

Financing Mitigation and Adaptation Projects (FMAP) in Indian MSMEs Programme

Environmental & Social Impact Assessment [ESIA] and Environmental & Social Management Plan [ESMP]

Direct Financing Steel Re-rolling Industry

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In consultation with Green Climate Fund (GCF)
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Section 1:

1. ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)

1.1 Executive Summary

1.1.1 Overview of the sector related to project activities and its objective

The Indian steel re-rolling sector forms an essential part of the country's secondary steel industry, catering primarily to the construction and infrastructure segments. Unlike integrated steel plants, re-rolling mills do not produce steel from iron ore; instead, they process semi-finished products such as billets, ingots, or scrap into finished long products like Techno Mechanically Treated (TMT) bars, angles, channels, beams, and flats. These mills are typically small to medium-sized enterprises, organized in clusters across various states, and play a critical role in meeting regional demand for structural steel. Their operations are relatively flexible and cost-effective, making them vital for India's growing urbanization and industrialization.

However, the sector faces challenges related to energy efficiency, modernization, and environmental compliance. Reheating furnaces and induction furnaces consume significant amounts of fuel and electricity, making energy costs a major concern. With increasing emphasis on sustainability and competitiveness, the steel re-rolling sector is gradually moving toward improved practices, automation, and cleaner production methods to align with India's vision of a low-carbon industrial future.

MSME in India stands for Micro, Small, and Medium Enterprises. These are businesses categorized based on their investment in plant and machinery/equipment and annual turnover. The MSME classification applies to both manufacturing and service industries. The classification is based on:

- **Investment in Plant & Machinery** (not land/building)
- **Annual Turnover**

All amount in Indian Rupee (₹)		
Category	Investment Limit	Turnover Limit
Micro	Up to ₹2.5 crore	Up to ₹10 crore
Small	Up to ₹25 crore	Up to ₹100 crore
Medium	Up to ₹125 crore	Up to ₹500 crore

This helps industries access priority lending, government schemes, and subsidies.

Environmental & Social Impacts of the Steel Re-Rolling Sector

The Indian steel re-rolling mill (SRRM) sector faces significant environmental and social challenges arising from energy-intensive reheating and rolling processes, air emissions, resource use, and occupational health and safety risks. These issues are compounded by the sector's dominance by micro, small and medium enterprises (MSMEs) and a high prevalence of informal and contract labour, which limit access to modern technologies, finance, and compliance capacity.

Key Environmental Issues

- **High Energy Use & Emissions:** Steel re-rolling mills are highly energy-intensive due to reheating furnaces. MSME units largely use coal, furnace oil, or gas with inefficient furnaces, resulting in high energy consumption and GHG emissions.

- **Air Pollution:** Air emissions from reheating and rolling include particulate matter and combustion gases. In many small units, air pollution control systems are inadequate or poorly maintained.
- **Water Use & Wastewater:** Water is mainly used for cooling and descaling. Wastewater containing oil and suspended solids is often insufficiently treated in smaller mills.
- **Solid & Hazardous Waste:** Re-rolling mills generate mill scale, slag, and refractory waste. While some waste is reused, improper storage and handling are common in MSME units.

Key Social Issues

- **Occupational Health & Safety Risks:** Workers are exposed to high heat, dust, fumes, noise, and moving machinery, leading to injury and health risks. PPE usage and safety practices remain inconsistent.
- **Working Conditions:** Long working hours, manual material handling, and physically demanding work are common. Poor shop-floor layout and ventilation further affect worker safety and productivity.
- **Informal Employment & Social Protection Gaps:** A large share of workers are informally employed, with limited access to social security, health benefits, and grievance mechanisms.
- **Skills & Training Gaps:** Limited training on furnace operation, safety, and environmental compliance constrains productivity and increases operational risks.

Addressing these challenges requires coordinated action by statutory bodies, industry associations, financial institutions, and worker organizations, with a focus on cleaner technologies, improved occupational safety, capacity building, and formalization to support a sustainable and responsible MSME-dominated Steel Re-Rolling sector in India.

