADEETIE (Assistance for Deployment of Energy Efficient Technologies in Industries and Establishments) Scheme (Ministry of Power)	Green Investment and Financing for Transformation (GIFT) Scheme (Ministry of MSME)	Scheme for Promotion and Investment in Circular Economy (SPICE) (Ministry of MSME)	Roadmap for Green Transition of MSMEs
Focus areas	Aims to facilitate MSMEs to upgrade with energy-efficient technologies/ measures across 60 clusters spanning 14 sectors through financial instruments and handholding them in carrying out an investment-grade energy audit, a detailed project report, monitoring, and verification of the implementation.	Provides institutional finance at concessional costs to support green technologies, clean transportation, energy-efficient projects like green buildings, and waste management initiatives, including recycling, efficient disposal, and energy conversion.	Provides support to adopt circular economy practices in sectors like plastic, rubber, and electronics waste management.	Provides institutional, financial support and a robust framework for sector agnostic green transition in MSMEs, with specific focus on enhancement of energy efficiency, adoption of green electricity, and alternate fuels. • Renewable Energy Service Company (RES-CO)/ Energy Service Company (ESCO) led green electricity adoption and energy efficiency enhancement in MSMEs. • PM Surya Ghar Yojana (PMSGY) like sub-scheme. • Financial Incentivization for alternate fuels adoption.

Beneficiaries	All MSMEs	Micro and small enterprises (MSEs)	Micro and small enterprises (MSEs)	All MSMEs
Benefits	Interest subvention, Streamlined project implementation	Interest subvention, Risk-sharing facility	Credit-linked capital subsidy	Financial incentives for adoption of sector agnostic solutions, Risk sharing facility, Streamlined project implementation, Boost for indigenous manufacturing of relevant technologies, Monitoring, Reporting and Verification (MRV)
Demand aggregation	×	×	×	□

Earlier schemes by the Government of India have effectively used the cluster approach. The roadmap recommends demand aggregation, which combines several demands of a service/product in a specific region to drive the outreach of the initiative thereby addressing systemic barriers at scale.

ANALYSIS

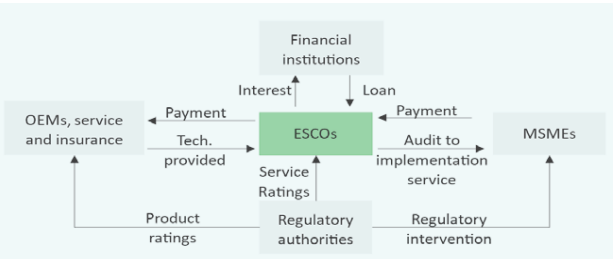
An in-depth data analysis was conducted using suitable mathematical models and industry data. The analysis revolved around calculating the potential impact of various interventions, evaluating the carbon footprint of Indian MSMEs, and determining the viability of various green transition strategies from a financial perspective. Data-driven insights helped identify the most efficient green transition levers, which were also crucial to creating a practical and attainable industry roadmap. In addition, this analysis compared India's performance to international standards in the areas of energy efficiency, carbon intensity and the uptake of cutting-edge technologies to assess the country's relative standing.

The green transition of MSMEs is a key area where a huge potential for energy reduction of GHG emissions is observed, providing several benefits for MSMEs. The report covers contents from published research pieces, reports, and other documents while framing the guidelines and methodology for the green transition of the MSME sector.

RECOMMENDATIONS

The report covers primary and secondary approach adopted in implementation of the recommendations in the area of **Energy efficiency measures, uptake of Green Electricity, Alternative Fuels, and Monitoring, Reporting and Validation**.

Figure 2: ESCO-MSME business model



Energy efficiency in the primary approach is implemented for five key sub-sectors, namely textiles, paper, steel re-rolling, foundry, and forging. 10 MSME clusters from these sub-sectors have been identified to reduce around 12 MtCO2e (around 33% of the total reduction potential identified). The **Energy Service Companies (ESCOs)** provide a robust ecosystem for MSMEs to adopt energy efficiency. The report also elaborates on the **Viability Gap Funding (VGF)** mechanism. The measures for Small and Medium Enterprises are covered in the secondary approach.

