GEF-8 PROJECT IDENTIFICATION FORM (PIF)

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General Project Information

Project Title
Accelerating sustainable energy transition for decarbonization of micro, small and medium manufacturing enterprises in India

Region	GEF Project ID
India	11758
Country(ies)	Type of Project
India	FSP
GEF Agency(ies):	GEF Agency ID
UNIDO	230230
Executing Partner	Executing Partner Type
Ministry of Micro, Small and Medium Enterprises, Government of India National Productivity Council The Energy Resource Institute	Government Government Others
GEF Focal Area (s)	Submission Date
Climate Change	9/19/2024

Project Sector (CCM Only)
Energy Efficiency

Taxonomy
Technology Transfer, Climate Change Mitigation, Climate Change, Focal Areas, Influencing models, Transform policy and regulatory environments, Strengthen institutional capacity and decision-making, Stakeholders, Beneficiaries, Communications, Awareness Raising, Behavior change, Public Campaigns, Private Sector, SMEs, Individuals/Entrepreneurs, Capital providers, Civil Society, Academia, Trade Unions and Workers Unions, Type of Engagement, Information Dissemination, Participation, Gender Equality, Gender Mainstreaming, Gender-sensitive indicators, Sex-disaggregated indicators, Gender results areas, Capacity Development, Participation and leadership, Capacity, Knowledge and Research, Learning, Theory of change, Adaptive management, Knowledge Exchange, Knowledge Generation, Energy Efficiency, Renewable Energy, Financing

Type of Trust Fund	Project Duration (Months)
GET	72
GEF Project Grant: (a)	GEF Project Non-Grant: (b)
8,982,420.00	0.00
Agency Fee(s) Grant: (c)	Agency Fee(s) Non-Grant (d)
853,330.00	0.00
Total GEF Financing: (a+b+c+d)	Total Co-financing
9,835,750.00	71,190,000.00
PPG Amount: (e)	PPG Agency Fee(s): (f)

150,000.00	14,250.00
PPG total amount: (e+f) 164,250.00	Total GEF Resources: (a+b+c+d+e+f) 10,000,000.00
Project Tags CBIT: No NGI: No SGP: No Innovation: No	

Project Summary

Provide a brief summary description of the project, including: (i) what is the problem and issues to be addressed? (ii) what are the project objectives, and if the project is intended to be transformative, how will this be achieved? iii), how will this be achieved (approach to deliver on objectives), and (iv) what are the GEBs and/or adaptation benefits, and other key expected results. The purpose of the summary is to provide a short, coherent summary for readers. The explanation and justification of the project should be in section B "project description".(max. 250 words, approximately 1/2 page)

India's Micro, Small, and Medium Enterprises (MSMEs) are critical to the economy, employing over 36 million people and contributing 33% to the country's manufacturing output. However, MSMEs face significant challenges in adopting sustainable practices, contributing to high energy consumption and substantial GHG emissions. This initiative aims to facilitate the decarbonization of the industrial sector through support to MSMEs, by enhancing energy and material efficiency, promoting industrial circularity, and integrating sustainable energy technologies. India's progress in MSME decarbonization reflects several initiatives, but a comprehensive strategy with clear targets and timelines is still emerging.

The initiative will target eight key industrial sectors—Textiles, Steel Re-Rolling, Chemicals, Food Processing, Pulp & Paper, Foundry & Forging, Bricks, and Light Engineering. These industrial sectors together contribute to about 50% of total industrial GHG emissions in India and collectively contribute significantly to India's industrial emissions, making them crucial for achieving national GHG reduction targets under the Paris Agreement.

The project will pilot and scale decarbonization interventions across 14,280 MSMEs in three phases, starting with 80 pilot projects and expanding to 3200 MSMEs in Phase 1, followed by a second scale-up targeting an additional 11,000 enterprises. Interventions will include energy efficiency measures, renewable energy integration, waste heat recovery, and other innovative solutions.

Key outcomes include an estimated lifetime direct GHG reduction of 5,428,600 tCO2 in 10 years. The project will also build capacity by training 1250 professionals and raising awareness among 28,400 individuals (over 30% women), contributing to long-term sustainability of the Indian MSMEs.

Indicative Project Overview

Project Objective

The project aims to support the decarbonization and reduction of energy consumption in Indian MSMEs in the industrial sector by implementing integrated energy efficiency measures, promoting energy substitution, and

introducing innovative solutions to minimize environmental impacts while enhancing productivity, competitiveness, and business resilience.

Project Components

Component 1: Policy development and market transformation for decarbonization in MSME

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing ($)	Co-financing ($)
600,000.00	2,000,000.00

Outcome:

Outcome 1.1: Enhance Policy Framework to mainstream Sustainable Energy Transition

Outcome 1.2: Preparation of Roadmaps for Sustainable Energy Transition

Outcome 1.3: Catalysing Market Transformation by developing industry standards, aggregating demand, facilitating commercialization and crafting innovative financing mechanisms

Output:

Output 1.1.1. Study policies, situation (especially gender), growth particularly pertaining to Sustainable Energy Transition for decarbonization in other relevant countries and preparing policies conducive to decarbonization in MSME

Output 1.1.2. Assess energy consumption (power and process heat) in different MSME sectors and their classification

Output 1.2.1. Development of sectoral roadmaps for sustainable energy transition for decarbonization in MSMEs

Output 1.3.1. Assessment of consumer behaviour for products/ packages for sustainable energy transition for decarbonization, formulating awareness modules and creating awareness

Output 1.3.2. Stimulate market demand for decarbonization technology in MSMEs

Output 1.3.3. Develop/revise decarbonisation inclusive schemes/policies under MoMSME for MSMEs

Component 2: Demand Creation and Enhanced Supply Chain for Sustainable Energy Solutions (SES) for Decarbonization

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing ($)	Co-financing ($)
1,400,000.00	3,000,000.00

Outcome:

Outcome 2.1. Demand creation and skill building for Sustainable Energy Solutions

Outcome 2.2: Enhance the supply chain of Sustainable Energy Solutions

Output:

Output 2.1.1: Develop modules for awareness creation and sensitization of factories Output 2.1.2: Develop modules and conduct skill-building programs (training) for workers (with a focus on women's participation) to facilitate SES interventions.

Output 2.1.3: Develop digital assets (e.g., website, platform, mobile app) for awareness creation, sensitization, training, knowledge sharing and benchmarking for MSMEs.

Output 2.1.4: Facilitate international exposure through study tours and knowledge exchange programs
Output 2.2.1: Assess gaps in the SES supply chain and identify suitable products and designs Output 2.2.2: Develop and advocate for industry-specific guidance material and performance benchmarks Output 2.2.3: Improve the design, engineering, and manufacturing capabilities Output 2.2.4: Support needs-driven sustainable energy innovation Output 2.2.5: Develop modules and train professionals Output 2.2.6: Build the capacity of identified institutions

Component 3: Implementation of Sustainable Energy Solutions for decarbonization in MSME sector

Component Type	Trust Fund
Investment	GET
GEF Project Financing ($)	Co-financing ($)
6,104,000.00	60,305,500.00

Outcome:

Outcome 3.1: Pilot Demonstration of Sustainable Energy Solutions in MSME Units

Outcome 3.2: First Scale-Up of Sustainable Energy Solutions in MSME Units

Outcome 3.3: Second Scale-Up of Sustainable Energy Solutions in MSME Units

Output:

Output 3.1.1: Conduct comprehensive baseline audits to assess energy consumption patterns and identify opportunities for improvement in selected MSMEs.

Output 3.1.2: Develop and implement customized SES solutions for each pilot MSME, considering their specific needs, energy consumption patterns, and decarbonization potential.

Output 3.1.3: Provide technical assistance and hands-on support (handholding) to pilot MSMEs throughout the implementation process, ensuring smooth adoption of new technologies and practices.

Output 3.1.4: Conduct post-implementation monitoring and evaluation to assess the impact of pilot projects, including energy savings, emission reductions, and cost-effectiveness. Document lessons learned and best practices for subsequent scale-up phases.

Output 3.2.1: Offer tailored SES solutions, including baseline studies, to interested MSMEs based on the successful models demonstrated in the pilot phase.

Output 3.2.2: Facilitate access to finance by leveraging financing mechanisms from financial institutions and promoting equity investments to support MSME investments in sustainable energy technologies.

Output 3.2.3: Provide technical assistance and handholding support to MSMEs during the implementation of upscaled interventions, ensuring effective technology transfer and knowledge sharing.

Output 3.2.4: Conduct post-implementation monitoring and evaluation to assess the impact of scaled-up interventions, track progress towards emission reduction targets, and identify areas for improvement.

Output 3.3.1: Engage and build the capacity of local institutions (e.g., Sector Skill Councils, industry associations) to establish "Decarbonization Cells" (DCs) that will serve as hubs for knowledge sharing, technical assistance, and implementation support.

Output 3.3.2: Develop training modules, including online resources, for enterprise owners and technical teams to enhance their understanding of decarbonization strategies and implementation best practices.

Output 3.3.3: Support enterprises in implementing decarbonization measures by providing access to trained professionals (Certified Energy Auditors, Certified Energy Managers, etc.) through the DCs.

Output 3.3.4: Track the progress of decarbonization interventions through digital monitoring platforms and physical sample monitoring of enterprises.

Component 4. Knowledge management and learning

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing ($)	Co-financing ($)
300,000.00	1,200,000.00

Outcome:

Outcome 4.1. Effective Creation, Management, Learning, and Communication of Knowledge

Output:

Output 4.1.1: Develop a variety of knowledge products, Output 4.1.2: Establish an information hub, accessible via a dedicated portal or app, Output 4.1.3: Set up digital monitoring systems to track progress in implementing decarbonization across all project phases.

Output 4.1.4: Set up a call center at the decarbonization cells to provide guidance and support to enterprises.

Output 4.1.5: Develop and deliver guided online learning modules for enterprises on decarbonization strategies and implementation.

Output 4.1.6: Organize and facilitate participation in workshops, conferences, and other knowledge-sharing events

M&E

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing ($)	Co-financing ($)
150,000.00	1,200,000.00

Outcome:

Outcome 5.1: Monitoring and Evaluation

Output:

Output 5.1.1. Conduct periodic meetings, including an inception workshop and Project Steering Committee meetings.

Output 5.1.2. Prepare and submit periodic reports, including Project Implementation Reports (PIRs), GEB reports, and progress reports,

Output 5.1.3. Conduct a Mid-Term Review to assess the project's progress at the midpoint of implementation.

Component Balances

Project Components	GEF Project Financing ($)	Co-financing ($)
Component 1: Policy development and market transformation for decarbonization in MSME	600,000.00	2,000,000.00
Component 2: Demand Creation and Enhanced Supply Chain for Sustainable Energy Solutions (SES) for Decarbonization	1,400,000.00	3,000,000.00
Component 3: Implementation of Sustainable Energy Solutions for decarbonization in MSME sector	6,104,000.00	60,305,500.00
Component 4. Knowledge management and learning	300,000.00	1,200,000.00
M&E	150,000.00	1,200,000.00
Subtotal	**8,554,000.00**	**67,705,500.00**
Project Management Cost	428,420.00	3,484,500.00
Total Project Cost ($)	**8,982,420.00**	**71,190,000.00**

Please provide justification

The project's funding allocation is strategically aligned with its objectives, ensuring a comprehensive approach to decarbonization and energy reduction in Indian MSMEs. The substantial co-financing, particularly for technology implementation, underscores strong stakeholder commitment. The emphasis on capacity building and knowledge dissemination fosters sustainability, while robust monitoring and evaluation mechanisms ensure accountability and impact measurement. The funding structure reflects a well-balanced strategy, paving the way for significant environmental and economic benefits for Indian MSMEs.

PROJECT OUTLINE

A. PROJECT RATIONALE

Briefly describe the current situation: the global environmental problems and/or climate vulnerabilities that the project will address, the key elements of the system, and underlying drivers of environmental change in the project context, such as population growth, economic development, climate change, sociocultural and political factors, including conflicts, or technological changes. Describe the objective of the project, and the justification for it. (Approximately 3-5 pages) see guidance here

Here's an overview of the current landscape, policy gaps, and potential ways to strengthen MSME decarbonization efforts.

Current situation

India has a significant number of Micro, Small, and Medium Enterprises (MSMEs). As of 2015, there were approximately 63.05 million micro-sized enterprises, 330,000 small enterprises, and 5,000 medium-sized enterprises. According to the Ministry of Micro, Small and Medium Enterprises (MoMSME), these MSMEs employ over 100 million individuals, making them the largest employer in India outside of agriculture. In recent years, the contribution of MSMEs to the country's overall industrial production and GDP has been on the rise; currently, the MSME industries account for nearly 45% of India's manufacturing output, 40% of total exports, and over 8% of GDP. Indian MSMEs manufacture more than 6,000 products, ranging from traditional items to high-tech goods, and require energy in both electrical and thermal forms.

Since independence, the capacity of India's power generation sector has expanded significantly, increasing from 1,347 MW in 1947 to 460,659 MW in 2020-21. In 2020, India consumed 1,229 terawatt-hours of electricity. The country generates electricity from a variety of sources, including fossil fuels, hydropower, solar, wind, gas, and nuclear power. Fossil fuels accounted for 1,114,702 GWh of gross electricity generation, while hydropower contributed 151,695 GWh, solar provided 73,483 GWh, wind generated 68,640 GWh, gas produced 47,019 GWh, and biomass contributed 16,056 GWh. Approximately 76% of electricity is generated from fossil fuels, with renewable energy sources making up nearly 20%. Electricity consumption is distributed as follows: residential use accounts for 24%, industrial use for 42%, agricultural use for 17%, and other sectors for 10%. By 2029-30, India is projected to have an installed capacity of 817,254 MW. The Primary energy demand for the year 2019 was 929 Mtoe[1][1] in India, with 74% of this energy utilized for heating and cooling, or thermal energy use. High-temperature applications (above 400°C) accounted for 48% of energy consumption, followed by low-temperature applications (below 150°C) at 30%, and medium-temperature applications (150-400°C) making up the remainder.

Sectoral Trends and expected evolutions :

Following are some sectoral trends and expected evolutions, which is relevant from the Indian MSMEs decarbonisation point of view –

MSMEs and Energy Consumption: Micro, Small, and Medium Enterprises (MSMEs) consume approximately 100 million tons of oil equivalent (MTOE) annually, accounting for about 10% of India's total energy demand. This substantial consumption underscores the MSME' significant impact on national energy usage, primarily driven by inefficient boilers and thermal energy systems prevalent in industries such as textiles, chemicals, and food processing.

Industrial Sector Contribution to Emissions: The industrial sector in India is responsible for roughly 33% of the nation's total greenhouse gas (GHG) emissions. Within this sector, MSMEs contribute significantly due to their inefficient energy usage, which results in a high carbon footprint. Enhancing energy efficiency and adopting cleaner technologies as well renewable energy technologies could lead to considerable reductions in emissions.

Energy Intensity of the Indian Economy: India's energy intensity stands at around 0.30 tons of oil equivalent per $1,000 of GDP, which is higher than global averages. The country aims to reduce this energy intensity by 33-35% by 2030 as part of its Nationally Determined Contributions (NDCs) under the Paris Agreement. Improving energy efficiency in MSMEs is crucial for achieving this goal.

Growth in Industrial Energy Demand: As the Indian economy expands, industrial energy demand is projected to grow significantly. By 2040, total energy consumption in India could double, with the industrial sector being a key driver. Addressing current inefficiencies is urgent to ensure that future energy demand remains sustainable.

Renewable Energy Adoption: India has set a target to achieve 450 GW of renewable energy capacity by 2030. Integrating renewable energy systems—such as solar and biomass—into MSME operations can help reduce reliance on fossil fuels and support national renewable energy objectives.

Potential for Emission Reductions: Research indicates that enhancing energy efficiency within the MSMEs could reduce GHG emissions by 25-30%. For instance, transitioning to more efficient boilers and optimizing thermal energy systems could decrease fuel usage by up to 15-20%, leading to significant reductions in CO2 emissions.

'Financial Challenges: The financing sources currently available to Micro, Small, and Medium Enterprises (MSMEs) include commercial banks, industry associations, and government schemes. However, these sources often prove inadequate due to several key barriers. High-interest rates pose a significant challenge for Micro, Small, and Medium Enterprises (MSMEs), as elevated loan costs strain their financial resources and hinder growth opportunities. Compounding this issue, many financial institutions require collateral, which smaller enterprises often lack, limiting their access to essential funding. Furthermore, existing financing options typically overlook the need for investments in decarbonization technologies, leaving MSMEs eager to adopt sustainable practices at a disadvantage when searching for suitable financial products. The complexity of loan application processes adds another layer of difficulty; lengthy documentation and stringent eligibility criteria can deter these businesses from pursuing necessary financing. Additionally, a lack of financial education among MSME owners hampers their ability to navigate the financing landscape effectively, leading to poor financial decisions and missed opportunities. Finally, the inadequate credit history common among MSMEs creates hesitancy among lenders, further obstructing access to capital for new or smaller businesses striving to grow and innovate. These challenges highlight the need for more accessible and supportive financing solutions that cater specifically to the unique needs of MSMEs, particularly those focused on sustainability and growth in a competitive market environment.