Steel Re-Rolling Clusters in India:

India has several steel re-rolling clusters spread across different states, producing a wide range of long products like TMT bars, angles, channels, beams, flats, and rounds. Few of these clusters have been mentioned below, and they play a crucial role in meeting domestic construction and infrastructure demand.

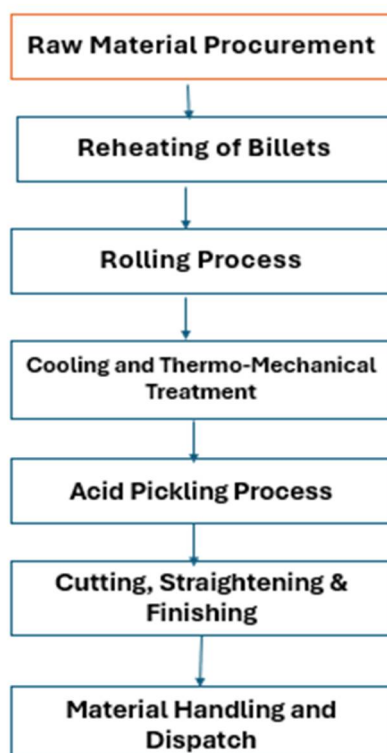
1. **Mandi Gobindgarh & Ludhiana (Punjab) – Products:** Rounds, Squares, TMT Bars, Ingots, Steel Wire, Billets, Tubes, M.S Flats, Strips
2. **Jaipur (Rajasthan) – Products:** Bars, Angles, Channels, Beams, Flats, Squares, Rounds, Billets
3. **Raipur (Chhattisgarh) – Products:** Angles, Channels, Rods, Flats, Ingots, Billets, Rounds
4. **Bhavnagar (Gujarat) – Products:** M.S Flats, Rounds, Squares, TMT Bars, Strips, Channels, Beams, Billets
5. **Jalna (Maharashtra) – Products:** Angles, Channels, Beams, Flats, Squares, Rounds, Billets, Bars
6. **Howrah (West Bengal) – Products:** Rounds, Squares, TMT Bars, Ingots, Steel Wire, Angles, Channels, Beams, Flats
7. **Durgapur (West Bengal) – Products:** Rounds, Squares, TMT Bars, Ingots, Steel Wire, Angles, Channels, Beams, Flats
8. **Palakkad (Kerala) – Products:** Squares, TMT Bars, Steel Wire, Angles, Channels
9. **Jamshedpur (Jharkhand) – Products:** Flats, Squares, Rounds, Bars

10. Coimbatore (Tamil Nadu) – Products: Billets, Ingots, TMT Bars, Wire Rod, Coils, Rounds, Angles, Channels, Rails, Flats

11. Indore (Madhya Pradesh)– Products: Billets, Ingots, TMT Bars, Wire Rod, Coils, Rounds, Angles

Note: The above cluster list is indicative and not exhaustive; additional clusters could be added by the Accredited Entity (AE) for funding under FMAP Programme.

1.1.2 Process in Steel Re-rolling Industry in Indian Setup



1.1.3 Purpose of the ESIA and its scope.

The Environmental and Social Impact Assessment (ESIA) has been developed as a programme - level assessment to evaluate and disclose potential environmental and social risks associated with MSME sub-projects financed under **the Financing Mitigation and Adaptation Projects (FMAP) in Indian MSMEs Programme**. It complements SIDBI's screening and due diligence process under its Environmental and Social Management System (ESMS) [approved by GCF Board] and ensures consistency with the Green Climate Fund (GCF) Environmental and Social Standards (ESS).