The **Behind the Meter (BTM) RESCO model and/ or Green Open Access and Behind the Meter (BTM) model** are various ways of adopting **Green electricity** in the Primary approach. The secondary approach follows the extension of **PM Suryaghar yojana to the micro units, or a new scheme that subsidies the adoption of RTS plants by micro units.**

Table 2: Takeaways for action and implementation from the alternate fuels lever adoption in MSMEs

Actions	Responsible Entity
Evaluate the feasibility of providing connections to MSME clusters through CGDs based on technical parameters such as pressure requirements, demand balancing, etc.	Ministry of Petroleum and Natural Gas (MoPNG)/ PNGRB
Create national guidelines to enable CGDs in their allocated geographical areas to aggregate and assess demand in MSME clusters that require NG solutions.	MoPNG/PNGRB
Develop a list of MSME clusters (export-oriented clusters to begin with) to prioritise during the first phase of implementation.	Ministry of MSME

With increased global pressure on account of climate mitigation, there is a need for India to develop robust **Monitoring, Reporting and Validation** (MRV) frameworks, which can enable businesses to retain their economic competitiveness and thereby safeguard themselves against changing regulatory norms that can adversely impact their operations, while delivering on net-zero commitments and Nationally Determined Contributions (NDCs).

Table 3: Roadmap for implementation of MRV in the MSME sector

Task/Details	Simplified emissions reporting and target setting framework	Free user-friendly tool	Incentives to encourage adoption	Awareness and capacity building
Responsible agency	Ministry of Corporate Affairs Accounting, Standards Board (ASB)	Ministry of MSME/ NPMA/ tool builder	Ministry of MSME/ NPMA	Ministry of MSME through NPMA and MSME National Level Institute for Energy and Greening (under RAMP-S Programme)
Agencies to be consulted	Ministry of MSME, Bureau of India Standards (BIS), Quality Council of India (QCI). Bodies setting global frameworks and protocols: SBTi, ISSB, SASB, TCFD, TPT, GHG protocol	National Information Centre (NIC), BEE, Ministry of Electronics and Information Technology, Cluster associations, SME Climate Hub	Ministry of Finance, SIDBI, NABARD, CGTMSE, Line Ministries such as Ministry of Railways, Public Sector Undertakings (PSU) Sector Ministries (Textiles, Food Processing, Steel etc.)	Cluster Associations, MSME industry bodies CII, FICCI
Implementation timeline	6 months	3 months	3 months	Ongoing: After the launch of the reporting framework and tool, for 3-year period

REGUALTORY IMPACT ASSESSMENT

Keeping in mind the price sensitivity, climate litigation charges, changing policy landscape and their material impact on MSMEs, Regulatory Impact Assessment (RIA) will be essential before any demand-side regulatory mandates are imposed on MSMEs. Increased compliance burden on MSMEs could lead to net negative economic effects. RIAs can provide decision-makers with vital information about whether and how to regulate to accomplish public policy objectives. Moreover, RIA helps inform policymakers' choices to refrain from making changes in markets when doing so would be more expensive than advantageous. RIA further supports the decisions made by policymakers by proving the advantages of a regulation. RIA is specifically recommended since MSMEs have been kept out of several stringent mechanisms such as GST compliance, CSR obligations, and PAT Scheme. It is recommended to conduct a thorough RIA before introducing any specific mandates under the roadmap for MSMEs. In alignment with the Government's vision of promoting sustainable industrial development, a dedicated 'MSME National-Level Institute for Energy and Greening' will be required to be established under the aegis of the Ministry of MSME.

CONCLUSION

The modern business environment is no longer static. Regulatory frameworks are tightening globally, with mechanisms like the Carbon Border Adjustment Mechanism (CBAM) penalize carbon-intensive exports. The green transition of India's MSMEs is not merely a moral or environmental obligation, it is a strategic imperative. Domestically, India is moving toward stricter environmental audits and product ratings that reflect a company's ecological footprint. For a small enterprise, keeping pace with these shifting dynamics requires more than just intent; it requires a structural overhaul of how they perceive value and risk. India has ambitious targets to reach Net Zero by 2070. Since MSMEs contribute nearly 30% of the country's GDP and a vast portion of industrial emissions, they are the ground zero for climate action. When a single MSME adopts a solar rooftop or a water-recycling plant, the impact is localised, however when clusters do that across geographies, it alters the national energy trajectory. This is inclusive growth in its truest form ensuring that the smallest players are not left behind in the race toward a modern, green economy. These initiatives are designed to make green transitioning both accessible and economically viable. By embracing sustainability, MSMEs not only contribute to India's climate commitments under India's Nationally Determined Contributions (NDC), the Paris Agreement and SDGs but also become more resilient, future-ready businesses that can thrive in a rapidly evolving global economy.