Impact of previous interventions:

There have been number of GEF and other interventions in the decarbonsiation of MSME space which has made varied degree of impact on the ground :

- **GEF-UNIDO-BEE Project on Promotion of Energy Efficiency and Renewable Energy in MSMEs (GEF ID 3553): This project successfully triggered investments in energy efficiency and renewable energy technologies in 23 MSME clusters. However, it was limited in geographical scope and struggled to achieve widespread technology adoption beyond the initial target clusters. This limitation highlights the need for interventions that can reach a larger number of MSMEs across diverse sectors and regions.**

- **Financing EE Projects in the MSME industries – KfW: This initiative provided valuable financial assistance to SMEs for EE projects. However, its impact was constrained by limited funding and a lack of complementary technical assistance and capacity building support. This underscores the need for blended finance approaches that combine grants, concessional loans, and technical expertise to overcome financial barriers and ensure successful project implementation.**

- **GEF funded Facility for Low Carbon Technology Deployment (FLCTD) (GEF ID 4927): The FLCTD successfully identified and supported 60 innovations in energy efficiency and clean technologies. However, many of these innovations faced challenges in scaling up and achieving market penetration due to a lack of policy support and market incentives. This highlights the need for interventions that not only support technology development but also create an enabling environment for their widespread adoption.**

- **"GEF-UNIDO-MSME-EESL Project on Promoting Market Transformation for Energy Efficiency in MSMEs", (GEF ID 4893): This project made strides in promoting energy efficient technologies through standardization, bulk procurement, and innovative financing. However, its reach was limited to 12 clusters, and it faced challenges in replicating successful models in other contexts due to varying MSME needs and market conditions. This points to the need for flexible and adaptable approaches that can cater to the diverse requirements of MSMEs across different sectors and regions.**

- **MoMSME Initiatives to promote Energy Efficiency in MSMEs: While MoMSME has implemented various programs to support energy efficiency in MSMEs, these initiatives often suffer from limited funding, fragmented implementation, and a lack of targeted support for decarbonization. Furthermore, data on the effectiveness and reach of these programs is limited, hindering the assessment of their impact and the identification of areas for improvement. This underscores the need for a comprehensive approach that strengthens existing initiatives, improves coordination, and enhances monitoring and evaluation frameworks.**

Previous efforts haven't reached a tipping point in MSME decarbonization due to persistent challenges:

- **Limited scale and scope: Existing initiatives have often focused on specific sectors, clusters, or technologies, limiting their overall impact. Currently, less than 15% of Indian MSMEs have adopted comprehensive energy efficiency measures, leaving a significant potential for decarbonization untapped.**

- **Lack of policy support: While some policies exist, they often lack clear targets, enforcement mechanisms, and incentives for deep decarbonization in the MSME industries. This creates an uncertain policy environment that hinders investment and technology adoption.**

- **Financial constraints: MSMEs face significant financial barriers to investing in energy efficiency and decarbonization technologies. Access to affordable financing remains a critical challenge, particularly for small and micro enterprises.**

- **Capacity gaps: Many MSMEs lack the technical expertise and managerial capacity to identify, implement, and monitor energy efficiency measures. This highlights the need for targeted training and capacity building programs.**

- **Market barriers: Market distortions, information asymmetry, and a lack of awareness about available technologies hinder the adoption of energy-efficient solutions. This calls for interventions that address market failures and promote the development of a robust market for energy efficiency products and services.**

- **Data gaps: A lack of reliable data on energy consumption, emissions, and technology performance in the MSMEs hampers effective policymaking and investment decisions. This underscores the need for improved data collection and analysis to inform targeted interventions.**

Some of the Existing Initiatives and Programs related to the MSME decarbonisation are

- **Perform, Achieve, and Trade (PAT) Scheme: A market-based mechanism under NMEEE mandating energy efficiency targets, mainly for large industries but indirectly impacting MSMEs by encouraging them to adopt efficient technologies.**
- **Zero Defect Zero Effect (ZED) Certification: A voluntary certification promoting quality improvement and energy efficiency in MSMEs, incentivizing cleaner practices.**
- **Credit Guarantee Fund Scheme for Energy Efficiency (CGFEE): Supports financing for energy-efficient projects in MSMEs.**
- **National Clean Energy Fund (NCEF): Backs R&D of clean technologies, which can benefit MSMEs.**
- **State-Level Initiatives: Various state programs encourage energy efficiency and renewable energy adoption in MSMEs.**

Policy and Regulatory Challenges :

While the Energy Conservation Act provides a framework, a comprehensive strategy specifically targeting MSME decarbonization with clear targets and timelines is needed. Several initiatives exist, such as the Perform, Achieve and Trade (PAT) scheme, Zero Defect Zero Effect (ZED) certification, and the Credit Guarantee Fund Scheme for Energy Efficiency (CGFEE). However, these initiatives lack a unifying framework with specific targets for MSMEs. Furthermore, regulatory barriers, limited financial support, lack of awareness, and capacity challenges hinder effective MSME decarbonization.'

Following are some challenges that has been observed in the existing policies and programmes

1. Limited Scope and Reach:

- **PAT Scheme: Primarily focuses on large industries, with limited direct impact on MSMEs. While it encourages efficient technologies, MSMEs often lack the resources and scale to participate fully.**
- **ZED Certification: Voluntary nature limits widespread adoption. Many MSMEs lack awareness or find the certification process burdensome.**
- **CGFEE: While it supports financing, access remains a challenge for many MSMEs, especially smaller ones. Disbursement of funds can be slow and complex.**
- **NCEF: Focus on R&D has indirect benefits for MSMEs. Translation of research into accessible and affordable technologies for MSMEs needs strengthening.**
- **State-Level Initiatives: Vary in effectiveness and suffer from inconsistencies, limited resources, and lack of coordination.**

2. Lack of Targeted Approach:

- Most programs lack a specific focus on deep decarbonization within MSMEs. They address energy efficiency broadly but may not incentivize the adoption of technologies with the highest emission reduction potential.
- Limited consideration of sector-specific needs and challenges. A 'one-size-fits-all' approach fails to address the unique circumstances of different MSME clusters.

3. Implementation Challenges:
   - Lack of awareness and capacity: Many MSMEs are unaware of existing programs or lack the technical expertise to implement energy-efficient solutions.
   - Financial constraints: High upfront costs and limited access to affordable financing remain significant barriers to adopting decarbonization technologies.
   - Market distortions: Lack of clear market signals and information asymmetry hinder the development of a robust market for energy-efficient products and services for MSMEs.
   - Data gaps: Insufficient data on MSME energy consumption, emissions, and technology performance hinders effective policymaking and targeted interventions.

4. Policy Gaps:
   - Lack of clear targets and mandates: Absence of specific decarbonization targets for MSMEs limits accountability and ambition.
   - Inadequate enforcement mechanisms: Weak enforcement of existing regulations and standards undermines their effectiveness.
   - Limited incentives: Financial and fiscal incentives for deep decarbonization in the MSMEs are insufficient to drive widespread adoption of clean technologies.

5. Lack of Coordination and Synergy:
   - Fragmentation of programs and initiatives across different ministries and agencies leads to duplication of efforts and inefficient resource allocation.
   - Weak coordination between national and state-level initiatives hinders a cohesive and impactful approach to MSME decarbonization.

Addressing these gaps requires a comprehensive strategy that strengthens existing initiatives, introduces new targeted programs, enhances policy support, and fosters collaboration among stakeholders.

Addressing Policy Gaps

This project will map existing policies and their limitations, building on lessons learned from past projects to ensure greater impact and sustainability. The project's additionality lies in its focus on strengthening policy coherence, fostering innovation, and enhancing sustainability, thereby filling critical gaps in the current landscape. This project will build on these existing policies by advocating for their strengthening and developing complementary instruments that specifically target deep decarbonization in the MSME industries. This project recognizes the need to build upon previous efforts while addressing persistent challenges. It will identify and address remaining policy gaps and implementation challenges, scale up successful approaches from past interventions, and enhance the sustainability of project outcomes by promoting their integration into national policies.

During the PPG phase, discussions with different stakeholders will take place in order to emphasize the importance of a strategic framework and policy consistency for long-term sustainability. These discussions

at the PPG phase will result in identifying how the project will contribute to a long term vision for MSME decarbonisation, ensuring to avoid an ad-hoc approach.

Building on Past Efforts and Rapid Up-scaling:

While previous GEF projects, have made valuable contributions, MSME decarbonization has yet to reach a tipping point due to limitations in scale and scope, lack of targeted policy support, financial constraints, capacity gaps, and market barriers. This project addresses these challenges by scaling up interventions to reach a larger number of MSMEs across multiple sectors, strengthening policy coherence and developing MSME-specific policies, and leveraging innovative financing mechanisms to unlock greater investment in decarbonization.

In the absence of the project, the energy consumption and greenhouse gas (GHG) emissions of the Micro, Small, and Medium Enterprises (MSME) industries are projected to rise significantly. Based on current trends and growth projections, it is estimated that the industry's energy consumption could increase to 135 million tonnes of oil equivalent (MTOE) by 2030, marking a 35% rise from the current level of 100 MTOE. This escalation in energy use would correspondingly elevate GHG emissions, potentially reaching 400 million tonnes of CO2 equivalent annually. Several factors contribute to this anticipated increase. First, the MSME industry is expected to experience growth at an average annual rate of 6-7% in the coming years, driven by rising domestic demand and expanding export opportunities.

This natural growth trajectory will lead to greater energy consumption and emissions. Additionally, a significant technology gap persists within many MSMEs, which continue to rely on outdated and inefficient technologies. This reliance results in higher energy consumption and emissions per unit of output; without intervention, this gap is likely to remain, impeding the sector's decarbonization efforts. Financial constraints also play a critical role, as MSMEs often struggle to access financing for investments in energy efficiency and renewable energy technologies. This limitation curtails their ability to adopt cleaner and more sustainable practices. Furthermore, while India has made strides in developing policies that promote energy efficiency and renewable energy, gaps still exist in effective implementation and enforcement, particularly at the MSME level.

This project will take a different approach and drive transformative change by:

- **Increased scale and scope: The project will target a wider range of MSMEs across diverse sectors and regions, significantly expanding the reach of decarbonization efforts. We aim to reach at least 5000 MSMEs directly and indirectly impact over 20,000 MSMEs through policy influence and market transformation.**

- **Enhanced policy support: The project will work closely with policymakers to strengthen existing policies and develop new instruments that incentivize MSME decarbonization. This will include advocating for clear targets, streamlined regulations, and financial incentives for technology adoption.**

- **Innovative financing mechanisms: The project will pilot and scale up innovative financing mechanisms, such as blended finance facilities and risk-sharing instruments, to overcome financial barriers and mobilize private sector investment. We will leverage public funds to catalyze private investment and create a sustainable financing ecosystem for MSME decarbonization.**

- **Capacity building and knowledge sharing: The project will implement comprehensive capacity building programs for MSMEs, technology providers, and financial institutions. This will include training on energy auditing, technology assessment, project development, and financial management.**

- **Market development and technology transfer: The project will support the development of a robust market for energy efficiency products and services by promoting technology transfer, fostering innovation, and addressing market barriers.**

- **Data collection and analysis: The project will establish a robust data collection and analysis system to monitor progress, evaluate impact, and inform decision-making. This will involve developing a comprehensive database on MSME energy consumption, emissions, and technology performance.**

In terms of access to finance, the project is designed to avoid crowding out other financing sources by employing a targeted approach that complements existing financial mechanisms. The project aims to enhance financing for MSMEs focused on decarbonization by offering targeted incentives that complement traditional funding sources rather than displace them. By leveraging existing government and industry initiatives, the project maximizes resource efficiency and effectiveness, ensuring that current programs are fully utilized. Emphasizing financial sustainability, it encourages MSMEs to develop economically viable business models that can thrive independently of ongoing subsidies. To foster trust and participation, the project will implement a transparent subsidy allocation process, ensuring equal access for eligible MSMEs without undermining other financing options. Additionally, it will actively seek co-financing from private investors and financial institutions to increase total funding and demonstrate confidence in the supported initiatives. By providing technical assistance, the project will help MSMEs create high-quality proposals that are attractive to lenders, thereby enhancing their chances of securing financing. Finally, the initiative will explore innovative funding mechanisms such as green bonds and blended finance models to diversify funding sources and reduce reliance on any single type of financing. Through these investment strategies, the project aims to create a supportive ecosystem for MSME financing that enhances existing resources and promotes sustainable practices without crowding out other funding options.

Additionally, this project will set itself apart from existing initiatives, such as those undertaken by TERI, BEE and other development agencies in collaboration with the Ministry of MSME. This approach would focuses on addressing gaps identified in previous assessments and introducing new dimensions, rather than merely replicating existing efforts.

Global environmental problems and climate vulnerabilities that project will address

The project aims to tackle several pressing global environmental challenges and climate vulnerabilities:

- **Greenhouse Gas Emissions: The industrial sector, including MSMEs, is a significant contributor to greenhouse gas emissions. By promoting sustainable energy practices among MSMEs, the project aligns with global efforts to mitigate climate change and reduce these emissions.**

- **Air Pollution: Conventional energy sources used by MSMEs are often major contributors to air pollution. The project's focus on transitioning to cleaner energy alternatives will help improve air quality and public health, addressing a global concern with far-reaching implications.**
- **Resource Depletion: Many industrial processes rely heavily on the use of finite resources. To address global concerns related to resource depletion, the project emphasizes resource optimization and the adoption of sustainable practices throughout the MSME industries.**
- **Renewable Energy Adoption: Promoting the adoption of renewable energy sources among MSMEs aligns with global initiatives aimed at transitioning to cleaner energy and decreasing reliance on fossil fuels.**
- **Circular Economy: The project advocates for resource efficiency and a circular economy approach, tackling global challenges linked to linear production models and waste generation.**
- **Climate Vulnerabilities: Like many countries, India faces significant vulnerabilities to the effects of climate change. By emphasizing sustainable energy practices, the project enhances climate resilience by minimizing carbon footprints and reducing environmental impacts.**

By tackling these critical issues head-on, the project demonstrates a commitment to environmental stewardship and sustainable development. Its interventions have the potential to create a ripple effect, inspiring broader adoption of eco-friendly practices and contributing to the global fight against climate change, air pollution, and resource scarcity.

Justification for the Project:

The justification for the project is rooted in the intersection of economic needs, environmental urgencies, and the crucial role of MSMEs. Key justifications include:

- **MSME Dominance: Recognizing that MSMEs are the backbone of India's business sector, any effective sustainable energy transition must include this extensive segment.**
- **Environmental Imperatives: With global commitments to reduce greenhouse gas emissions, India's pursuit of sustainability aligns with international objectives. The active involvement of MSMEs is essential for achieving these targets.**
- **Alignment with India's Net-Zero Emissions Target for 2070: The project supports India's commitment to reach net-zero emissions by 2070, highlighting the need for MSMEs, which consume over 100 million tons of oil equivalent, to contribute to the decarbonization effort.**
- **Energy as a Strategic Resource: Acknowledging that energy is vital for MSMEs, the project emphasizes that sustainable energy practices are crucial for reducing costs and maintaining competitiveness.**
- **Innovation and Competitiveness: The project underscores the connection between innovation, sustainability, and competitiveness, aiming to position MSMEs as leaders in adopting advanced technologies.**
- **Circular Economy and Resource Optimization: Recognizing the importance of resource optimization in achieving broader sustainability goals, the project promotes a circular economy to minimize waste.**
- **Integration and Adaptability: Understanding that sustainability is a continuous journey of improvement, the project aims to foster long-term transformation within MSMEs.**
- **Building on Past Efforts for Rapid Scaling: UNIDO has implemented various initiatives focused on energy efficiency and quality improvement globally and in India. However, the impact has been limited in India due to the sheer number of MSMEs. This project builds on previous**

learnings, including technology demonstrations, financing models, and innovations, to enhance and rapidly scale up decarbonization efforts.

- Focus on decarbonisation in MSME: The Ministry of Micro, Small and Medium Enterprises (MoMSME) serves as the lead ministry for the overall development of MSMEs in India. Beyond its role in business, market, and capacity development, MoMSME has initiated efforts to integrate energy and resource efficiency, as well as greening initiatives, into its schemes (see Table 2 for details). In addition, other key agencies like the Bureau of Energy Efficiency (BEE), under the Ministry of Power, focus on enhancing energy efficiency and promoting energy conservation, contributing to decarbonization efforts. Similarly, the Ministry of New and Renewable Energy (MNRE) plays a cross-cutting role by promoting renewable energy sources and hydrogen technologies, which further support MSMEs in adopting cleaner energy solutions. The interventions and insights gained from this project will provide valuable inputs for these entities, helping them accelerate the development and implementation of strategies to fast-track decarbonization across MSMEs. During the PPG phase of the project, discussions will be held with BEE and MNRE along with MoMSME regarding some executing activities.

By addressing these justifications, the project aims to create a significant impact on the sustainable energy landscape within India's MSME industries.

Drivers of environmental change in the context of the project include factors such as population growth, economic development, climate change, sociocultural and political influences, conflicts, and technological advancements:

- Population Growth: The increasing population in India intensifies the demand for energy resources, particularly those utilized by micro, small, and medium enterprises (MSMEs). Rapid urbanization and industrialization further exacerbate this demand.
- Economic Development: Growth in the MSME industries leads to higher energy consumption. As these enterprises expand, their energy requirements increase, often relying on fossil fuels that contribute to carbon emissions and environmental harm.
- Climate Change: India is vulnerable to the impacts of climate change, including extreme weather events, altered precipitation patterns, and rising temperatures. The project aims to mitigate these effects by promoting sustainable energy practices that lower greenhouse gas emissions.
- Sociocultural Factors: Traditional energy sources and practices within MSMEs can be inefficient and environmentally damaging. Cultural acceptance of new technologies and practices is essential for a successful transition.
- Political Factors: Government policies and regulations shape the energy landscape. In India, initiatives that promote renewable energy and hydrogen, along with commitments to Nationally Determined Contributions focused on carbon reduction, influence the adoption of sustainable energy technologies by MSMEs.
- Conflicts: Divergent interests among stakeholders can lead to conflicts. Political or social unrest can disrupt energy infrastructure and supply chains, impacting energy availability and reliability for MSMEs.
- Technological Changes: Innovations in renewable energy technologies, energy efficiency measures, and advancements such as energy storage and hydrogen present opportunities for MSMEs to adopt cleaner and more sustainable energy solutions.
- GHG emissions practices: The MSME considered under the project consume mostly fossil fuels in the form of coal, furnace oil, and electricity (over 70% of which is generated in power plants through coal). The thematic sectors considered for the project contribute to about 50% GHG

emissions of the industrial GHG contribution. The decarbonisation measures present an opportunity to reduce GHG emissions.