In line with ESMS procedures, all proposed sub-projects are first screened against the Exclusion List (Annexure 1) to confirm eligibility. Eligible projects are then assessed for compliance with SIDBI's Environmental and Social Management Policy which is in alignment with IFC Performance Standards. Applicants are required to submit the Environmental and Social Due Diligence (ESDD) form (Annexure 2), followed by project appraisal. During project appraisal, financial ratings of the MSME borrowers are carried out using the respective credit rating model / tool adopted by the organization alongside the Environmental Social and Governance (ESG) rating/ ESDD format. The project appraisal is carried out after carrying out project site assessments to confirm risk categorization and safeguard requirements

under FMAP Programme. ESIA/ESMP shall only be applicable for **Category B projects**. The definitions of **Category B** and **Category C** projects are mentioned below.

- **Category B projects** involve technology or process changes that may result in moderate, site-specific, and reversible impacts, such as water discharge, air emissions, chemical and waste handling, energy use, and occupational health and safety concerns. These impacts must be carefully assessed and managed through structured mitigation planning or involve technology or process where risks and impacts are considered limited, and the magnitude is expected to be low to moderate. The risks and impacts are few in number, contained within the footprint of the activities, largely reversible, and readily mitigated through generally accepted mitigation measures and good international industry practices.
- **Category C projects** involve low-risk efficiency improvements or equipment upgrades that do not alter manufacturing chemistry or increase pollution loads and therefore present minimal potential for adverse environmental or social effects or Category C activities are typically those that have no physical elements or defined footprints. However, in certain contexts, activities that have physical elements or a footprint may also be considered as low risk, particularly where the activities are small-scale, undertaken within an already built environment, do not involve physical and economic displacement of people or have minimal or no adverse impacts on indigenous peoples.

By providing a structured assessment framework, this ESIA enables the FMAP Programme to evaluate Category B interventions - identifying, analyzing, and mitigating potential environmental and social impacts - while also validating the low-risk nature of Category C projects. This ensures full alignment with SIDBI's ESMS (aligned with IFC Performance Standards), and the GCF Environmental and Social standards.

This ESIA and ESMP are applicable across diverse industrial activities and processes within the **Steel Re-Rolling sector, covering various MSME clusters in India**. These frameworks define pathways for classifying risks, evaluating the implications of mitigation technologies and adaptation investments, and establishing a transparent, standardized basis for environmental and social risk management under the FMAP

Linkage with GCF

The **FMAP Programme** supports projects that reduce greenhouse gas emissions and enhance climate resilience. MSMEs in the Steel Re-Rolling sector industry can avail assistance under GCF-FMAP Programme for any of the following project types:

A. Mitigation

- **Energy Efficiency Projects:** Example- Retrofitting / replacing / upgrading EE machinery / interventions / process optimization, and waste heat recovery to reduce energy consumption.
- **Renewable Energy Integration:** Example- Installation of solar panels / solar water heater in manufacturing units for captive use / Renewable Energy Service sector enterprises that sell solar / wind power to the manufacturing enterprises.
- **Green Mobility & Logistics:** Example- 2 Wheelers, 3 Wheelers, 4 Wheelers, E-buses, E-trucks, charging infrastructure and battery swap.

- **Waste to Energy:** Example- Setting up Waste to Energy projects for generation of Biogas/ Bio CNG/ Power/ producer or syngas from urban, industrial and agricultural wastes/residues.

B. Adaptation:

- **Water-efficient technologies:** Example- Wastewater / Effluent treatment / ZLD/ Rainwater harvesting systems, surface water storage units, stormwater management equipment and aquifer recharge solutions for drought-prone areas.
- **Climate-resilient materials:** Example-Green Buildings using locally suited, durable materials for housing and infrastructure to withstand extreme weather.
- **Manufacturing Climate innovation related products:** Example- Innovative and locally suited technologies aimed at increasing climate adaptation.
- **Supplying alternative raw materials for those that are at risk from climate change:** Example- Aiding MSMEs who are the suppliers to bigger industries manufacturing technologies to enhance adaptive capacity of end beneficiaries.

