

SCALING UP ROOFTOP SOLAR IN THE MSME SECTOR IN INDIA

This study aimed to diagnose the reasons for the slow growth and low investments in solar rooftop in the Micro, Small and Medium Enterprises (MSME) sector in India. It also evaluated appropriate financial instruments that balance the concerns of lenders with the needs of MSMEs. A total of 150 MSMEs were surveyed across six identified clusters (rubber and plastic; pharmaceuticals; auto; paper; food and beverage; textiles). Through this lens, the study proposed interventions to promote and increase uptake of rooftop solar in the MSME segment.

The Climate Investment Funds (CIF) accelerates climate action by empowering transformations in clean technology, energy access, climate resilience, and sustainable forests in 72 developing and middle-income countries. The USD5.5 billion Clean Technology Fund (CTF) is empowering transformation in developing countries by providing resources to scale up low carbon technologies with significant potential for long-term greenhouse gas emissions savings.

CONTEXT

India's substantial and sustained economic growth has placed an enormous demand on its energy resources. As a result, alternate energy options, like renewable energy, represent one of the most desirable pathways to contain the demand for fossil fuel sources in the short term, while diversifying the energy infrastructure and improving energy security.

The MSME sector is one of the key pillars of the economy, contributing approximately 29 percent of the GDP, 45 percent of manufacturing output, and 40 percent of exports. It is also one of the largest consumers of energy in India, accounting for approximately 20-25 percent of energy consumption by industries. However, limited access to finance, insecure market conditions, and escalating energy expenses are impacting the long-term profitability, competitiveness, and sustainability of the sector. The MSME sector is expected to contribute significantly to achieving the Government's target of developing 40 gigawatt (GW) of rooftop solar capacity by 2022.

KEY FINDINGS

Based on pre-defined qualitative and quantitative criteria, 150 MSMEs were selected and surveyed nationwide across six clusters (see the box below for more information). Analysis of the surveys found:



QUICK FACTS

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RELEVANT CIF PROGRAM

Clean Technology Fund (CTF)

EVALUATION FIRM

Deloitte Touche Tohmatsu India LLP

RELEVANT COUNTRIES

India (Hyderabad; Ahmedabad; Gurugram; Chennai; Jaipur; and Thane)

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- 1 More than 90 percent of MSMEs were the owners of the physical property/building out of which the company was being run, so ownership was not a barrier to implementation.
- 2 Almost 50 percent of the MSMEs had a connected load in the range of 50 to 200 kW, while in most cases the rooftop solar potential was less than 50 percent of the connected load. This indicated that solar generation could be fully absorbed.
- 3 Most MSMEs spent either between five and 10 percent or between 10 and 20 percent of their operating income on electricity, with the share determined largely by the nature of the industry and cost of other raw materials.
- 4 In general, the level of awareness about rooftop solar was very low amongst the survey sample.
- 5 Public and private banks were reported to be the most preferred financial institutions for lending. Respondents expressed a willingness to work with any institution that could offer the most attractive financial terms.
- 6 Some MSMEs found it difficult to meet collateral requirements as their plant and machinery were already committed to other term loans tied to their primary line of business.

differences between various MSME clusters in terms of their composition, market outlook, level of awareness, energy consumption patterns, financing requirements, etc.

- **Create dedicated aggregation vehicles:** The rooftop solar market is currently not geared to implement large-scale rooftop solar projects under the OPEX model¹ in the MSME sector without institutional or financial interventions. A dedicated aggregation vehicle would support implementation of rooftop solar projects across target MSME clusters.
- **Implement regulatory changes to support aggregation:** While aggregation-based models can address some of these barriers, there is no regulatory framework in place to facilitate implementation of such projects in India.
- **Support MSME based portfolios within existing/new lines of concessional credit:** Given that MSMEs are sometimes perceived by developers as higher risk in comparison to large commercial and industrial entities, concessional lines of credit may play a role in targeting dedicated portfolios supporting rooftop solar projects in MSME sector.
- **Create awareness and build capacity:** Majority of the MSMEs surveyed had limited knowledge of various aspects of rooftop solar such as cost and benefits, government schemes and policies, sources of concessional funding, etc. Dedicated initiatives to bridge knowledge gaps through workshops, IT tools, or toolkits on solar technology, for instance, would support the critical adoption of rooftop solar.

RECOMMENDATIONS

- **Target clusters where likelihood of achieving intended outcomes is highest:** Survey results pointed to significant

¹ OPEX refers to "Operational Expenditure". This is a third-party ownership model in which consumers only provide the premises for the solar plant; the plant is owned and operated by the installer companies or the investors. The consumers then pay the developer or investors for the electricity produced by the panels, sometimes at a rate lower than what they pay their utility.

1. SELECTION OF INDUSTRIES

The following parameters were identified for the purpose of shortlisting industries:

Parameter	Weight
Avg. electricity consumption	40%
Scale and volume of operations	30%
Profitability of the industry	20%
Growth rate of the industry	10%

The weighted average of the above parameters was used to shortlist industries. The shortlisted industries were:

1. Automobile components
2. Textiles
3. Food products and beverages
4. Pharmaceuticals
5. Paper and paper products
6. Rubber and plastic products

2. SHORTLISTING OF CLUSTERS

The following parameters were identified for the purpose of shortlisting MSME clusters in the identified clusters:

- Number of units in a cluster
- Annual turnover of the cluster
- Geographical diversity

Based on these parameters, the following clusters were selected:

Industry	Cluster
Textiles	Thane, Maharashtra
Automobile components	Gurugram, Haryana
Food products and beverages	Jaipur, Rajasthan
Pharmaceuticals	Ahmedabad, Gujarat
Plastic products	Hyderabad, Telangana
Paper and paper products	Chennai, Tamil Nadu

3. IDENTIFICATION OF MSME UNITS

A balanced mix of micro, small, and medium-size enterprises was chosen from each cluster to ensure diversity in understanding financial and technical barriers in adopting rooftop solar.