- Environmental degradation - In the absence of project interventions, we anticipate that the drivers of environmental degradation will continue to intensify due to many factors. The MSME industry is projected to grow, resulting in higher emissions and resource consumption. Without intervention, energy-intensive processes and fossil fuel reliance will exacerbate environmental degradation. Many MSMEs currently lack access to energy-efficient technologies, leading to inefficient resource utilization and waste generation. As industrial activity expands, existing environmental regulations may be insufficiently enforced, further contributing to pollution and resource depletion.

Potential for socio-economic co-benefits

The project's focus on the MSME segment presents significant potential for socio-economic co-benefits. One major advantage is job creation; the project is expected to generate new green jobs in areas such as the installation, maintenance, and operation of renewable energy systems, energy-efficient equipment, and resource recovery and recycling. It is estimated that the project could directly create between 1,500 and 2,000 green jobs while indirectly supporting several thousand additional jobs through the growth of sustainable energy-related businesses. Moreover, training programs centered on energy efficiency, renewable energy, and circular economy practices will enhance the skills of MSME workers, thereby improving their employability and income potential. This enhancement can lead to higher wages and improved living standards for MSME workers and their families. Additionally, improvements in energy efficiency can significantly lower energy costs for MSMEs, boosting their profitability and competitiveness. Such advancements may result in increased sales, market share, and export opportunities for MSMEs, contributing positively to economic growth and development.

The project also emphasizes social inclusion by specifically targeting women's participation in training and capacity-building activities. This focus promotes gender equality and women's empowerment within the MSME industries, fostering greater economic opportunities and social inclusion for women in the industrial workforce. Finally, implementing cleaner energy technologies and processes can reduce air and water pollution in and around MSME workplaces. This reduction leads to improved health outcomes for workers and nearby communities while lowering healthcare costs and enhancing overall quality of life.

In summary, the project is justified by the need to empower MSMEs with sustainable energy practices that align with global sustainability goals and national objectives. It fosters innovation and enhances competitiveness while leveraging strong drivers for transition. Additionally, it builds on UNIDO’s previous efforts to accelerate scaling up and contributes to the decarbonization of India's MSME industries.

The previous GEF and other investments targeting MSME industries, though have contributed in creating awareness, pockets of demonstrations, small scale up, several challenges have prevented these efforts from having a widespread, transformational impact. This project presents a more holistic, more visible scale (14280 nos.) across 8 thematic sectors in 20 clusters, by addressing the gaps in past initiatives and leveraging lessons learned. Some of the factors preventing widespread impact are as follows;

- Limited awareness and technical capacity: Despite efforts in promoting energy efficiency, many MSMEs remain unaware of the long-term benefits of decarbonization or do not have the technical knowledge to adopt such practices. The proposed interventions also are rapidly changing – for

example, in a previous intervention efficient way of handling/burning coal was key focus, however, now phasing out coal both from national/ international perspective is critical.

- Lack of integration between policy and implementation: There appears gap in focus of different government agencies, as can be seen, MoMSME focus is promote MSME business, market while BEE focus on EE & EC and MNRE focus on Renewable Energy, Hydrogen. These needs to be amalgamated into the policies and schemes of MoMSME. The project supports such inclusion.
- High upfront costs and limited access to finance: Though the payback on investments are estimated good, MSME often find it hard to mobilise the upfront capital costs. Unlike large industries, MSME struggle to leverage finances.
- Lack of sector-specific solutions: Different sectors need different set of solutions; without them it is difficult to standardize and offer as ready/ cost-effective solutions. Past interventions were focused at fewer sectors and fewer factories, without resulting into standardized solutions.
- Multiple agencies and Cross-sectoral involvement: With different agencies Ministry of MSME, BEE, MNRE and MoEFCC, holding different focus areas, there is a need for greater institutional linkages and coordination mechanisms for industry centric solutions.

This project offers this additionality which have prevented the MSME industries from achieving a tipping point in decarbonization. By combining sector-specific solutions, innovative financial models, stronger institutional coordination, and large-scale capacity-building efforts, this project moves beyond the limitations of previous GEF investments and targets a more comprehensive, scalable transformation of the MSME industries.

Objective of the Project:

This initiative aims to facilitate the decarbonization of the industrial sector through support to MSMEs in the industrial sector, by enhancing energy and material efficiency, promoting industrial circularity, and integrating sustainable energy technologies. To achieve this, the project will focus on the following levers of transformation:

- Promote Energy Efficiency: Implement energy-efficient (EE) technologies and practices (Energy Conservation - EC) to reduce energy consumption and operational costs.
- Facilitate Renewable Energy Adoption: Encourage MSMEs to transition from fossil fuels to renewable energy (RE) sources such as solar, biomass, and wind.
- Introduce Low-Carbon Technologies: Integrate low-carbon technologies (LCT), including emerging options like hydrogen, tailored to specific MSME industries.
- Reduce Greenhouse Gas Emissions: Help MSMEs lower their emissions through EE/EC, RE, LCT, and other innovative solutions.
- Enhance Business Competitiveness: Improve resource efficiency, reduce energy costs, and align MSMEs with global sustainability standards to boost their competitiveness.
- Capacity Building and Training: Equip MSME stakeholders with the knowledge and skills to implement decarbonization measures and access financial support.
- Strengthen Institutional Frameworks: Collaborate with government bodies like the Ministry of MSME, Bureau of Energy Efficiency (BEE), and Ministry of New and Renewable Energy (MNRE) to align policy frameworks, leverage support schemes, financial incentives, and technical assistance.
- Support Climate Resilience: Enhance MSME resilience to climate change impacts by integrating sustainability into their operations and reducing resource dependency. The project will promote long-term sustainability and resilience by supporting MSMEs in adopting flexible and adaptable technologies, enhancing their capacity to manage climate risks, fostering innovation in energy-efficient solutions, and advocating for policies that incentivize decarbonization. This will ensure

that project outcomes endure beyond the project's lifetime and contribute to lasting reductions in GHG emissions

By achieving these levers of transformation, the project aims to catalyse a transformative shift towards sustainable energy practices in India's MSME industries, positioning it as a global leader in environmental stewardship and economic competitiveness.

Baseline in the absence of the project

For MSME industries, the government has partnered with GEF, its implementing agencies (UNIDO, World Bank) and other development partners (GIZ, EU, IEA, etc.) on different energy efficiency projects, covering awareness raising, capacity building, energy monitoring and audits and promotion of specific energy efficient appliances, including lighting, motors and pumps[2][2]. Moreover, energy efficiency is being mainstreamed through sectoral programs. For example, the Ministry of MSME is running a Zero Defect Zero Effect (ZED) program on productivity and waste minimization that amongst others also addresses energy efficiency[3][3]. The leading specific energy efficiency national initiatives in the MSME industries in India are listed below. These are complemented by state and sector specific initiatives.

Table 2. List of projects and initiatives aligned with proposed project

Initiative / projects name	Brief Summary of the Initiative
GEF-UNIDO-BEE Project on Promotion of Energy Efficiency and Renewable Energy in MSMEs (GEF-4 Cycle Project) (GEF ID 3553)	The objective of this project is to develop and promote a market environment for introducing energy-efficient technologies and enhancing the use of renewable energy technologies in process applications. The programme was initially operational in 12 MSME clusters in India from five sectors. Since 2019 its project activities expanded to 11 more clusters covering the same five sectors. One of the critical components of the projects is to offer a number of Energy Management Centres that help MSMEs doing energy monitoring for facilitating working energy conservation measures. The project is on track to achieve energy efficiency uptake in over 1,100 MSMEs by the end of 2021. By September 2021 the project triggered investments of INR 190 crores (~25 MUSD).
Financing EE Projects in the MSME Sector – KfW	KfW, in cooperation with the Small Industries Development Bank of India (SIDBI) under the framework of the Indo- German Development Cooperation, was offering financial assistance in the form of a line of credit to SMEs for investment in EE projects.
GEF funded Facility for Low Carbon Technology Deployment (FLCTD) (GEF ID 4927)	The Facility for Low Carbon Technology Deployment (FLCTD) a GEF-funded UNIDO project was launched in 2016 with the objective to address technology gaps through the use of innovative energy efficiency and clean technologies and support their deployment, validation and scale-up. The project is being implemented in collaboration with the BEE. The FLCTD has already run 12 technology challenges covering six technology verticals, respectively: energy efficient motors; space conditioning; waste heat recovery; electric energy storage; industrial Internet of Things; and industrial resource efficiency, from which 60 innovations were selected for deployment support.

"GEF-UNIDO-MSME-EESL Project on Promoting Market Transformation for Energy Efficiency in MSMEs", (GEF ID 4893)	This GEF funded project is aimed at addressing in an integrated manner existing market barriers towards energy efficient technologies in manufacturing MSMEs, by, firstly, standardization of energy efficient technologies to sector and cluster requirements; secondly, bulk procurement of these standardized energy efficient technologies; and, thirdly, providing innovative financing solutions for their implementation based on energy service contracts from a revolving fund. The project works with 12 clusters and has so far been identified. The project has promoted 30 energy efficient technologies, based on energy surveys in 700+ MSMEs and detailed energy audits in 70+ MSMEs. The first sets of energy efficient technology have been implemented under the ESCO model in textile, tea, rice and other clusters.
MoMSME Initiatives to promote Energy Efficiency in MSMEs	MSMEs in general pay higher per unit energy costs, leading to higher costs of operations, and are more vulnerable to energy price volatility. MoMSME has the following programs to assist MSMEs in improving their operational technology and competitiveness in the market, including energy and resource efficiency measures. • Financial Support to MSMEs in Zero Defect Zero Effect (ZED) Certification Scheme to inculcate ZED practices in manufacturing processes • Credit Linked Capital Subsidy for Technology Upgradation (CLCSS) for induction of state-of-the-art or near state-of-the- art technology • Technology and Quality Upgradation Support to MSMEs for adoption of EETs in manufacturing units • Micro & Small Enterprises Cluster Development Programme (MSE-CDP): This scheme promotes green and sustainable manufacturing technologies within MSME clusters. (See link to scheme booklet) • Assistance to Training Institutions (ATI): This scheme provides assistance to national-level training institutions under the Ministry of MSME, including the National Institute for Micro Small and Medium Enterprises (ni-msme), Khadi Village and Industries Commission, Coir Board, Tool Rooms, National Small Industries Corporation, and Mahatma Gandhi Institute for Rural Industrialisation. These institutions can play a key role in disseminating knowledge and skills related to energy efficiency and decarbonization. • MSME Competitive (LEAN) Scheme: This scheme focuses on resource optimization, including water, energy, and natural resources, which aligns with the project's goals. • Raising and Accelerating MSME Performance (RAMP) Scheme: This scheme aims to enhance MSME performance by promoting technology upgradation, innovation, digitization, market access, credit, and greening initiatives through active participation of state governments.

Improving thermal energy efficiency in the design, manufacture, and operation of industrial boilers for low-carbon micro-, small, and medium-sized enterprises in India	This project has been developed by UNIDO in collaboration with Ministry of Micro Small and Medium Enterprises, Government of India. The project objective is 'To scale up and mainstream thermal energy optimization in manufacturing MSMEs through creation of ecosystem for the design, manufacture and operation of efficient industrial boilers.' The project was sanctioned under GEF-7. The project aims to carry out interventions directly in 225 factories and scale up further through enabling activities. The project has three major components namely, • Demand creation through the development, promotion and implementation of best available techniques and operating practices for thermal energy optimization and industrial boiler efficiency • Market facilitation through the introduction and mainstreaming of energy performance specification in the market for boilers (new & retrofit segments), and • Supply creation through promotion, manufacture and market development for energy efficient boilers and boiler retrofits for manufacturing MSMEs

Description and categorisation of project barriers

The project has identified several barriers and gaps that Indian MSMEs face in achieving an energy transition, which can be summarized as follows. The project aims to address these issues:

Table 3. Barrier analysis

Type of barrier	Description of barrier
Financial Barriers	High Initial Costs: The upfront expenses associated with adopting sustainable energy technologies, such as energy-efficient systems and renewable energy solutions, pose a significant challenge for MSMEs. Limited Access to Finance: MSMEs often have constrained financial resources for investing in new technologies and processes that could help reduce emissions. This limitation is a major obstacle to their transition to net-zero, as many necessary investments can be considerably high.
Lack of Awareness About Decarbonization	
	Limited Knowledge: Many MSMEs are unaware of the benefits of sustainable energy options, including potential cost savings, improved efficiency, and positive environmental impacts. Understanding of Decarbonization: A significant number of MSMEs lack awareness of the concept of net-zero and its implications for their businesses. The evolving nature of decarbonization concepts and technologies contributes to this knowledge gap.
Lack of Stakeholder Engagement	
	Awareness and Understanding: Stakeholders, including MSME owners, industry associations, government bodies, suppliers, and service providers, often lack awareness of the long-term benefits of decarbonization. This disengagement can impede their willingness to collaborate on common objectives, such as identifying and transferring best practices both domestically and internationally.
Lack of Capacities and Skills	
	Skills Gap: Current capacities and skill sets do not incorporate decarbonization considerations in decision-making, financing, and technology. This gap needs to be

	addressed for various stakeholders, including owners making decisions, bankers with financing skills, technicians and consultants requiring technical training, and chartered accountants supporting the MSME industries across various thematic areas.

Policy and Regulatory Challenges

	Insufficient Policies: The absence of supportive policies and regulatory frameworks for adopting sustainable energy transitions inhibits long-term investments and provides insufficient financial incentives. This lack of support may discourage MSMEs from prioritizing decarbonization efforts. While the Energy Conservation Act provides a framework, a comprehensive strategy specifically targeting MSME decarbonization with clear targets and timelines is needed. Several initiatives exist, such as the Perform, Achieve and Trade (PAT) scheme, Zero Defect Zero Effect (ZED) certification, and the Credit Guarantee Fund Scheme for Energy Efficiency (CGFEE). However, these initiatives lack a unifying framework with specific targets for MSMEs.

Lack of Access to Expertise and Technology

	Expertise Deficiency: MSMEs often lack the expertise needed to select technologies that facilitate decarbonization. Factors contributing to this include their smaller size, limited resources, and distance from major urban centers. Lack of Shelf-Ready Customized Decarbonization Technology Packages: With thousands of MSME industries, significant customization is often required for even proven technology packages. Additionally, decarbonization technologies are continuously evolving and need to be validated for specific types of MSMEs before implementation. As a result, these technologies are not readily available for immediate adoption

Risk aversion by MSME to make new interventions

	MSMEs may perceive risks associated with adopting new and partially proven or unscaled technologies, leading them to prefer conventional and familiar systems. The uncertainty regarding the return on investment for sustainable energy projects can deter businesses from committing their resources.

Limited Market Demand for Sustainable Products and Services

	Short-Term Focus: MSMEs may prioritize immediate financial gains over long-term sustainable energy transition objectives, particularly in competitive markets facing operational challenges. Additionally, there is still limited market demand for sustainable products and services in India, making it difficult for MSMEs to justify the costs associated with investing in net-zero solutions.

Lack of supply chain for decarbonisation

	Insufficient Supply Chain for Decarbonization Technology Packages: Many decarbonization technology packages are still in development, and their supply chains are in the early stages. This nascent supply chain may lead MSMEs to worry that implementing new sustainable energy systems could disrupt their production processes.

[1] **India Energy Outlook 2021, Special Report, International Energy Agency IEA**

[2] See e.g. AEEE (2021), India's energy efficiency landscape, https://aeee.in/our_publications/indias-energy-efficiency-landscape/

[3]http://dcmsme.gov.in/CLCS_TUS_Scheme/ZED_Scheme/Scheme_Guidelines.aspx.

B. PROJECT DESCRIPTION

Project description

This section asks for a theory of change as part of a joined-up description of the project as a whole. The project description is expected to cover the key elements of good project design in an integrated way. It is also expected to meet the GEF's policy requirements on gender, stakeholders, private sector, and knowledge management and learning (see section D). This section should be a narrative that reads like a joined-up story and not independent elements that answer the guiding questions contained in the PIF guidance document. (Approximately 3-5 pages) see guidance here

As depicted in Figure 1, this project addresses the stagnant transition to sustainable energy within India's MSME industries. Despite the proven potential of energy efficiency initiatives (demonstrated by various pilot programs), widespread adoption is hindered by the lack of a comprehensive support system. This project aims to catalyze systemic change by fostering an enabling ecosystem of policies, financial instruments, and robust supply chains, ultimately curbing the reliance on fossil fuels and driving decarbonization.

This project focuses on eight key industrial sectors—Textiles, Steel Re-Rolling, Chemicals, Food Processing, Pulp & Paper, Foundry & Forging, Bricks, and Light Engineering—which are representative of the diversity within India's MSME landscape and contribute significantly to the country's industrial greenhouse gas (GHG) emissions.' In the Table 4 we have presented the summary for energy consumption for a total of 197,217 units (data gathered from Sameeksha https://www.sameeeksha.org/ and other sources) and the GHG emission reduction potential which was calculated for eight sectors. Then energy and GHG reduction potential were derived per unit.