1.1.4 Objectives of the ESIA:

The key objectives of this ESIA are to:

- Provide a programme-level framework for environmental and social risk assessment of MSME sub-projects under FMAP Programme.
- Ensure compliance with SIDBI's ESMS, IFC Performance Standards, and GCF Environmental and Social Standards.
- Identify and categorize potential risks associated with Category B and Category C projects.
- Establish mitigation measures and safeguard requirements for Category B interventions.
- Validate the low-risk nature of Category C projects to streamline approval and implementation.
- Promote transparency and accountability in environmental and social risk management across MSME sectors.

1.1.5 Scope of the ESIA:

The scope of this ESIA covers:

- MSME sub-projects financed under the FMAP Programme in India viz., (i) Brownfield projects set up by an existing enterprise within its existing industrial premises, (ii) Brownfield enterprises going for expansion and modernization of their existing operations in a new location / premises; and (iii) Greenfield projects i.e., setting up of new enterprises.
- Environmental risks such as emissions, effluents, waste management, energy use, and resource efficiency.
- Social risks including occupational health and safety, community impacts, and labor practices.
- Screening, categorization, and appraisal processes consistent with SIDBI's ESMS and GCF ESS requirements.
- Programme-level analysis to guide project-specific assessments and safeguard planning.

1.1.6 Summary of key Environmental and Social Risks

The steel re-rolling sector is a critical part of India's manufacturing value chain, supplying finished steel products to the construction, infrastructure, and manufacturing industries. However, the sector is also associated with significant environmental and social risks, particularly due to energy-intensive reheating operations, material handling, and occupational exposure.

Steel re-rolling processes such as billet reheating and rolling require substantial energy inputs, largely sourced from fossil fuels, contributing to greenhouse gas emissions and air pollution. Emissions from reheating furnaces and rolling operations include particulate matter, oxides of nitrogen, sulphur oxides, carbon monoxide, and metal oxide fumes, which can adversely affect ambient air quality, especially where pollution control systems are inadequate. The sector also generates solid and industrial waste, including mill scale, furnace slag, refractory waste, and oily sludge, which pose risks to land and surface drainage if not properly stored or managed. Water used for cooling, descaling, and dust suppression may become contaminated with oil, grease, and suspended solids, and improper treatment or disposal can affect local water resources.

On the social side, workers in steel re-rolling mills are exposed to high temperatures, hot metal surfaces, dust, fumes, noise, and moving machinery, leading to risks such as burns, heat stress, respiratory illnesses, hearing loss, and musculoskeletal disorders. Manual handling of heavy materials, repetitive tasks, and machinery operation increase the likelihood of workplace injuries, particularly in smaller MSME units with limited safety infrastructure. Use of personal protective equipment (PPE) and access to occupational health monitoring remain inconsistent. Indirect impacts on surrounding communities may also arise from air emissions, waste handling, and noise, extending the sector's footprint beyond factory premises.

1.1.7 Key mitigation measures and recommendations:

To address these challenges, the steel re-rolling sector can adopt a more balanced and forward-looking approach that safeguards both the environment and people:

- **Energy Efficiency & Cleaner Fuels:** Promote adoption of energy-efficient reheating furnaces, waste heat recovery systems, continuous rolling mills, and a gradual shift to cleaner fuels and renewable energy to reduce energy consumption and emissions.
- **Air Pollution Control:** Install and maintain appropriate air pollution control devices such as bag filters, scrubbers, and effective dust extraction systems to control particulate matter, furnace emissions, and fumes.
- **Water & Waste Management:** Encourage water recycling and closed-loop cooling systems, proper treatment of wastewater from cooling and descaling operations, and safe handling, storage, and reuse or disposal of mill scale, slag, and refractory waste.
- **Occupational Health & Safety:** Strengthen the use of personal protective equipment (PPE), improve ventilation, shop-floor layout, and machine guarding, and provide regular training on safe furnace operation, rolling processes, and material handling.
- **Community Safeguards:** Monitor and manage noise, air emissions, and waste handling practices, and maintain adequate fire safety systems and emergency preparedness measures to protect surrounding communities.
- **Technology Upgradation & Capacity Building:** Support modernization through improved process controls, automation, and capacity-building programs for MSME steel re-rolling units to enhance compliance, productivity, and worker safety.

Note: (large list is described in the process wise section 1.3)

1.2 Risk categorization Methodology

The methodology adopted for the ESIA is based on a systematic and participatory approach, ensuring the involvement of all relevant stakeholders and partners associated with the FMAP Programme. With

the support of administrative bodies, local authorities, industry associations, and MSME representatives, the study was conducted in a consultative manner to promote transparency and broad dissemination of information regarding the programme's objectives and potential impacts.

Risk categorization methodology tailored for SIDBI–GCF ESIA/ESMP screening of Steel Re-Rolling MSMEs in India.

- **Low:** Limited, site-specific impacts; easily mitigated; compliant is categorized as C.
- **Moderate:** Manageable with standard measures; no significant legacy issues are categorized as B.
- **High:** Significant, diverse, or irreversible impacts; cumulative cluster impacts; resettlement/land acquisition affecting biodiversity-sensitive areas, indigenous communities, or cultural heritage without regulatory compliance; major legal non-compliance; sensitive receptors affected is categorized as A. **Under the programme, Category A projects are not covered.**

Key steps in the methodology include:

- **Stakeholder Consultations:** Structured discussions were held with MSME owners, workers, local communities, and sectoral experts to capture diverse perspectives on environmental and social risks, benefits, and concerns.
- **Documentary Review:** Existing policies, regulatory frameworks, sectoral studies, and SIDBI's ESMS procedures were reviewed to ensure alignment with national standards, IFC Performance Standards, and GCF Environmental and Social Standards.
- **Portfolio Data Review:** Technical, financial, and environmental data from SIDBI's previous portfolio assets (earlier loan cases) were analyzed to identify patterns of risk, performance outcomes, and mitigation effectiveness. This evidence base provided valuable insights into sector-specific challenges, compliance trends, and the practical feasibility of proposed interventions.
- **Site Assessments:** Field visits and site-level assessments were conducted to validate information provided in the Environmental and Social Due Diligence (ESDD) forms and the ESG Screening Sheets, ensuring accurate categorization and safeguard planning.
- **Risk Analysis and Mitigation Planning:** Environmental and social risks were analyzed for Category B interventions, focusing on emissions, effluents, waste management, energy use, and occupational health and safety. Mitigation measures were identified to ensure impacts remain moderate, site-specific, and reversible.
- **Screening and Categorization:** Sub-projects were systematically screened against the ESMS Exclusion List, followed by categorization into Category B or Category C based on potential risk pathways. Screening of sub-projects follows a joint interpretation framework, where SIDBI applies its internal ESMS processes while ensuring full alignment with GCF's safeguards
- **Validation of Low-Risk Projects:** Category C projects were reviewed to confirm their low-risk nature, particularly efficiency improvements and equipment upgrade that do not alter manufacturing chemistry or increase pollution loads.

This participatory and evidence-based methodology ensures a common understanding of the issues, benefits, and concerns associated with MSME sub-projects under FMAP Programme. By integrating historical portfolio data with forward-looking risk analysis, the ESIA provides a transparent and

standardized framework for environmental and social risk management, strengthening compliance with SIDBI's ESMS and the GCF Environmental and Social Policy.

1.3 Environmental and Social Due Diligence and Assessment

As the Accredited Entity (AE), SIDBI is responsible for ensuring that all subprojects under the Program adhere to the Green Climate Fund (GCF) Environmental and Social Safeguards (ESS) and follow a proportionate, risk-based due diligence process.