These specific industrial sectors were selected due to their significant contributions to national GDP, export earnings, and employment. They represent a mix of energy-intensive industries and those with high growth potential, offering opportunities for substantial impact in terms of energy conservation and GHG reduction.

Here's why these sectors are important:

- **Value Chains: These sectors are interconnected within the broader industrial ecosystem. Improvements in energy efficiency and GHG reduction in one sector can have cascading positive effects on others. For example, increased efficiency in steel re-rolling can benefit downstream industries like light engineering and construction.**
- **Energy Conservation Potential: The table demonstrates varying levels of energy saving potential across sectors, ranging from 9% in light engineering to 50% in chemicals. This indicates significant opportunities to optimize energy consumption through technology upgrades, process improvements, and better energy management practices.**
- **GHG Reduction Potential: Given their energy consumption patterns, these sectors contribute significantly to industrial GHG emissions. By implementing energy efficiency measures and adopting cleaner technologies, substantial reductions in GHG emissions can be achieved, contributing to national climate goals.**

Focusing on these sectors allows for a targeted approach to maximize the impact of interventions and leverage synergies across different industries. This strategy not only promotes environmental sustainability but also enhances economic competitiveness and contributes to sustainable industrial development.

Proposed Theory of Change (TOC): The proposed Theory of Change is based on two key assumptions:

This project recognizes that successful decarbonization of the MSME industries relies on three key pillars:

- **Enabling Policies: Supportive policies are essential to incentivize MSMEs to transition to sustainable energy and adopt clean technologies.**
- **Thriving Markets: A robust market for decarbonization technologies will drive investment, innovation, and accessibility for MSMEs.**
- **Stakeholder Engagement: Active engagement with stakeholders and targeted capacity building are crucial for ensuring project success and long-term sustainability of outcomes.**

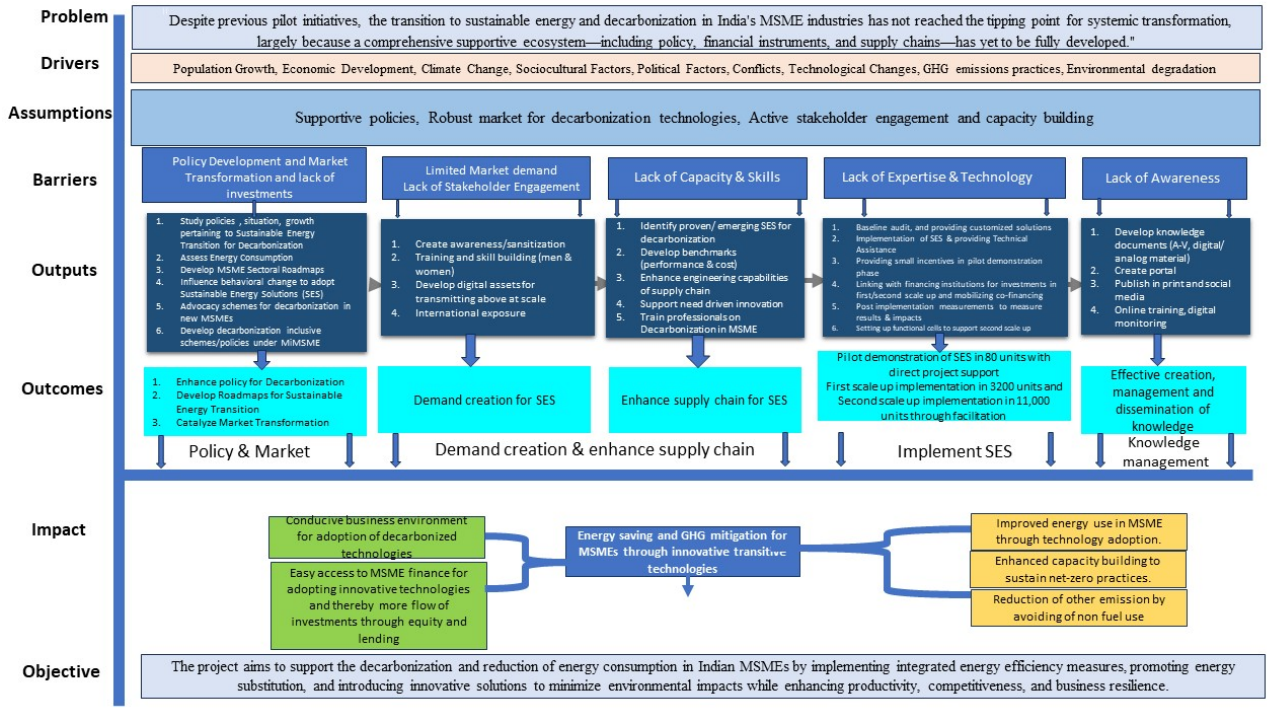

Figure 1. Theory of Change (TOC) for accelerating sustainable energy transition for decarbonization of Micro, Small and Medium Enterprises in India

The program aims to implement Sustainable Energy Solutions (SES) across a significant number of MSMEs. SES are defined as technologies that are innovations that involves renewable energy, energy efficiency and conservations which has significant potential to reduce greenhouse gas emissions. These technologies prioritize sustainable practices, considering both environmental and social impacts, and demonstrate a favourable cost-to-benefit ratio. Furthermore, they utilize novel approaches or apply existing technologies in innovative ways, ensuring alignment with national climate strategies and international agreements.

The key drivers for facilitating this change are stakeholder engagement and capacity building. Active involvement and collaboration among a diverse range of stakeholders—including MSMEs, industry associations, relevant government bodies, service providers, suppliers, and financing institutions—are

essential to ensure that project interventions align with the needs and capabilities of the target audience. A multifaceted approach to capacity building for different target groups, equipping them with the necessary skills and resources to adopt sustainable energy practices, will create the required ecosystem for energy transition among MSMEs. To support large-scale implementation, capacity building efforts will not only focus on direct project activities but also on strengthening the institutional capacity of selected training institutions across India.

The project recognizes the importance of a thorough policy review to inform the development of a long-term coordinated roadmap for MSME decarbonization. To ensure this is conducted comprehensively and strategically, the policy review will be carried out in two phases:

During the PPG stage: A preliminary assessment of key policies and regulations relevant to MSME decarbonization will be conducted. This will involve identifying major gaps and barriers based on readily available information and initial consultations with key stakeholders. This preliminary assessment will inform the project design and justify the need for a more in-depth analysis during the project implementation phase.

During project implementation: A comprehensive review of the Indian policy environment will be conducted, including an assessment of potential conflicting incentives or lack thereof across different institutions and strategies. This will involve mapping existing policies, analyzing the institutional framework, and conducting a gender analysis to identify any gender-specific barriers or opportunities.

Based on this comprehensive review, a long-term coordinated roadmap for MSME decarbonization will be developed. This roadmap will articulate a clear vision, outline specific policy actions, propose a coordinated inter-ministerial approach, and incorporate gender-responsive measures. It is firmly believed that the above approach would ensure that the policy analysis is conducted thoroughly and strategically, informing the development of a long-term roadmap that addresses the core problem statement and promotes a coordinated approach to MSME decarbonization.

The project will not only support immediate emission reductions but also foster resilience to future changes in emissions drivers by promoting adaptability, building capacity, fostering innovation, and integrating climate risk management into MSME operations

The financial and investment dimension : The financial and investment dimension of systems change focuses on ensuring adequate resources and funding are available to support and scale up initiatives. Strategies to attract investment, ensuring financial sustainability, and mobilizing capital for long-term growth include (i) creating visual impact with large number factories under the project so that more factories get attracted & invest and (ii) involving specialised bank like SIDBI and other lead banks in the clusters. This approach will help facilitate the second phase of scaling up decarbonization interventions.

Component 1: Policy Development and Market Transformation for Decarbonization in MSMEs
This component aims to create an enabling environment for MSME decarbonization by enhancing policy frameworks, developing sectoral roadmaps, and catalyzing market transformation.
Outcome 1.1: Enhance Policy Framework to Mainstream Sustainable Energy Transition
Conduct a comprehensive review of existing policies, study best practices, conduct gender analysis, and develop policy recommendations to create a supportive policy environment.
Outputs:

 Output 1.1.1: Study policies, situation (especially gender), and growth, particularly pertaining to Sustainable Energy Transition for decarbonization in other relevant countries. Based on the study and considering the specific context of India, prepare policies conducive to decarbonization in MSMEs.
 Output 1.1.2: Assess energy consumption (power and process heat) in different MSME sectors and their classification. This assessment will provide the foundation for developing targeted policy interventions and roadmaps for decarbonization.

Outcome 1.2: Preparation of Roadmaps for Sustainable Energy Transition

Develop detailed sectoral roadmaps for sustainable energy transition, ensuring gender inclusivity and stakeholder engagement.

Outputs:

 Output 1.2.1: Based on the policy recommendations from Output 1.1.1 and the energy consumption assessment from Output 1.1.2, develop sectoral roadmaps for sustainable energy transition for decarbonization in MSMEs. Ensure gender inclusivity and stakeholder engagement in the roadmap development process.

Outcome 1.3: Catalysing Market Transformation

Stimulate market demand, assess consumer behavior, develop industry standards, and collaborate with financial institutions to promote decarbonization technologies.

Outputs:

- Output 1.3.1: Assessment of consumer behavior for products/packages for sustainable energy transition for decarbonization, formulating awareness modules and creating awareness
- Output 1.3.2: Stimulate market demand for decarbonization technology in MSMEs by facilitating commercialization, standardization/benchmarking, demand segregation, and establishing appropriate financing mechanisms in collaboration with Small Industries Development Bank of India (SIDBI)
- Output 1.3.3: Develop/revise decarbonization inclusive schemes/policies under MoMSME for MSMEs

The inclusive scheme mentioned in 1.3.3 is designed to address the issue of MSMEs being excluded from energy saving certificates and related payments. Currently, many energy saving schemes and incentives primarily target larger consumers due to their higher energy consumption and potential for significant savings. This leaves MSMEs at a disadvantage, as they may not have the resources or scale to participate in these programs. Inclusive schemes aim to level the playing field by:

- **Providing tailored incentives:** These schemes could offer incentives specifically designed for MSMEs, considering their unique needs and constraints. This might involve smaller-scale projects, different eligibility criteria, or targeted financial support.
- **Simplifying processes:** The application and participation process for energy saving schemes can be complex and burdensome, particularly for smaller businesses. Inclusive schemes could streamline these processes, making it easier for MSMEs to access and benefit from them.
- **Capacity building and awareness:** Many MSMEs lack awareness of energy efficiency measures and available support. Inclusive schemes could incorporate capacity building and awareness components to educate and empower MSMEs to adopt energy-saving practices.

By addressing the specific barriers faced by MSMEs, inclusive schemes can promote wider participation in energy efficiency initiatives and ensure that the benefits are distributed more equitably. This can lead to greater overall energy savings, reduced emissions, and a more sustainable energy future for all.

Component 2: Demand Creation and Enhanced Supply Chain for Sustainable Energy Solutions (SES) for Decarbonization

This component focuses on creating a self-sustaining ecosystem by promoting demand for and enhancing the supply chain of sustainable energy solutions.

Outcome 2.1: Demand Creation and Skill Building for Sustainable Energy Solutions

Develop and implement awareness campaigns, skill-building programs, digital platforms, and facilitate international exposure.

Outputs:

- Output 2.1.1: Develop modules for awareness creation and sensitization of factories and key influencers (associations, experts, consultants, etc.) to promote the adoption of sustainable energy solutions.
- Output 2.1.2: Develop modules and conduct skill-building programs (training) for workers (with a focus on women's participation) to facilitate SES interventions.
- Output 2.1.3: Develop digital assets (e.g., website, platform, mobile app) for awareness creation, sensitization, training, knowledge sharing and benchmarking for MSMEs.
- Output 2.1.4: Facilitate international exposure through study tours and knowledge exchange programs to learn from best practices in energy management.

Outcome 2.2: Enhance the Supply Chain of Sustainable Energy Solutions

Conduct supply chain assessment, promote technology transfer, build capacity of manufacturers, and support innovation.

Outputs:

- Output 2.2.1: Assess gaps in the SES supply chain and identify suitable products and designs of proven/emerging technologies for decarbonization in MSMEs.
- Output 2.2.2: Develop and advocate for industry-specific guidance material and performance benchmarks for the development, engineering, and production of promising sustainable energy solutions.
- Output 2.2.3: Improve the design, engineering, and manufacturing capabilities of MSME manufacturers, suppliers/service providers, and installers of energy technologies.
- Output 2.2.4: Support needs-driven sustainable energy innovation through targeted funding and technical assistance.
- Output 2.2.5: Develop modules and train professionals (e.g., energy auditors, energy managers) in sustainable energy transition for decarbonization in MSMEs.
- Output 2.2.6: Build the capacity of identified institutions (e.g., Sector Skill Councils, National Institute for MSMEs) to facilitate the large-scale adoption of sustainable energy solutions.
-
- For output 2.2.4, GEF grants will be used in supporting the adoption of innovative low and zero carbon technologies for MSMEs and for the application of circular economy practices. This doesn't include any incubator related activities.
-

Component 3: Implementation of Sustainable Energy Solutions for decarbonization in MSME sector

This component focuses on the practical implementation of sustainable energy solutions in MSMEs through a phased approach.

Outcome 3.1: Pilot Demonstration of Sustainable Energy Solutions in MSME Units

Conduct baseline audits, develop customized solutions, provide technical assistance, and conduct monitoring and evaluation.

Outputs:

- Output 3.1.1: Conduct comprehensive baseline audits to assess energy consumption patterns and identify opportunities for improvement in selected MSMEs.
- Output 3.1.2: Develop and implement customized SES solutions for each pilot MSME, considering their specific needs, energy consumption patterns, and decarbonization potential.
- Output 3.1.3: Provide technical assistance and hands-on support (handholding) to pilot MSMEs throughout the implementation process, ensuring smooth adoption of new technologies and practices.
- Output 3.1.4: Conduct post-implementation monitoring and evaluation to assess the impact of pilot projects, including energy savings, emission reductions, and cost-effectiveness. Document lessons learned and best practices for subsequent scale-up phases.

Outcome 3.2: First Scale-Up of Sustainable Energy Solutions in MSME Units
Replicate and adapt successful pilot interventions, facilitate access to finance, provide technical support, and conduct impact assessment.
Outputs:

- Output 3.2.1: Offer tailored SES solutions, including baseline studies, to interested MSMEs based on the successful models demonstrated in the pilot phase.
- Output 3.2.2: Facilitate access to finance by leveraging financing mechanisms from financial institutions and promoting equity investments to support MSME investments in sustainable energy technologies.
- Output 3.2.3: Provide technical assistance and handholding support to MSMEs during the implementation of upscaled interventions, ensuring effective technology transfer and knowledge sharing.
- Output 3.2.4: Conduct post-implementation monitoring and evaluation to assess the impact of scaled-up interventions, track progress towards emission reduction targets, and identify areas for improvement.

Outcome 3.3: Second Scale-Up of Sustainable Energy Solutions in MSME Units
Build institutional capacity, develop training modules, provide professional support and track progress.
Outputs:

- Output 3.3.1: Engage and build the capacity of local institutions (e.g., Sector Skill Councils, industry associations) to establish 'Decarbonization Cells' (DCs) that will serve as hubs for knowledge sharing, technical assistance, and implementation support.
- Output 3.3.2: Develop training modules, including online resources, for enterprise owners and technical teams to enhance their understanding of decarbonization strategies and implementation best practices.
- Output 3.3.3: Support enterprises in implementing decarbonization measures by providing access to trained professionals (Certified Energy Auditors, Certified Energy Managers, etc.) through the DCs.
- Output 3.3.4: Track the progress of decarbonization interventions through digital monitoring platforms and physical sample monitoring of enterprises.

Component 4: Knowledge Management and Learning
This component focuses on capturing, curating, and sharing knowledge generated throughout the project.

Outcome 4.1: Effective Creation, Management, Learning, and Communication of Knowledge
Employ a robust knowledge management approach to ensure effective creation, management, and dissemination of knowledge.
Outputs:

- Output 4.1.1: Develop a variety of knowledge products, including A/V materials, digital communication tools, best practice compendiums, manuals, and articles, to reach diverse stakeholder groups.
- Output 4.1.2: Establish an information hub, accessible via a dedicated portal or app, to serve as a central repository for all project knowledge materials. Integrate the hub into existing institutions for long-term sustainability.
- Output 4.1.3: Set up digital monitoring systems to track progress in implementing decarbonization across all project phases.
- Output 4.1.4: Set up a call centre at the decarbonization cells to provide guidance and support to enterprises.
- Output 4.1.5: Develop and deliver guided online learning modules for enterprises on decarbonization strategies and implementation.
- Output 4.1.6: Organize and facilitate participation in workshops, conferences, and other knowledge-sharing events to promote the project's findings and best practice.

The proposed website portal is designed to provide a comprehensive platform for greenhouse gas (GHG) calculations, emphasizing user engagement and streamlined data input processes. It features a user-friendly interface for simplified navigation and data entry, real-time data analysis for immediate feedback on GHG calculations, and integration capabilities with other environmental assessment tools for a holistic approach to sustainability. In contrast, the existing Sameeksha portal primarily serves as a repository for government initiatives related to GHG calculations, offering basic data storage, reporting tools, and limited interactivity. Technically, the new portal will utilize modern web technologies like JavaScript frameworks to enhance responsiveness and user experience, while Sameeksha relies on older technologies that restrict interactivity. The proposed portal targets a broader audience, including businesses, researchers, and policymakers seeking detailed analytics and engagement in GHG calculations, whereas Sameeksha mainly serves government officials focused on compliance. Overall, the new portal represents a significant advancement over Sameeksha by providing enhanced interactivity, real-time processing, and a more inclusive approach to promoting sustainable practices across various sectors.