Fit-for-Purpose ESIA (Environmental and Social Impact Assessment): For subprojects categorized as Moderate risk (B), the review a sector-specific ESIA that:

- Identifies environmental impacts such as high energy demand from reheating furnaces, air emissions (particulate matter, NOx, SOx, carbon monoxide, metal oxide fumes), solid and industrial waste generation (mill scale, slag, refractory waste, oily sludge), wastewater arising from cooling and descaling operations, and risks associated with fuel and material handling—critical in steel re-rolling operations.
- Assesses social risks such as labour conditions, occupational health and safety (exposure to extreme heat, hot metal surfaces, dust, fumes, noise, moving machinery), migrant and contract worker conditions, and potential community-level impacts, especially in steel re-rolling clusters.
- Evaluates contextual sensitivities (e.g., proximity to drainage channels, rivers, or groundwater sources).
- GCF guidelines state that the ESIA must be proportional to the risk category and designed to address the specific impacts of the activity.
- For sub-projects where Brownfield enterprises going for expansion and modernization of their existing operations in a new location / premises; and (ii) Greenfield projects i.e., setting up of new enterprises, the scope of land is limited to industrial area, industrial estate, notified industrial zone, special economic zones, Land parcels already designated by the Government for non-agricultural use, solar / wind farms etc. where all the necessary statutory permission / infrastructure are available.
- Such projects are eligible under this ESIA only where Environmental and Social Due Diligence (ESDD) and legal/site screening confirm that there is no compulsory land acquisition with physical or economic displacement, no Indigenous Peoples impacts, no critical habitat/protected ecosystem impacts, no cultural heritage impacts, and no other material PS5–PS8 consequence in line with SIDBI's ESMS and GCF Environmental and Social Standards.
- Any sub project for which screening identifies impacts falling under exclusion criteria or PS5–PS8 requirements shall be deemed ineligible and excluded from financing under the GCF-FMAP Programme.

Following are the detailed E&S Risk Assessment associated with Steel Re-Rolling Process & Technologies.

1.3.1 Raw Material Procurement

The primary raw materials used are a) Steel billets / ingots b) Scrap based billets (from induction furnaces) c) Ship breaking scrap (limited use). Billets are inspected visually and dimensionally and are cut or sheared into required lengths using shearing machines or gas cutting systems before charging into the reheating furnace.

(a) Key Environmental Risks:

Raw material procurement and handling in steel re-rolling mills present the following environmental risks:

- Fugitive dust generation during unloading, handling, and cutting
- Localized emissions from gas cutting operations (CO, NOx, metal fumes)
- Scrap remnants and off-cuts
- Surface scale and rust flakes from billets
- Packaging waste (wood, plastic, strapping)
- Oil and grease leakage from handling equipment
- Low-probability contamination risk from ship-breaking scrap containing paint residues or heavy metals
- High noise levels from shearing machines, cranes, and material handling operations

(b) Key Social Risks:

The key social and occupational risks associated with raw material procurement include:

- Injuries from sharp edges, hot billets, and heavy lifting
- Localized fire risk from gas cutting operations
- Exposure to dust, fumes, and high noise levels
- Ergonomic stress due to manual handling
- Inadequate use of personal protective equipment (PPE)
- Risk of accidents in congested storage yards
- Use of contract labour without adequate training
- Inconsistent enforcement of safety procedures

Categorization of activities in Raw Material Procurement Process- Category: C (Low Risk)

Rationale for the categorization of Raw Material Procurement Process:

The raw material procurement and handling stage is classified as Category C (Low Environmental and Social Risk) due to the following reasons:

- Impacts are low-intensity, site-specific, localized, and fully reversible
- No process emissions, wastewater generation, or thermal operations are involved at this stage
- Risks can be effectively managed through standard control measures, such as:
- Dust suppression
- Safety guards and PPE
- Proper waste management practices
- No large-scale displacement, land acquisition, or severe community impacts are involved