The project remain committed to reviewing and optimizing KM activities to avoid redundancies and leverage existing knowledge platforms effectively. All effort would be made to consolidate activities and clearly define roles and responsibilities.

Component 5: Monitoring and Evaluation

A robust monitoring and evaluation (M&E) framework with well-defined performance indicators is crucial for tracking progress, ensuring accountability, and measuring the effectiveness of the project's coordination mechanisms in promoting MSME decarbonization. This component will establish a robust monitoring and evaluation (M&E) framework to track project implementation, measure progress towards objectives, and ensure accountability. The M&E activities will be conducted in accordance with GEF and UNIDO guidelines and will involve a combination of ongoing monitoring and periodic evaluations.

Outcome 5.1: Conducting Monitoring and Evaluation
This outcome focuses on establishing a comprehensive M&E system that provides timely and relevant information on project performance, enabling adaptive management and informed decision-making.

Outputs:

- Output 5.1.1: Conduct periodic meetings, including an inception workshop and Project Steering Committee meetings, to review progress, discuss challenges, and ensure alignment with project objectives. Prepare and disseminate meeting reports to relevant stakeholders.
- Output 5.1.2: Prepare and submit periodic reports, including Project Implementation Reports (PIRs), GEB reports, and progress reports, to the GEF and UNIDO. These reports will provide detailed information on project activities, achievements, challenges, and lessons learned.
- Output 5.1.3: Conduct a Mid-Term Review to assess the project's progress at the midpoint of implementation. The review will identify achievements, provide recommendations for improvement, and document lessons learned. Conduct a Terminal Evaluation by an independent evaluator within six months of project closure to assess the overall project performance, identify key outcomes and impacts, and provide recommendations for future interventions.

Continuous evaluation of Technical Assistance (TA) and Knowledge Management (KM) activities would be ensured for assuring that the resources are used effectively and adjusted as needed to maximize impact. This iterative process would allow identifying best practices, addressing challenges, and ultimately achieving MSME decarbonization goals.

Safeguards Rating (PIF level):

The project's environmental impact, which includes its effectiveness in reducing greenhouse gas emissions, minimizing pollution, and conserving natural resources, is rated as high. This assessment is primarily based on the significant reduction in greenhouse gases, with some technologies also expected to decrease particulate emissions, thereby enhancing the positive environmental footprint. In terms of social impacts—such as effects on local communities, livelihoods, social inclusion, and the project's capacity to address potential negative consequences—the impact is considered moderate. The project's efforts to engage and consult with relevant stakeholders, including local communities, NGOs, and affected parties throughout its lifecycle, are also rated as moderate.

A concrete plan has been developed for engaging both governmental and non-governmental entities. The assessment conducted during the Project Identification Form (PIF) stage regarding the establishment and functionality of a grievance mechanism for addressing environmental and social concerns raised by local communities and other stakeholders is deemed adequate, resulting in a moderate rating. The monitoring and reporting mechanisms outlined in the PIF stage, including their transparency, accuracy, and frequency, have also been assigned a moderate safeguard rating. In terms of compliance with relevant national and international environmental and social regulations and standards, the project's safeguard rating is considered moderate. A monitoring mechanism for co-financing resources is essential to ensure that project outcomes align with targets and promote sustainability.

The project will focus on tracking fund utilization and assessing investment effectiveness. Co-financing partners will be included as members or invited members of the Project Steering Committees, enhancing accountability for both the Project Management Unit (PMU) and co-financing partners. Co-financing in the form of loans will be monitored periodically at PSC meetings, and any identified impediments will be addressed. Directly participating factories will receive incentives, and the structuring of these incentives and the closure of interventions at each factory will include tracking equity investments.

The project's strong focus on building the capacity of MSMEs and other stakeholders to adopt and sustain decarbonization technologies and practices contributes to a high safeguard rating in this area. The effectiveness of the project in facilitating the transfer of decarbonization technologies to MSMEs and

promoting their adoption is rated as moderate. Given the predominance of moderate ratings across various safeguard categories, the overall safeguard rating for the project is determined to be 'Moderate.'

At the PIF stage on the basis of the preparedness and general perception, assessment of Safeguard for the following categories are made and ratings are as indicated below -

- Environmental Impact: High
- Social Impact: Moderate
- Stakeholder Engagement: High
- Compliance with Regulations: Moderate
- Capacity Building: High
- Technology Transfer: Moderate
- Monitoring and Reporting: Moderate
- Community Grievance Mechanism: Moderate
- Overall Safeguard Rating: Moderate

Gender equality and women's empowerment

Empowering women transforms their lives and enables them to gain control and authority over their own circumstances. This empowerment yields significant co-benefits and is a fundamental, non-negotiable deliverable of UNIDO projects. The project will adhere to UNIDO's recommended processes, which include raising awareness, building self-confidence, expanding choices, increasing access to and control over resources, and eliminating actions that reinforce gender discrimination and inequality. Women are significantly underrepresented in the workforce, particularly at middle and senior levels, for various reasons. In India, female labor force participation is only 20%, compared to 76% for males, meaning that men aged 15-60 are approximately four times more likely to be employed. This gender imbalance is also evident in the MSME workforce.

According to the latest MSME survey data from the 2015-2016 fiscal year, MSMEs employed 111.1 million individuals, with women making up 24% and men 76%. While data is available for the manufacturing MSME workforce (3.6 million jobs), it is not disaggregated by gender. Although gender-disaggregated data exists for women-owned MSMEs (20% of the total), specific information on women-owned manufacturing MSMEs is lacking. UNIDO acknowledges that gender equality and women's empowerment significantly contribute to sustained economic growth and inclusive, sustainable industrial development, which are essential for poverty alleviation and social progress. A comprehensive gender action plan will be developed during the Project Preparation Grant (PPG) phase.

In this project, a gender lens will be applied across all assessments, policy reviews, and roadmap developments, ensuring the project's impact is equitable and promotes inclusivity within the MSME workforce.

Sustainability plan:

The project has formulated components and outcomes that are designed to facilitate scaling up and ensure sustainability.

The project will promote long-term sustainability and resilience by supporting MSMEs in adopting flexible and adaptable technologies, enhancing their capacity to manage climate risks, fostering innovation in energy-efficient solutions, and advocating for policies that incentivize decarbonization. This multifaceted

approach will equip MSMEs with the tools and knowledge needed to navigate future changes in the economic, regulatory, and environmental landscape.

To enhance adaptability, the project will prioritize technologies and practices that can be adjusted to suit evolving needs and circumstances. This includes promoting modular and scalable solutions that can be expanded or modified as businesses grow and technology advances. Additionally, the project will foster a culture of continuous improvement by encouraging MSMEs to regularly assess their energy performance, identify opportunities for enhancement, and adapt their strategies accordingly.

Fostering innovation is essential for ensuring long-term resilience. The project will support the adoption of new energy-efficient technologies and practices tailored to the specific needs of MSMEs. This will involve collaborating with research institutions, technology providers, and industry associations to identify promising innovations and facilitate their adoption. By encouraging the development and deployment of cutting-edge solutions, the project will help MSMEs stay ahead of the curve and maintain their competitiveness in a rapidly evolving market.

Policy Integration and Market Transformation: Integrating policy considerations is crucial for creating an enabling environment for long-term resilience. The project will advocate for policies that incentivize decarbonization, promote energy efficiency, and support the adoption of renewable energy technologies. This will involve working closely with policymakers to develop and implement supportive regulations, standards, and financial incentives. By creating a policy landscape that favors sustainable practices, the project will help ensure that MSMEs have the necessary support to invest in long-term resilience and contribute to a low-carbon and climate-resilient economy. This comprehensive approach to promoting adaptability, building capacity, fostering innovation, and integrating policy considerations will ensure that project outcomes endure beyond the project's lifetime and contribute to lasting resilience within the MSME industries. This dedicated component focuses on policy development and market transformation for decarbonization in MSMEs and sustainable energy transition. As part of this component, sector-specific roadmaps are developed, along with carbon footprint assessments and mitigation plans for different sectors.

Enhancing the Supply Chain of Sustainable Energy Solutions for Decarbonization: This component aims to create digital assets for awareness, which will be handed over to the relevant ministry and entities at project closure to support ongoing scale-up and expansion efforts.

Institutional Capacity Building: Capacity building will be central to promoting resilience. The project will strengthen the capacity of relevant government agencies, MSME industry associations and service providers by providing training and technical assistance on various aspects of sustainable energy management, including energy auditing, technology assessment, and climate risk mitigation. By equipping MSMEs with the knowledge and skills to make informed decisions and implement effective solutions, the project will empower them to proactively address climate-related challenges and capitalize on emerging opportunities. The project's second phase itself serves as a scale-up mechanism, as the project provides support through identified institutions like NIMSME (National Institute for Micro, Small and Medium Enterprises) and the Skill Council for Green Jobs. These institutions are trained as trainers to impart knowledge on decarbonization and sustainable energy solutions to MSMEs. The decarbonization cells supported under the project are likely to continue, similar to the Energy Conservation Building Code (ECBC) cells housed in relevant state governments, which have been supporting states in implementing ECBC even 8 years after the GEF-UNDP-BEE project that initiated the concept. It is expected that the modules developed will be formulated as regular qualification packs and courses in these institutions.

High-Impact, High-Return on Investment Interventions: The project will demonstrate technology interventions that significantly reduce energy costs. Such substantial savings can serve as a driver for MSMEs to consider and sustain the project interventions. For example, energy efficiency interventions are likely to have payback periods of less than 20 months. The demonstrations will instil confidence in other MSMEs to follow suit.

Stakeholder Ownership and Participation: The Ministry of Micro, Small and Medium Enterprises (MoMSME) and industry associations are major stakeholders who will be fully involved during project implementation. It is expected that the knowledge products and portal developed will remain with them for future reference. They may incorporate such interventions as guidance in their relevant circulars and policies, similar to how the Tea Board/Ministry of Commerce provided guidance on the findings of reduced energy and greenhouse gas emissions through interventions under the GEF-Ministry of Commerce/Tea Board-UNDP project.

Coordination and Cooperation with Ongoing Initiatives and Project.

Does the GEF Agency expect to play an execution role on this project?

No

If so, please describe that role here. Also, please add a short explanation to describe cooperation with ongoing initiatives and projects, including potential for co-location and/or sharing of expertise/staffing

The project will be implemented by UNIDO as the Implementing Agency (IA) in collaboration with local partners in India. The main national counterparts for the project will include the Ministry of Micro, Small and Medium Enterprises (MoMSME), the Ministry of Power, the National Productivity Council/The Energy Resource Institute, and SIDBI. UNIDO will oversee the overall implementation, internal monitoring, and reporting to the GEF. "The Government of the Republic of India agrees to apply to the present project, mutatis mutandis, the provisions of the Revised Standard Technical Assistance Agreement concluded between the United Nations and the Specialized Agencies and the Government on 31 August 1956 and as amended on 3 October 1963."

The Project Management Unit (PMU), will be established within the MoMSME (the Executing Agency) under this Project and will be guided by the Project Steering Committee (PSC). The PSC will be the responsible for ensuring the successful execution of the project. The National Project Director (NPD)/a senior official from the MoMSME, will chair the PSC.

The PMU will handle day to day management of the project and will adhere to UN/GEF regulations as a general rule for project execution. The two potential executing partners being evaluated are the National Productivity Council and The Energy and Resources Institute. During the Project Preparation Grant (PPG) phase, a thorough due diligence process and consultations will take place. Based on the actual workload and the capabilities of these agencies, a decision will be made to either confirm both partners or to replace one or add a third agency. This selected agency will be responsible for coordinating with the Project Management Unit (PMU) and will report to the Project Steering Committee (PSC), the National Project Director (NPD), and UNIDO.

The National Productivity Council and/or The Energy and Resources Institute will serve as Project Executing Partners. The National Productivity Council (NPC) is an autonomous organization in India established in 1958 under the Ministry of Commerce and Industry. Its primary mission is to promote a culture of productivity and enhance competitiveness across various sectors of the economy through consultancy, training, and research services. NPC focuses on improving efficiency, quality, and profitability in industries,

agriculture, and the service sector by adopting best practices, innovative techniques, and advanced technologies. NPC also collaborates with international organizations and governments to exchange knowledge and implement productivity improvement initiatives. Through its comprehensive approach, NPC aims to significantly contribute to the nation's economic growth and sustainable development.

The Energy and Resources Institute (TERI) is a leading research institution in India dedicated to advancing sustainable development and environmental conservation. Established in 1974, TERI addresses a wide range of issues, including energy efficiency, renewable energy, climate change, and resource management. Through its innovative research, policy advocacy, and capacity-building initiatives, TERI aims to tackle global challenges and promote a transition toward a more sustainable future. The institute collaborates with governments, industries, and communities worldwide, leveraging its expertise to develop and implement practical solutions that foster environmental sustainability, economic development, and social well-being.

The selection of Execution partners will involve a thorough due diligence and consultation process. While NPC and TERI are currently tentatively considered, the final decision may include third organization depending on the specific project requirements. This will be determined during the Project Preparation Grant (PPG) phase.

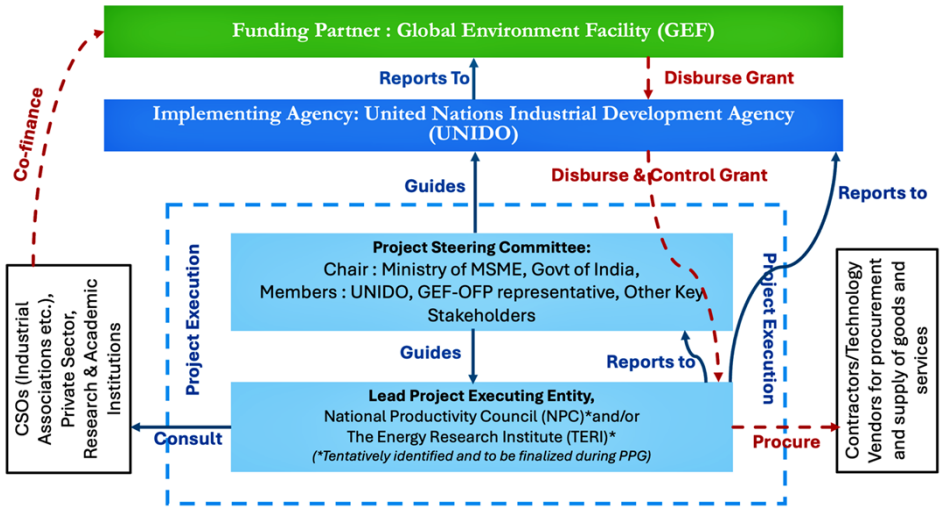

Figure 2. Organogram

Financial flows, reporting and accountability lines

Financial flows: The Global Environment Facility (GEF) allocates grants to the United Nations Industrial Development Organization (UNIDO), which will distribute these funds periodically to the primary project executing entities. These entities will then allocate the funds to contractors, technology suppliers, and staff/consultants, as well as cover office expenses. UNIDO will directly manage disbursements for monitoring and evaluation (M&E) expenses. All expenditures will align with the Annual Work Plan and be consistent with the prevailing guidelines. Co-financing will be released by the respective partners, and the Lead Project Executing Partner will gather this information. Reporting will occur through the Mid-Term Review, Terminal Evaluation, and other periodic reports submitted to the GEF.

Reporting line: The Project Management Unit will be integrated within the Lead Project Executing Partner, comprising of a National Project Manager and additional team members, including consultants. The National Project Manager (NPM) will report to the Ministry of Micro, Small, and Medium Enterprises (MoMSME) via a National Project Director, a senior official designated by the Ministry. The Project

Executing Entity (PEE) will report to the Project Steering Committee (PSC) through the NPM/NPD. UNIDO will handle periodic reporting to the GEF, incorporating input from the PEE.

Accountability: UNIDO holds overall responsibility for project progress, results achievement, monitoring and evaluation, and facilitating the Mid-Term Review and Terminal Evaluation in accordance with the prevailing and GEF programming guidelines. As the Project Executing Agency, MoMSME is responsible for ensuring that the project is implemented according to the Annual Work Plans agreed upon with UNIDO and aligned with the prevailing guidelines. The PMU is tasked with managing daily operations and reporting to both MoMSME and UNIDO. The PSC, chaired by MoMSME, serves as the highest committee overseeing project progress and results, making necessary adjustments to ensure project targets are met.

The Small Industries Development Bank of India (SIDBI) as Lead Co-financing Agency

The Small Industries Development Bank of India (SIDBI) plays a pivotal role in empowering Micro, Small, and Medium Enterprises (MSMEs) through green financing initiatives aimed at promoting sustainable development. As a lead co-financing entity, SIDBI is at the forefront of facilitating the transition of MSMEs towards greener practices.

SIDBI has adopted a comprehensive strategy to support MSMEs in their sustainability efforts. One of the key initiatives is the provision of concessional financial assistance through dedicated Green Finance Schemes. These schemes offer financial support at reduced rates for MSMEs implementing projects focused on energy efficiency, renewable energy, waste management, and other environmentally friendly initiatives.

SIDBI actively participates in risk-sharing mechanisms with financial institutions to encourage lending to MSMEs for energy efficiency projects. By mitigating perceived risks and enhancing credit availability for green initiatives, SIDBI creates an enabling environment for MSMEs to adopt sustainable practices.