Applicable IFC Performance Standards in Raw Material Procurement process

- **PS 1- Assessment and Management of Environmental and Social Risks and Impacts:**
 - Identification of environmental and social risks
 - Implementation of mitigation and monitoring measures
 - Environmental and Social Management System (ESMS)
- **PS2 – Labor & Working Conditions:**
 - Occupational health and safety
 - Fair treatment of permanent and contract workers

- Training and capacity building
- **PS3 – Resource Efficiency & Pollution Prevention:**
 - Control of air emissions and noise
 - Efficient use of raw materials
 - Waste reduction and proper disposal
- **PS4 – Community Health & Safety:**
 - Prevention of offsite impacts from dust, noise, and traffic
 - Safe transportation and material handling practices
- **PS5 to PS8** are conditional because they apply only if projects involve land acquisition affecting biodiversity-sensitive areas, indigenous communities, or cultural heritage without regulatory compliance.

SIDBI's ESMS and GCF ESS require these checks during screening and due diligence.

1.3.2 Reheating of Billets

The reheating furnace is the most energy intensive unit in the steel re rolling mill, which accounting for 50–70% of total energy consumption.

Billets are reheated to 1100–1200°C, making them soft and ductile for plastic deformation during rolling mill. Heat is transferred to the billet through radiation and convection from hot flue gases and furnace walls.

(a) Key Environmental Risks:

Reheating of billets presents several environmental risks due to high temperature combustion processes and large-scale fuel consumption:

- Emission of CO₂, contributing to greenhouse gas emissions and climate change. Emission of NO_x, SO_x, CO, and particulate matter from fuel combustion.
- Fugitive emissions during charging and discharging of billets High flue gas temperatures and excess air levels further increase emission intensity if combustion efficiency is poor.
- Reheating furnaces account for 50–70% of total energy use in steel re rolling mills. Inefficient furnaces increase overall specific energy consumption (SEC) and operating costs.
- Thermal Losses & Heat Wastage, Losses through hot flue gases and Wall, roof, and skid conduction losses. Heat loss during billet charging and discharging. Formation of mill scale (1–2% of billet weight) due to oxidation at high temperatures.

(b) Key Social Risks:

- The reheating stage involves substantial occupational and community risks. Occupational Health & Safety (OHS) Hazards which exposure to extremely high temperatures. Burn injuries during charging/discharging.
- Fire and explosion risk due to fuel handling and burner malfunction. Exposure to combustion gases leading to respiratory issues.
- High noise levels from draft fans and combustion blowers. Significant heat stress for furnace operators, especially in poorly ventilated units.

- Off-site air pollution affecting nearby communities. Increased traffic and accident risk due to fuel supply logistics

Categorization of activities in Reheating of Billets process - Category: B (Moderate Risk)

Rationale for the categorization of Reheating of Billets process:

The activity falls under Category B because Environmental impacts are predictable, site specific, and reversible. No significant land acquisition, displacement, or irreversible ecological damage is involved.

Emissions and safety risks can be mitigated using proven technologies and management systems, such as: Efficient burners and combustion control. Waste heat recovery systems. Adequate ventilation and safety barriers. Impacts are typically confined within plant boundaries and adjacent areas.

Applicable IFC Performance Standards in the Reheating of Billets process:

- **PS 1- Assessment and Management of Environmental and Social Risks and Impacts:** Assessment and Management of Environmental and Social Risks and Impacts- Identification and management of emissions, energy use, and OHS risks. Implementation of Environmental and Social Management Systems (ESMS).
- **PS2 – Labor & Working Conditions:** Labor and Working Conditions- Occupational health and safety management. Worker training and emergency preparedness. Provision of appropriate PPE and heat stress management measures.
- **PS3 – Resource Efficiency & Pollution Prevention:** Resource Efficiency and Pollution Prevention- Energy efficiency improvements in reheating furnaces. Reduction of air emissions and heat losses. Adoption of waste heat recovery systems.
- **PS4: Community Health, Safety, and Security** - Control of off-site air emissions. Prevention of safety incidents affecting surrounding communities.
- **PS 5 to PS 8** are conditional because they apply only if projects involve land acquisition affecting biodiversity-sensitive areas, indigenous communities, or cultural heritage without regulatory compliance.