In the context of the GEF8 MSME Energy Transition proposal, SIDBI's unique position as a development finance institution allows it to serve multiple roles. As a lead co-financing entity, SIDBI can provide credit enhancements to attract private sector investment and facilitate the implementation of decarbonization solutions.

SIDBI is expected to undertake the following specific actions to support the GEF8 MSME Energy Transition proposal:

- Develop a pipeline of bankable projects suitable for blended finance
- Mobilize private capital to scale up green financing for MSMEs
- Offer various financial models to support the implementation of decarbonization solutions

By leveraging its expertise and resources, SIDBI, as a lead co-financing entity, is well-positioned to drive the adoption of sustainable practices among MSMEs and contribute to the success of the GEF8 MSME Energy Transition proposal.

Cooperation with ongoing initiatives and projects

The project will build on existing national, other bilateral/ multilateral and UNIDO's activities, in the MSME industries. A list of the activities and brief descriptions is given below. These activities/ projects/ programs can also be treated as baseline projects and programs (those completed) and complementing (for those ongoing) for an accelerated sustainable energy transition for decarbonization in MSMEs in India.

Global Programme for Hydrogen in Industry (UNIDO)
UNIDO has launched a 'Global Programme for Hydrogen in Industry,' aimed at assisting countries in achieving their climate goals through hydrogen utilization, specifically by promoting green hydrogen. While hydrogen is already used in Indian industries, primarily in the form of grey hydrogen, the introduction of green hydrogen will be a new development. The Project Identification Form (PIF) will assess progress and insights from this global program, incorporating them into the CEO Executive Document during the PPG phase and throughout project interventions. The lessons learned from this program will guide the development of policies, standards, skills, innovation, financing, and investment strategies that will benefit the PIF. The PIF will leverage two key pillars of the program: (i) The Global Partnership for Hydrogen in Industry, which serves as a platform for member states, industries, private sector stakeholders, investors, and academic institutions; and (ii) Technical Cooperation, which offers tailored interventions specific to each country. Although this PIF focuses on a limited number of green hydrogen pilot projects, the insights gained from the program will enable the Ministry of Micro, Small and Medium Enterprises (MoMSME) and Indian MSMEs to effectively utilize these two pillars.

Revised Energy Conservation (EC) Act 2022
The Government of India has made EC Act as provision for promoting efficient use of energy and its conservation. Bureau of Energy Efficiency (BEE) with head office at Delhi is the autonomous body established to promote energy efficiency.

The EC Act has provisions for (i) assisting large energy consuming segments of the industry called ‘designated consumers’; (ii) creating and developing energy managers and energy auditing firms through certification and accreditation programs, respectively; (iii) developing and updating Energy Conservation Building Codes for both residential and commercial sectors; and (iv) setting up a Central Energy Conservation Fund to develop the delivery mechanism for large-scale adoption of energy efficiency services such as performance contracting and promotion of energy service companies.

The Energy Conservation Act of 2001 underwent significant amendments through the Energy Conservation (Amendment) Act of 2022. The amended Act came into force on January 1, 2023, aiming to address India's commitments made at COP-26 in Glasgow 2021 and promote sustainable development goals. The Energy Conservation Act, 2001, initially focused on the efficient use of energy and conservation. The amendments broaden its scope to regulate energy consumption by various entities, aligning with India's COP-26 commitments: the amendment targets achieving 'Panchamrit,' the five nectar elements presented at COP-26, and India's COP-26 commitments include reaching 500GW non-fossil energy capacity by 2030, 50% energy from renewables, and net-zero emissions by 2070.

Overall, the amendments align with India's commitment to sustainable development and climate change mitigation. BEE has made many initiatives to MSME, though they all are under voluntary regime. Energy audits have been initiated, in association with bilateral and multilateral agencies, encouraging MSME to adopt energy efficient methods.

National Mission on Enhanced Energy Efficiency (NMEEE)
NMEEE aims to strengthen the market for energy efficiency by creating conducive regulatory and policy regime and envisaged fostering innovative and sustainable business models to the energy efficiency sector. The Mission has been implemented since 2011. It is one of the eight national missions under the National Action Plan on Climate Change (NAPCC). NMEEE consists of four initiatives to enhance energy efficiency in energy intensive industries through PAT (Perform Achieve and Trade) – improving efficiency in energy intensive sectors, Energy Efficiency Financing Platform (EEFP) -providing enhancement of stakeholders related to EE financing, MTEE (Market Transformation for Energy Efficiency) – accelerating shift towards energy efficient appliances and FEEED (Framework for Energy Efficient Economic Development) – development of fiscal instruments to promote energy

efficiency. The Bureau of Energy Efficiency and Energy Efficiency Services Limited are the key implementing agencies of NMEEE.

Updated Nationally Determined Contributions

India through its Nationally Determined Contributions (NDC) to the Paris Climate Agreement committed to reduce the GHG intensity of its economy by 33%-35% by 2030 relative to 2005 levels[1][4]. India's Updated First Nationally Determined Contribution Under Paris Agreement (2021-2030) submitted to UNFCCC in August 2022 [2][5], states the following, namely;

- To put forward and further propagate a healthy and sustainable way of living based on traditions and values of conservation and moderation, including through a mass movement of LIFE-'Lifestyle for Environment 'as a key to combating climate change [Updated]
- To adopt a climate friendly and a cleaner path than the one followed hitherto by others at corresponding level of economic development.
- To reduce Emissions Intensity of its GDP by 45% by 2030, from 2005 level [Updated]
- To achieve about 50% cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030, with the help of transfer of technology and low-cost international finance including from Green Climate Fund (GCF) [Updated].
- To create an additional carbon sink of 2.5 to 3 billion tons of CO_2 equivalent through additional forest and tree cover by 2030.
- To better adapt to climate change by enhancing investments in development programs in sectors vulnerable to climate change, particularly agriculture, water resources, Himalayan region, coastal regions, health and disaster management.
- To mobilize domestic and new & additional funds from developed countries to implement the above mitigation and adaptation actions in view of the resource required and the resource gap.

To build capacities, create domestic framework and international architecture for quick diffusion of cutting-edge climate technology in India and for joint collaborative R&D for such future technologies.

[1] MoEFCC (2018) Intended Nationally Determined Contributions – India, https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/India%20First/INDIA%20INDC%20TO%20UNFCCC.pdf
[2] https://unfccc.int/sites/default/files/NDC/2022-08/India%20Updated%20First%20Nationally%20Determined%20Contrib.pdf

Core Indicators

Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO_2e (direct)	5428600	0	0	0
Expected metric tons of CO_2e (indirect)	0	0	0	0

Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO_2e (direct)				
Expected metric tons of CO_2e (indirect)				

Anticipated start year of accounting				
Duration of accounting				

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO_2e (direct)	5,428,600			
Expected metric tons of CO_2e (indirect)				
Anticipated start year of accounting	2027			
Duration of accounting	10			

Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Total Target Benefit	Energy (MJ) (At PIF)	Energy (MJ) (At CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)
Target Energy Saved (MJ)	81,239,829,840			

Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)

Indicator 11 People benefiting from GEF-financed investments

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	25,000			
Male	55,000			
Total	**80,000**	**0**	0	**0**

Explain the methodological approach and underlying logic to justify target levels for Core and Sub-Indicators (max. 250 words, approximately 1/2 page)

Key drivers of GHG emissions in the targeted MSME industrial sectors include energy consumption, process emissions, waste management, and transportation. To ensure long-term resilience, the project will promote energy-efficient technologies, renewable energy adoption, cleaner production processes, and efficient logistics, enabling MSMEs to adapt to evolving emission reduction requirements and technological advancements.

The project recognizes the potential of solar energy as a key renewable energy solution for MSMEs due to its abundance, widespread availability, and declining costs in India. Solar photovoltaic (PV) technology offers a readily accessible and increasingly affordable option for MSMEs to reduce their reliance on fossil fuels and contribute to national efforts to mitigate climate change. The environmental benefits of solar energy, coupled with various policy incentives and support mechanisms, make it an attractive choice for MSMEs seeking to decarbonize their operations.

While biomass can be a renewable energy source, its inclusion in the project is conditional on meeting stringent sustainability criteria. Sustainable sourcing of biomass is essential to prevent deforestation, land degradation, and biodiversity loss. A thorough

assessment of the scale and leakage risks associated with biomass energy will be conducted to ensure its use does not lead to unintended environmental or social consequences. Additionally, the project will prioritize appropriate energy uses for biomass, focusing on applications where it can provide the greatest environmental benefits while complying with relevant environmental regulations and standards

Key core and sub-indictors considered are, energy reduced (ton of oil equivalent), GHG emissions reduction and number of people trained including women in targeted units. Methodology to derive these indicators are as follows;

- The project has considered eight sectors namely, Textile, Sponge & Iron and Steel re-rolling, Chemical, Food Processing, Pulp & paper, Foundry & Forging, Bricks, Light Engineering.
- The project will be implemented in twenty clusters and they will be identified during PPG.
- Thus, it is envisaged that the project will provide direct benefits to about 28,400 persons including 8,900 women. The project will strive to involve and impart awareness/ training to 35% of women from the participating factories.
- The project has considered 14,280 units for project interventions. However, direct interventions and core indicator for GHG reduction are considered from 3,280 enterprises and the remaining 11,000 will receive facilitative support. They are not included for GHG targets.

o The pilot interventions in 80 units will be carefully designed, implemented, and monitored. These units will be supported with baseline measurements, customized decarbonization solutions, technical assistance to implementation, incentives to implement interventions and post implementation measurements. The interventions will include, Energy Efficiency - Waste Heat Recovery; Renewable energy – electricity generation through Solar Photovoltaic systems, heat generation through Concentrating Solar Heat systems; Hydrogen (green); and Heat pump.

o To that end, the project will exclusively focus on 100% green hydrogen in limited scale if appropriate and this will be discussed more during the PPG phase. Even though biomass and biogas for energy generation or industrial use primarily would not be considered, their inclusion can only be considered after a thorough assessment of sourcing, scale, leakage risks, and targeted energy uses to safeguard sustainable practices. Waste-to-energy initiatives are excluded from the set of technologies, though waste heat recovery technologies remain eligible. Activities involving fossil fuels, such as fossil fuel-based furnaces or boilers, are not part of the project scope. The project will prioritize renewable energy systems designed for captive generation to directly power industrial operations of MSMEs, aligning with GEF objectives and supporting sustainable practices.

o The first scale up will be carried out in an additional 3200 units. All support mentioned above will be provided. The difference here will be to scale up technology proven at the pilot shall be scaled up (however, if newer technologies emerge, the same shall be considered after deliberations and concurrence by the steering committee without exceeding the overall project budget). The interventions will include, Energy Efficiency - Waste Heat Recovery; Renewable energy – electricity generation through Solar Photovoltaic systems, heat generation through Concentrating Solar Heat systems; and Heat pump.

o The remaining 11,000 units will be taken up as second scale up and here the project will provide only external, soft and facilitation support to implement decarbonization in enterprises. This will be achieved through engaging with training institutions, training the trainers, decarbonization cells, online training, etc. The focus will be to build the capacities of enterprises, technical teams, industry consultants, and creating network among the stakeholders. The project may do sample monitoring to learn, document and take corrective actions.

- Energy consumption calculations were derived from the data/ information on MSME. The summary data for the 8 sectors on energy consumption and GHG emissions generated are presented below. Calculations for an average unit was derived by dividing the total energy consumption/GHG emissions by number of units and these are presented in table below.
- Additionally, 3,280 units were distributed across eight different sectors, with estimated energy consumption and resulting GHG emissions. Energy saving potential and energy generation through renewables, was considered for the pilot phase and the first scale up. The lifetime of equipment is considered at 10 years (different equipment will have different life time which will be analysed in detail during the PPG). The total GHG emission reductions potential estimated is approximately 5,428,600 tCO_2 in ten years. These calculations are summarized in the subsequent tables.

o Table 4 presents the summary for energy consumption for a total of 197,217 units (data gathered from Sameeksha https://www.sameeeksha.org/ and other sources) and the GHG emission reduction potential was calculated for eight sectors. Then energy and GHG reduction potential were derived per unit.

o Table 5, provides an estimate for energy saving and GHG emission reduction potential for first pilot of 80 units.

o Table 6, provides an estimate for energy saving and GHG emission reduction potential for first pilot of 3200 units.

The direct energy savings over 10 years, totaling 1,940,380 ToE, were calculated as follows:

1. Average Energy Savings per Unit: To estimate the energy saved per unit, the average savings from two groups (80 units and 3,200 units, numbers from tables 5 and 6) were calculated, yielding an average savings of 44.3 ToE per unit.

2. Estimated Energy Savings for 1,100 Units: Using the average savings of 44.3 ToE per unit, the energy saved for 1,100 units was calculated to be 48,731 ToE.

3. Total Energy Savings Calculation: The total energy saved was then calculated by summing up the contributions:

o 48,731 ToE (from 1,100 units),

o 12,939 ToE (from 80 units, table 5), and

o 132,368 ToE (from 3200 units, table 6),

giving a total of 194,038 ToE.

4. 10-Year Total: To project this over 10 years, the total energy saved was multiplied, resulting in 1,940,380 ToE saved over 10 years.

5. In MJ this would be 1,940,380 x 41868= 81239829840 MJ

The project's interventions are expected to trigger indirect emission reductions beyond the directly supported 3,280 enterprises. The knowledge products, capacity-building initiatives, and successful demonstration projects will likely inspire wider adoption of sustainable energy practices in the MSME sector. The project's focus on developing sectoral roadmaps, carbon footprint assessments, and policy advocacy will further contribute to an enabling environment for decarbonization. The enhanced supply chain for sustainable energy solutions and the trained professionals will facilitate the replication of successful interventions, leading to additional emission reductions in the long term. The project's emphasis on knowledge management and dissemination will ensure that lessons learned and best practices are shared widely, promoting a broader shift towards sustainable energy practices in the MSME industries.

While a precise quantification would be carried at the PPG phase, the project's potential for indirect emission reductions is substantial. The 11,000 enterprises targeted in the second scale-up phase, along with other MSMEs influenced by the project's knowledge products and capacity-building efforts, represent a significant opportunity for further decarbonization. The project's focus on high-impact, high-return-on-investment interventions will likely encourage replication and scaling up, leading to sustained emission reductions beyond the project's timeframe. The project's contribution to policy development and market transformation will create a favourable environment for the adoption of sustainable energy practices, further amplifying its indirect impact.

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It is strongly believed that the proposed Knowledge Management structure and component for this nature of project would be befitting to the project objective, where 11,000 factories will be supported in implementing decarbonization interventions based on learnings from the pilot and first scale-up phases, broad assessment could be made on the basis of the prevailing or historical conversion rate. The percentage of industries that convert capacity-building efforts into actual implementation of energy efficiency measures in India varies significantly depending on several factors, such as industry type, size, regional focus, and the specific capacity-building programs undertaken. From available data on past capacity-building initiatives by organizations like the Bureau of Energy Efficiency (BEE), UNIDO, and Energy Efficiency Services Limited (EESL), implementation rates typically range between 20% to 40% of industries that participate in capacity-building exercises. This is largely because of the following reasons:

1. Financial Constraints: Many industries, especially small and medium enterprises (SMEs), face financial limitations in investing in energy-efficient technologies.

2. Awareness and Expertise: While industries may receive training, the level of in-house expertise to execute energy efficiency measures varies widely.

3. Technology and Supply Chain Readiness: Availability of relevant technologies and vendors also plays a role, with industries waiting for market conditions to be more favorable.

4. Regulatory and Market Incentives: Industries that have access to incentives such as subsidies or favorable regulatory frameworks show higher conversion rates.

While 30-40% of the industries might move toward partial implementation, the percentage of industries adopting comprehensive and long-term energy efficiency strategies can be lower, often falling between 10% and 20%. Therefore, outreach and capacity building are important, but financial and structural support mechanisms are equally crucial to increasing implementation rates. Keeping the conservative percentage of 10% conversion, the total number of industries that can be expected to be converted for adoption of SES, could be roughly 1100, which would mean a total of 136,000 tCO2 reduction from the second phase of the implementation. The total from 4380 units the overall GHG reduction could be expected in the life span of 10 years is 5,428,600 tCO2.

Key Risks

	Rating	Explanation of risk and mitigation measures
CONTEXT		
Climate	Low	TThe project acknowledges the potential indirect impact of climate change on MSME operations, mainly through possible disruptions in energy supply chains due to extreme weather events. However, the direct climate risk associated with the project is assessed as low. By focusing on sustainable energy solutions, including renewable energy systems, the project supports climate change mitigation and adaptation. Direct issues around climate vulnerabilities include disruptions in supply chain (fuel, raw materials, finished products) due to climate induced events like floods. They may lead to productivity losses, delivery disruptions and also livelihood of workers. To mitigate the risk of equipment damage from extreme weather, appropriate design considerations and resilience measures will be incorporated. Additionally, strategies for energy storage and diversified supply chains will be explored during the Project Preparation Grant (PPG) phase, ensuring the long-term sustainability and effectiveness of interventions against potential climate-related challenges.

Environmental and Social	Moderate	The project acknowledges potential environmental and social considerations related to MSME operations, such as waste disposal, maintenance procedures, and labor management as LOW. Its proactive approach to addressing these issues, including integrating environmental and social topics into training programs, significantly reduces these risks. By emphasizing sustainable energy solutions and resource efficiency, the project is expected to promote better environmental practices and improve working conditions. Capacity-building initiatives and training will further enhance awareness of environmental and social responsibility among MSMEs, fostering a culture of sustainability.
Political and Governance	Low	Changes in political leadership can lead to policy instability and inconsistent regulatory frameworks, creating uncertainty for MSMEs and affecting the long-term viability of sustainable energy initiatives. However, India has a relatively stable political and governance system that strives to provide a conducive environment, resulting in a low risk assessment. Additionally, industry associations are generally strong and capable of influencing the political and governance landscape to ensure stable policies. Economic fluctuations and currency exchange rates can also impact MSME decision-making, affecting the financial feasibility of sustainable energy projects and influencing investment choices. Nevertheless, India maintains stable macroeconomic indicators, which contributes to a low risk assessment in this regard. Furthermore, Changes in socio-economic trends or government priorities could affect MSME industries' ability to prioritize and sustain decarbonization efforts. Mitigation: The project will promote policy integration and advocate for stable regulatory frameworks that incentivize long-term decarbonization. It will also build MSME industries' capacity to adapt to evolving market demands and climate risks.
INNOVATION		
Institutional and Policy	Moderate	Insufficient organizational capabilities and expertise within MSMEs or implementing institutions could potentially affect the effective execution and long-term sustainability of decarbonization efforts. However, the project proactively addresses this concern by incorporating a robust capacity development and skills training component. It establishes a dedicated "Decarbonization Cell" within government autonomous institutions to support the second scale-up phase. This initiative serves as a long-term strategy to enhance and sustain institutional capacity well beyond the project's duration, significantly reducing the risk associated with organizational capabilities and expertise to a MODERATE level. Inadequate policies for rapid implementation of sustainable energy solutions could potentially impede the successful transition of MSMEs towards decarbonization. On the other hand, India has been proactive and positive in its response to sustainable energy transition. The country has consistently enhanced its climate action, presenting significant commitments through its Nationally Determined Contributions (NDCs) in 2015 and further strengthening them in 2021. Given these efforts, the risk of inadequate policy alignment is considered MODERATE.

Technological	Moderate	The proposed project acknowledges potential technical challenges in sustainable energy projects that can impact performance. However, the project's proactive approach to identifying and selecting appropriate decarbonization technologies, along with rigorous technical detailing during the PPG phase, significantly mitigates this risk. Collaborative efforts of the PMU, industry associations, and PSC will ensure robust technical design and effective scale-up. The project envisages to pilot cutting edge technologies, scaling up proven technologies. The project leverages technical expertise and technical agencies to ensure quality technical assistance is provided to industries and the capacity of the stakeholders are also built on technologies.
Financial and Business Model	Moderate	The project has envisaged financing/co-financing from several sources, Banks, participating industries, national government and the GEF. There may potential fluctuations in funding, market uncertainties, currency conversion rates. They may impact in achieving the desired project results and impacts. The project provides financing to technical assistance. The project also links the interventions-industry-professional banks/ lead local banks that can help financial barriers. The project envisages project interventions that is different than Business As Usual, transiting to newer business model though primarily in the energy related interventions. But this may pose challenges include the reluctance to shift from traditional practices, potential cost barriers, and uncertainty about long-term benefits. Mitigation involves creating customizable, economically viable business models that demonstrate clear benefits, offering financial incentives, and providing technical support. The project carefully designed into pilot phase, phase 1 and phase 2 to ensure sustainable and feasible business models are identified from pilot and phase 1 for rapid scale up in phase 2.
EXECUTION		
Capacity	High	The project’s success depends on the capacity of stakeholders, including MSMEs, to effectively implement sustainable energy solutions. Risks include limited technical expertise, inadequate technical assistance, non-availability of customised solutions and resource constraints. Mitigation measures involve comprehensive capacity-building initiatives, including training 1250 professionals through the project in addition to training at least a few in every project selected factory in pilot phase and phase 1. All owners of phase 2 factories will also be sensitised on technologies and its implementation. The project will also leverage Certified Energy Auditors and Certified Energy Managers (certified by the Bureau of Energy Efficiency, about 30,000 in number) in the country. The project will establish partnerships with these experts, government bodies and consulting agencies that can enhance support systems. Additionally, developing a phased implementation plan with clear milestones and continuous monitoring will help manage capacity challenges.
Fiduciary	Low	The fiduciary risks for this project include potential mismanagement of funds, lack of transparency, and non-compliance with financial regulations, which could undermine project credibility and effectiveness. MoMSME will be the executing agency through the executing selected partners (finalised during

		PPG phase). MoMSME will either adopt Government procurement and other processes or UNIDO approved processes in implementing the project. HACT will be conducted by UNIDO for the project executing partners at PPG.
Stakeholder	Low	UNIDO and MoMSME's extensive experience working with MSME clusters on two ongoing and one upcoming project has built rapport with relevant stakeholders. This will help percolate the decarbonization initiative to additional MSMEs. While engaging new vendors is essential for implementing sustainable energy transition technologies, the project considers this risk low. During the PPG phase, consultations will identify strategies to engage new vendors and ensure smooth implementation. The project's proactive stakeholder engagement, combined with UNIDO and MoMSME's existing MSME cluster relationships, positions it to reach a wider audience and secure vendor support for decarbonization. By addressing potential vendor challenges through consultations and leveraging partnerships, the project effectively mitigates this risk.
Other	Low	Delays in project implementation are considered a low risk due to the robust planning established prior to the project's rollout, which will be thoroughly discussed during the Project Preparation Grant (PPG) phase. To further mitigate any residual risk, periodic steering committee meetings will be scheduled. In the unlikely event of any slippage, additional Project Steering Committee (PSC) meetings will be convened to promptly address the issue. This proactive strategy ensures that the project stays on track and effectively manages any potential delays.
Overall Risk Rating	Moderate	The overall risk rating for the project is assessed as LOW, primarily due to minimal climate-related, environmental, social, and stakeholder engagement risks associated with implementation. These risks will be thoroughly discussed during the Project Preparation Grant (PPG) phase, where strategies will be developed to effectively mitigate them.

C. ALIGNMENT WITH GEF-8 PROGRAMMING STRATEGIES AND COUNTRY/REGIONAL PRIORITIES

Describe how the proposed interventions are aligned with GEF- 8 programming strategies and country and regional priorities, including how these country strategies and plans relate to the multilateral environmental agreements.

Confirm if any country policies that might contradict with intended outcomes of the project have been identified, and how the project will address this.

For projects aiming to generate biodiversity benefits (regardless of what the source of the resources is - i.e., BD, CC or LD), please identify which of the 23 targets of the Kunming-Montreal Global Biodiversity Framework the project contributes to and explain how. (max. 500 words, approximately 1 page)

The project is directly aligned with the GEF-8 programming strategy Pillar I: Promote innovation, technology development and transfer, and enabling policies for mitigation options with systemic impacts. It strongly supports the overarching goals and objectives outlined in the GEF-8 Programming Directions, particularly focusing on the Focal Area strategy for Climate. In this context, the project demonstrates several key characteristics:

- Integrated Approach: The project employs an integrated approach that encompasses various aspects of sustainable energy, including energy efficiency, renewable energy, energy innovation, electrification, energy storage, and resource efficiency. This approach aligns seamlessly with the GEF-8 strategy, which aims to assist developing countries in making transformative shifts toward net-zero greenhouse gas emissions and climate-resilient development pathways, particularly benefiting manufacturing Micro, Small, and Medium Enterprises (MSMEs).
- Support for GEF-8 Pillar I: The project actively contributes to the first pillar of the GEF-8 Climate Change strategy, which focuses on promoting innovation, technology development, and transfer, along with enabling policies for mitigation options that have systemic impacts. By emphasizing energy and resource efficiency and transitioning to decarbonized power systems through renewable energy and electrification, the project addresses specific objectives outlined in this pillar. It accelerates the efficient use of energy and materials while facilitating the shift toward cleaner and more sustainable energy sources.

The project directly supports the Nationally Determined Contributions (NDCs) and the transition to a Net Zero Emissions agenda of the Government of India. Notably, it builds on previous efforts in the MSME industries to accelerate the transition to sustainable energy for decarbonization in India. Additionally, it plays a crucial role in helping India achieve several key targets related to climate change, energy sustainability, and economic development.

- Alignment with GEF-8 Programming Directions: The project is in full alignment with the aims and objectives set forth in the GEF-8 Programming Directions, which emphasize the importance of addressing climate change and promoting sustainability. It is particularly aligned with the Focal Area strategy for Climate, demonstrating a commitment to comprehensively tackling climate-related challenges.
- Supporting India's Net Zero Commitment: One of the project's primary strategy is to assist India in fulfilling its commitment to achieving a net-zero carbon emissions future, in line with global efforts to combat climate change and reduce greenhouse gas emissions. By focusing on various aspects of sustainable energy and resource management, the project actively contributes to India's pursuit of this ambitious goal.
- This project directly supports India's NDC targets, which include reducing the emissions intensity of its GDP by 45% by 2030 from 2005 levels and achieving 50% cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030. By promoting energy efficiency and renewable energy adoption within the MSME industries, a significant contributor to national emissions, the project actively contributes to achieving these targets. This focus on decarbonizing MSMEs is also crucial for India's long-term goal of achieving net-zero emissions by 2070.
- Furthermore, by fostering green growth within this vital economic segment, the project aligns with India's broader sustainable development goals. It contributes to promoting economic growth, creating jobs, and improving environmental quality, supporting national priorities like 'Make in India,' which aims to boost domestic manufacturing and create jobs. By promoting sustainable practices within MSMEs, the project enhances their competitiveness and environmental responsibility, contributing to a more sustainable and resilient industrial sector.
- Nationally Determined Contributions (NDCs) and National Missions: The project acts as a catalyst for India to meet its NDCs and aligns with various National Missions. It supports India’s updated First Nationally Determined Contribution under the Paris Agreement (2021-2030), submitted to the UNFCCC in August 2022, which includes (i) reducing emissions intensity of GDP by 45 percent by 2030 from 2005 levels, and (ii) achieving about 50 percent cumulative electric power installed capacity from non-fossil fuel-based energy sources by 2030, aided by technology transfer.

- Renewable Energy: By promoting renewable energy sources, the project supports India's mission to increase the share of clean energy in its energy mix.
- Accelerated Energy Efficiency: The project emphasizes energy efficiency, complementing India's efforts to reduce energy consumption and enhance efficiency.
- Green Hydrogen: India has initiated a green hydrogen mission to produce five million metric tons per annum (MMTPA) of green hydrogen by 2030. The project proposes to support one pilot projects by way of providing expertise externally to prepare MSMEs for future green-hydrogen use, thereby contributing to the development and adoption of green hydrogen technology in line with India's aspirations. This will be discussed more during the PPG phase within the context of application in MSME.
- Self-Reliant India (Atmanirbhar Bharat): The project aligns with the goal of building a self-reliant India by promoting sustainable and efficient energy practices.

Alignment with Other GEF-8 Programming Areas:

Other GEF-8 programming areas include Environmental and Social Safeguards, Stakeholder Engagement, and Gender Action.

- Environmental and Social Safeguards: An Environmental Social Management Plan will be developed during the PPG phase for project implementation. This will involve assessing the environmental and social impacts of project interventions and implementing mitigation actions. The project will also include sensitization efforts for owners and training modules to educate factories on environmental and social safeguards.
- Stakeholder Engagement: During the PPG phase, consultations will be conducted across various clusters, sectors, districts, states, and with central authorities, training institutions, industry associations, vendors, service providers, and NGOs. The feedback from these consultations will be analyzed to create a robust stakeholder engagement plan for implementation.
- Gender Action: A baseline analysis will be conducted during the PPG phase to gather and analyze data, policies, and practices related to gender. A detailed Gender Action Plan with a budget will be proposed for implementation.

The proposed project is well-aligned with both global and national climate-related objectives, supporting India's journey toward a sustainable, net-zero carbon future. Its comprehensive approach, which focuses on various aspects of clean energy and resource management, reflects a commitment to addressing the challenges posed by climate change while also contributing to broader economic and environmental goals.

D. POLICY REQUIREMENTS

Gender Equality and Women's Empowerment:

We confirm that gender dimensions relevant to the project have been addressed as per GEF Policy and are clearly articulated in the Project Description (Section B).

Yes

Gender equality and women's empowerment Empowering women transforms their lives and enables them to gain control and authority over their own circumstances. This empowerment yields significant co-benefits and is a fundamental, non-negotiable deliverable of UNIDO projects. The project will adhere to UNIDO's recommended processes, which include raising awareness, building self-confidence, expanding choices, increasing access to and control over resources, and eliminating actions that reinforce gender discrimination and inequality. Women are significantly underrepresented in the workforce, particularly at middle and senior levels, for various reasons. In India, female labor force participation is only 20%, compared to 76% for males,

meaning that men aged 15-60 are approximately four times more likely to be employed. This gender imbalance is also evident in the MSME workforce. According to the latest MSME survey data from the 2015-2016 fiscal year, the sector employed 111.1 million individuals, with women making up 24% and men 76%. While data is available for the manufacturing MSME workforce (3.6 million jobs), it is not disaggregated by gender. Although gender-disaggregated data exists for women-owned MSMEs (20% of the total), specific information on women-owned manufacturing MSMEs is lacking. UNIDO acknowledges that gender equality and women's empowerment significantly contribute to sustained economic growth and inclusive, sustainable industrial development, which are essential for poverty alleviation and social progress. A comprehensive gender action plan will be developed during the Project Preparation Grant (PPG) phase.

Stakeholder Engagement

We confirm that key stakeholders were consulted during PIF development as required per GEF policy, their relevant roles to project outcomes and plan to develop a Stakeholder Engagement Plan before CEO endorsement has been clearly articulated in the Project Description (Section B).

Yes

Were the following stakeholders consulted during project identification phase:

Indigenous Peoples and Local Communities:

Civil Society Organizations: Yes

Private Sector: Yes

Provide a brief summary and list of names and dates of consultations

Though a tentative engagement of stakeholders is provided in the section below, during PPG phase more in-depth analysis shall be carried out to find adequacy of the stakeholders and their engagements. Both will be revised, added if required.

Stakeholder Name	Type	Kind of consultation
Ministry of Micro, Small and Medium Enterprises (MoMSME)	Nodal Ministry	Conduct detailed discussions on the project components, deliverables and conformity with the GEF-8 project protocols. MoMSME is responsible for driving MSME development and ensuring policy alignment with the project. MoMSME will also be the implementing partner of the project.
Ministry of Environment, Forest and Climate Change (MoEFCC)	GEF Operational Focal Point for India (GEF-OFP India)	Presented the Project Concept and incorporated comments in the PIF document and alignment with GEF 8 project requirements and India's climate goals
National Productivity Council (NPC)	Potential Execution Partner	Engaged in discussions reqgarding the the project concept, its component and deliverables including prospective timeline. NPC could play a role in execution through its focus on promoting resource efficiency in industries.
The Energy Research Institute (TERI)	Potential Execution Partner	Provided briefing regarding the project concept, its component and deliverables including prospective timeline. TERI could contribute with its expertise in energy efficiency,

		climate change mitigation, and sustainable development solutions.
Small Industries Development Bank of India (SIDBI)	Supporting Partner (Co-financing partner)	Consultations are planned for the Project Preparation Grant (PPG) phase. SIDBI is proposed to play a key role in providing low-cost financial loans to project beneficiaries, facilitating MSME access to clean technologies.
MSME Industry Associations	Private Sector	Engaged through workshops and training under on-going GEF5 projects. Industry feedback has been incorporated into the project design to address specific sectoral needs and challenges related to energy transition and decarbonisation. They will have a significant role in creating an eco-system in the project clusters to implementing the project which will be detailed out during the PPG phase.
Bureau of Energy Efficiency (BEE)	Government Autonomous Agency	Supports the project through policy advice on energy efficiency measures and cross-cutting activities. BEE's involvement ensures alignment with national energy efficiency targets and compliance with regulatory frameworks.
Ministry of New and Renewable Energy (MNRE	Government Ministry	Provides strategic guidance on the adoption of renewable energy sources, such as solar, wind, Hydrogen to support decarbonization goals within MSMEs. MNRE is involved in promoting clean energy technologies and hydrogen initiatives.
Local Financial Institutions (LFIs)	Financial Stakeholders	Will be consulted to develop mechanisms for financing clean energy and energy efficiency projects in MSMEs, potentially offering green finance solutions.
UNDP India, World Bank, GIZ	International Development Partners	Exchanging knowledge gained in their projects implemented in India and other countries.

The success of the MSME (Micro, Small, and Medium Enterprises) Energy Transition project relies on the collaboration and engagement of various stakeholders. Identifying and involving critical stakeholders is essential for effective project planning, implementation, and sustainability. Here are some potential stakeholders that are critical to the success of the project:

- Government Agencies: Government bodies at the national, regional, and local levels are key stakeholders. Ministry of MSME will provide regulatory support, incentives, and policy frameworks to facilitate the transition of MSMEs to cleaner and more sustainable energy sources.
- MSMEs and Business Owners: The MSMEs themselves are central stakeholders. Through the various MSMEs and their active participation, commitment to adopting clean energy technologies, and willingness to invest in energy efficiency measures is planned to be achieved.
- Industry Associations: Cluster level industry associations representing sectors that include MSMEs would play a pivotal role. They would also advocate for policy changes, provide technical expertise, and offer a platform for networking and knowledge sharing.
- Financial Institutions: SIDBI and other private sector Banks, credit unions, and microfinance institutions would be essential stakeholders, as they are expected to provide funding, loans, and financial products to support MSMEs in their energy transition efforts.

- Energy Service Providers: Companies specializing in renewable energy, energy efficiency, and clean technology are crucial partners. They would offer solutions, expertise, and technical assistance to MSMEs seeking to adopt sustainable energy practices.

To enhance stakeholder engagement in the proposed MSME (Micro, Small, and Medium Enterprises) Energy Transition project, following are strategies proposed to improve collaboration, communication, and involvement of key stakeholders. This project envisages a huge scale up, here are some ways the stakeholder engagement proposed:

- **Inclusive Consultations**: The project plans to involve a diverse range of stakeholders, including industry associations, suppliers, service providers, governmental agencies at district/ state/ central, research & academic institutions, international entities/ institutes, etc. By engaging them, the project would attempt to benefit from diverse perspectives, expertise, and insights, leading to more comprehensive and effective solutions.
- **Tailored Communication**: Variety of communication channels, such as workshops, webinars, industry association meetings, and online portals, industry magazines, R&D magazines, Ministry reports, social media would be initiated to disseminate information and engage stakeholders effectively. Tailoring communication would be made to enhance understanding, participation, and collaboration.
- **Capacity Building**: The project envisages to provide training programs, workshops, online learning, and skill development opportunities to enhance stakeholders' understanding of sustainable energy technologies, project objectives, and their roles in the transition to cleaner energy sources. More importantly, the project will build capacities of selected institutions during the project period itself and involve them in facilitating second scale up of the project. Building the capacity of stakeholders can foster ownership, commitment, meaningful engagement and sustained interventions.
- **Feedback Mechanisms**: The project will create avenues for stakeholders to express their opinions, raise concerns, and provide input on project interventions. Some of them will be members/ invitees on Project Steering Committees and other committees set up by PSC if any. By incorporating stakeholder feedback into decision-making processes, the project can adapt, improve, and address stakeholder needs effectively.
- **Collaborative Partnerships**: The project will engage with expert entities in executing the project. In addition, the project will collaborate with expert training agencies to impart training and particularly facilitate implementation second scale up. Collaborative partnerships can enhance stakeholder buy-in, commitment, the overall success of the project and mainstreaming of interventions.
- **Use of inter-ministerial/inter-departmental committees:** The project will establish inter-ministerial/inter-departmental committees comprising representatives from relevant ministries, such as the Ministry of Micro, Small and Medium Enterprises (MoMSME), the Ministry of Power, and the Ministry of New and Renewable Energy (MNRE). These committees will serve as platforms for communication, coordination, and collaboration among ministries, ensuring that their strategies and initiatives are aligned with the project's goals.
- Coordinated roadmaps: The project will develop coordinated roadmaps for MSME decarbonization that outline the roles and responsibilities of different ministries and agencies. These roadmaps will provide a clear framework for collaboration and ensure that all stakeholders are working towards common objectives.
- Collaborative workshops: The project will organize collaborative workshops that bring together representatives from different ministries, industry associations, and other stakeholders. These workshops will foster communication, facilitate knowledge sharing, and promote a cohesive approach to MSME decarbonization.

By institutionalizing these mechanisms for inter-ministerial collaboration, the project will ensure that MSME decarbonization efforts are integrated across various government initiatives and policies. This will create a more enabling environment for MSMEs to adopt sustainable energy practices and contribute to India's national climate goals.

While the stakeholder consultations with different entities expected to be involved in project implementation (direct and indirect), shall be carried out during PPG phase (Project Preparation Phase), a tentative list of stakeholders, their name and engagement, contribution and potential role are mapped and presented in table below.

Table 8. A list of likely stakeholders with their engagement, contribution and potential role in the project

Stakeholders/ main groups	Stakeholder's name/ agency	Content engagement, contribution to the project and potential role
Implementing Agency	UNIDO	GEF Implementing agency. UNIDO is a specialized agency of the United Nations that promotes inclusive and sustainable industrial development. UNIDO will contribute as knowledge partner, introduce best practices and learning from similar initiatives elsewhere in the world, and act as overall guide on project management. UNIDO will also be a PSC member.
National Executing Agency (NEA)	Ministry of Micro, Small & Medium Enterprises (MoMSME)	The Ministry of MSME is the National Executing Agency (NEA) of the project. Senior official from the ministry will be Chairperson of PSC to lead and monitor project activities in the country. MoMSME will also nominate a National Project Director to the project who will guide PMU and support Project Implementation. In addition, the National Project Director will chair the Project Steering Committee (PSC).
Project Management Unit (PMU)	UNIDO and MoMSME	The project will be implemented through a PMU. PMU will consist of a National Project Manager. PMU will liaise with two Project Execution Partner NPC, manage monitoring & evaluation and provide overall guidance to project implementation. PMU will report to UNIDO and guided by National Executing Agency through National Project Director and the Project Steering Committee.
Project Execution Partner	National Productivity Council (NPC)	NPC provides technical support to Project implementation. They are members of PSC and PEC.
Project Execution Partner	The Energy and Resources Institute	TERI provides technical support to project implementation. They will be members on PEC and members on PSC.
Associated Ministry	Ministry of Power	Ministry of Power will be on PSC.
Government and National Agencies	Bureau of Energy Efficiency (BEE)	BEE provides guidance to mainstream energy efficiency measures in their overall Energy Efficiency policy promotion and regulatory framework in the country. They are member of PSC.

	Ministry of Environment, Forest & Climate Change (MoEFCC)	The GEF Operational Focal Point of India will be a member of the PSC.
	Other Ministries Ministry of Power Ministry of Textiles (MoT), Ministry of Steel (MoS), Ministry of Food Processing (MoFP) Ministry of Chemicals and Fertilizers (MoCF)	MSME industries are connected to different Ministries. Major Ministries are, Ministry of Power, Textiles, Food Processing, Chemicals and Fertilizers, and others. The relevant ministries shall be invited members
Sector Skill Councils	Skill Council for Green Job (SCGJ), and other relevant Sector Skill Councils	The Ministry of Skilling has established Sector Councils to develop course curriculum (in the form of Qualification Packs), impart skilling, certify the candidates, accredit agencies imparting skilling. The QPs go through rigorous scrutiny and approval processes. Skilling modules developed under the project can be included into the scheme of actions of sector skill councils to roll out at national level. Skill Council for Green Jobs/ other relevant Sector Skill Councils may leverage project interventions to develop skilling qualification packs around Sustainable Energy Transition for Decarbonisation and roll out the skilling during or/ and beyond the project. SCGJ and relevant SSC will be invitees to the PSC.
Beneficiaries / Local private sectors	MSME units	MSME units will be the main beneficiaries of the project. The participating units will share data, cooperate with PMU, Project Execution Partner for proposed interventions, implement the recommended changes and comply with the monitoring protocols. The owners/ managers of MSME units will participate in awareness/ sensitization programmes of the project. They will nominate their staff for training/ skilling in enhancing the Sustainable Energy Transition for Decarbonisation. They will also make equity contributions and leverage loans to make identified interventions for Sustainable Energy Transition for Decarbonisation
	MSME cluster Associations	MSME cluster associations/ state will be involved during the project. Their role will be to facilitate workshops, create outreach and sensitize not only participating MSME units but also others to participate to meet objective of significant scale up. They will encourage units to demonstrate and replicate the identified project interventions. They will also be involved in the dissemination efforts of the project. They will be invitees on PSC.

	Confederation of Indian Industry, ASSOCHAM, FICCI	These are large industry associations with the national presence. They will be invited to relevant project activities to support scale up actions. They may be invited to PSC as invitee.
	Academia and technical research institutions	Academia and Research Institutions are involved in research and innovation for sustainable energy transition for decarbonisation. Project will make consultations on such technology packages which are ready for roll out. They will be invited to the consultation meetings, sharing knowledge as and to participate in relevant activities.
Financial Sector	Financial institutions such as Small Industrial Development Bank of India (SIDBI), Yes Bank and other financing institutions	Financial institutions are expected to provide loans to MSME units to purchase sustainable energy technologies for decarbonisation. They will participate in financing components, guide in formulating financing packages. SIDBI will be a member of the PSC. Other bankers may be invited to PEC or PSC as per requirement identified by PMU.
	Lead banks	Lead banks in respective clusters will be informed on the project interventions and its goals. They will be sensitized to consider lending for sustainable energy technologies for decarbonisation in the interested MSME units.
Other stakeholders	Gender experts	Gender experts will be invited to PEC/ PSC to seek advice on reviewing and inclusion of Gender Action Plan in the project. A gender expert will be recruited during the PPG phase to carry out the gender analysis and provide recommendations on action to be taken out during project execution. Sufficient resources will be allocated for this.

(Please upload to the portal documents tab any stakeholder engagement plan or assessments that have been done during the PIF development phase.)

Private Sector

Will there be private sector engagement in the project?

Yes

And if so, has its role been described and justified in the section B project description?

Yes

Environmental and Social Safeguard (ESS) Risks

We confirm that we have provided indicative information regarding Environmental and Social risks associated with the proposed project or program and any measures to address such risks and impacts (this information should be presented in Annex D).

Yes

An Environmental and Social Management Framework (ESMF) will be prepared for the proposed project, focusing on improving operational efficiencies in MSMEs across the identified sectors. The ESMF will address the ESS risks related to the financing mechanisms and loan packages for MSMEs in outcome 1.3, the pilot demonstration of Sustainable Energy Solutions in MSME units in outcome 3.1, and the scaling up of sustainable energy solutions in MSME units in outcome 3.2. During the Project Preparation Grant (PPG) phase, the ESMF will:

- Mainstream ESS considerations in the assessment of supported technologies, MSMEs, and pilot demonstrations carried out during the project cycle.
- Review the applicable environmental and social regulations relevant to the proposed project activities.
- Examine the proposed project activities and interventions to determine if any of them could lead to environmental, social, health, and safety-related implications.
- Based on the above assessment, propose appropriate mitigation strategies and management measures that could be adopted to suitably address all identified impacts.

The ESMF will also include a Risks and Mitigation table addressing the main environmental and social impacts already identified, including emissions, ash generation, waste management, worksite safety issues, worker safety concerns, worker facilities/amenities, equal opportunities, grievance mechanisms, and anti-harassment provisions. These issues are prevalent due to the relatively small scale of operations, a limited number of workers, and the unorganized nature of these industries. The ESMP observes considerable synergies between the proposed Sustainable Energy Transition for decarbonization and potential improvements in environmental, social, health, and safety (ESHS) aspects, which would complement each other. By addressing these ESHS concerns in parallel with sustainable energy interventions, the project aims to create a more holistic and impactful approach to improving the overall operational efficiency and sustainability of the targeted MSMEs.

Overall Project/Program Risk Classification

PIF	CEO Endorsement/Approval	MTR	TE
Medium/Moderate			

E. OTHER REQUIREMENTS

Knowledge management

We confirm that an approach to Knowledge Management and Learning has been clearly described in the Project Description (Section B)

Yes

ANNEX A: FINANCING TABLES

GEF Financing Table

Indicative Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	Grant / Non-Grant	GEF Project Grant($)	Agency Fee($)	Total GEF Financing ($)
UNIDO	GET	India	Climate Change	CC STAR Allocation: CCM-1-2	Grant	540,000.00	51,300.00	591,300.00
UNIDO	GET	India	Climate Change	CC STAR Allocation: CCM-1-1	Grant	8,442,420.00	802,030.00	9,244,450.00

Total GEF Resources ($)		**8,982,420.00**	**853,330.00**	**9,835,750.00**

Project Preparation Grant (PPG)

Is Project Preparation Grant requested?

true

PPG Amount ($)

150000

PPG Agency Fee ($)

14250

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	Grant / Non-Grant	PPG($)	Agency Fee($)	Total PPG Funding($)
UNIDO	GET	India	Climate Change	CC STAR Allocation: CCM-1-2	Grant	9,000.00	855.00	9,855.00
UNIDO	GET	India	Climate Change	CC STAR Allocation: CCM-1-1	Grant	141,000.00	13,395.00	154,395.00
Total PPG Amount ($)						**150,000.00**	**14,250.00**	**164,250.00**

Please provide justification

Sources of Funds for Country Star Allocation

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Sources of Funds	Total($)
UNIDO	GET	India	Climate Change	CC STAR Allocation	10,000,000.00
Total GEF Resources					**10,000,000.00**

Indicative Focal Area Elements

Programming Directions	Trust Fund	GEF Project Financing($)	Co-financing($)
CCM-1-2	GET	540,000.00	4271400
CCM-1-1	GET	8,442,420.00	66918600
Total Project Cost		**8,982,420.00**	**71,190,000.00**

Indicative Co-financing

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
Recipient Country Government	Ministry of Micro Small and Medium Enterprises	In-kind	Recurrent expenditures	8000000
Others	Small Industries Development Bank of India	Loans	Investment mobilized	42000000
Private Sector	Industry Associations	Equity	Investment mobilized	20950000
GEF Agency	United Nations Industrial Development Organisation	Other	Investment mobilized	125000
GEF Agency	United Nations Industrial Development Organisation	In-kind	Recurrent expenditures	115000
Total Co-financing				**71,190,000.00**

Describe how any "Investment Mobilized" was identified

The "Investment Mobilized" amounts represent the financial resources that various co-financiers have committed to the project to support its decarbonization and energy reduction goals. These investments are distinct from in-kind contributions or recurrent expenditures and signify a direct financial injection into the project.

Justification for considering them as co-financing:

1. Additionality: These co-financing amounts bring additional financial resources beyond the GEF grant, enabling the project to achieve a larger scale and broader impact.

2. Alignment with Project Objectives: The investments are directed towards activities that directly contribute to the project's outcomes, such as technology implementation and capacity building.

3. Diverse Sources: The mobilization of investments from government bodies, financial institutions, the private sector, and international agencies demonstrates a multi-stakeholder commitment to the project's success.

4. Catalytic Effect: These investments can leverage further funding and resources, stimulating market transformation and creating a sustainable ecosystem for decarbonization in Indian MSMEs.

The "Investment Mobilized" amounts represent a crucial component of the project's financial architecture, ensuring its viability and maximizing its potential for transformative change. It signifies the confidence and commitment of various stakeholders in the project's vision and its ability to deliver tangible results in decarbonization and energy efficiency.

ANNEX B: ENDORSEMENTS

GEF Agency(ies) Certification

GEF Agency Type	Name	Date	Project Contact Person	Phone	Email

Project Coordinator	United Nations Industrial Development Organisation		Sanjaya Shrestha	+43 676 9561460	s.sreshtha@unido.org

Record of Endorsement of GEF Operational Focal Point (s) on Behalf of the Government(s):

Name	Position	Ministry	Date (MM/DD/YYYY)
Neelesh Shah	Joint Secretary	Ministry of Environment, Forest & Climate Change	10/17/2024

ANNEX C: PROJECT LOCATION

Please provide geo-referenced information and map where the project interventions will take place

SN	Sectors	Clusters	Longitude	Latitude
1	Textiles	Tiruppur, Tamil Nadu	77.3411° E	11.1085° N
		Surat, Gujarat	72.8311° E	21.1702° N
		Ludhiana, Panjab	75.8573° E	30.9010° N
		Panipat, Haryana	76.9635° E	29.3909° N
2	Steel re-rolling	Mandi Gobindgarh, Panjab	76.2914° E	30.6642° N
		Raipur, Chhattisgarh	81.6296° E	21.2514° N
3	Chemical	Ankaleshwar, Gujarat	73.0152° E	21.6264° N
		Vapi, Gujarat	72.9106° E	20.3893° N
4	Food Processing	Karnal, Haryana	76.9905° E	29.6857° N
		Krishna, Andra Pradesh	80.7214^0 E	16.6100° N

5	Pulp and Paper	Ahmedabad, Gujarat	72.5714° E	23.0225° N
		Muzaffarnagar, Uttar Pradesh	77.7085° E	29.4727° N
6	Foundry & Forging	Rajkot, Gujarat	70.8022° E	22.3039° N
		Belgaum, Karnataka	74.4977° E	15.8497° N
7	Bricks	Vellore, Tamil Nadu	79.1325° E	12.9165° N
		Muzzafarpur, Bihar	85.3910° E	26.1197° N
		Morbi, Gujarat	70.8491° E	22.8252° N
8	Light - Engineering	Ludhiana, Panjab	75.8573° E	30.9010° N
		Coimbatore, Tamil Nadu	76.9558° E	11.0168° N

ANNEX D: ENVIRONMENTAL AND SOCIAL SAFEGUARDS SCREEN AND RATING

(PIF level) Attach agency safeguard screen form including rating of risk types and overall risk rating.

Title

Annex G-Tables 4,5,6

ES_Screening__GEF8 MSME Energy Transition_230230

ANNEX E: RIO MARKERS

Climate Change Mitigation	Climate Change Adaptation	Biodiversity	Land Degradation
Principal Objective 2	No Contribution 0	No Contribution 0	No Contribution 0

ANNEX F: TAXONOMY WORKSHEET

Level 1	Level 2	Level 3	Level 4
Influencing Models			
	Transform policy and regulatory environments		
	Strengthen institutional capacity and decision making		
Stakeholders	Private sector		
		Capital providers	
		SMEs	
		Individuals/ Entrepreneurs	
	Beneficiaries		
	Civil Society		
		Academia	
		Trade Unions and Workers Unions	
	Type of engagement		

		Information dissemination	
		Participation	
	Communication		
		Awareness raising	
		Public campaigns	
		Behavior change	
Capacity, Knowledge and Research			
	Capacity development		
	Knowledge generation and exchange		
	Learning		
		Theory of Change	
		Adaptive management	
		Indicators to measure change	
	Innovation		
	Knowledge and learning		
Gender Equality			
	Gender mainstreaming		
		Beneficiaries	Gender related challenges for better work area
		Sex disaggregated indicators	Collecting baseline data on gender
		Gender sensitive indicators	Gender sensitive monitoring
	Gender results area		
		Participation and leadership	Promoting women leadership
		Capacity development	decision-making roles
		Awareness raising	Challenging discriminatory practices
Focal Area/Theme			
	Climate Change		
		Climate Change Mitigation	
			Energy Efficiency
			Technology Transfer
			Renewable Energy
			Financing