SIDBI's ESMS and GCF ESS require these checks during screening and due diligence.

1.3.3 Rolling Process

Once reheated, billets are discharged from the furnace and passed through multiple rolling stands. The rolling mill typically consists of 1) Roughing stands – initial size reduction 2) Intermediate stands – cross section shaping 3) Finishing stands – final dimension & surface finish. Each stand uses grooved rolls to progressively reduce the cross section while increasing length. Rolling is usually hot rolling, and the temperature of metal gradually decreases from 1200°C to around 850–900°C at finishing stages.

(a) Environmental Risks

- Rolling mill motors and auxiliary systems consume significant electrical energy. Inefficient motors and improper load management increase specific energy consumption. Formation of mill scale due to oxidation at high temperatures. Minor fugitive emissions from hot surfaces and lubrication oils.

- High noise levels generated by rolling stands, gearboxes, motors, and cooling fans. Noise exposure may exceed occupational limits without proper controls.
- Generation of mill scale (iron oxide flakes). Rejected or off-spec products requiring re-processing. Use of cooling water for rolls, bearings, and guides. Potential contamination is due to oil and grease ingress.

(b) Social Risks

- Risk of entanglement and crush injuries from rotating rolls and moving machinery.
- Burn injuries from hot billets, scale, and rolled products.
- Electrical hazards associated with high-power motors and control panels.
- Prolonged exposure to high noise levels affecting worker health.
- Increased fatigue and long-term hearing damage risks.
- Manual handling during product guiding and inspection.
- Repetitive tasks leading to musculoskeletal disorders.
- Risk of accidents in congested rolling mill areas.
- Dependence on contract labour with variable training levels.

Categorization of activities in Rolling process - Category: B (Moderate Risk)

Rationale for the categorization of Rolling process :

Environmental and social impacts are localized, operational, and reversible. No significant off-site, cumulative, or irreversible environmental impacts. Risks are largely occupational and can be minimized using - 1) Engineering controls (guards, enclosures, automation). 2) Preventive maintenance and energy-efficient equipment 3) Standard occupational health and safety systems. The activity does not involve land acquisition, resettlement, or major community disruption.

Applicable IFC Performance Standards in Rolling process

- **PS1:** – Assessment and Management of Environmental and Social Risks and Impacts
 - o Systematic identification and management of operational risks.
 - o Implementation of Environmental and Social Management Systems (ESMS).
- **PS2:** - Labor and Working Conditions
 - o Occupational health and safety management.
 - o Worker training, machine safety protocols, and PPE usage.
- **PS3:** – Resource Efficiency and Pollution Prevention
 - o Energy-efficient rolling mill motors and drives.
 - o Reduction of water use, waste generation, and noise emissions.
- **PS4:** – Community Health, Safety, and Security
 - o Control of noise and vibration impacts beyond plant boundaries.
 - o Safe handling and transportation of finished products.
- **PS5 to PS8** are conditional because they apply only if projects involve land acquisition affecting biodiversity-sensitive areas, indigenous communities, or cultural heritage without regulatory compliance.

SIDBI's ESMS and GCF ESS require these checks during screening and due diligence.

1.3.4 Cooling and Thermo Mechanical Treatment

Cooling and Thermo Mechanical Treatment (TMT) is a post rolling process used to control the mechanical properties, microstructure, and final quality of re rolled steel products such as TMT bars and structural sections. In this stage, hot rolled products exiting the finishing mill at temperatures of approximately 850–950°C are subjected to: Controlled water cooling or quenching, and Natural or forced air cooling on cooling beds.

In TMT bar production, rapid quenching of the surface followed by self-tempering of the core produces a hardened outer layer with a ductile core, resulting in improved strength, ductility, and weldability. Cooling systems typically include water spray systems, quenching boxes, pumps, cooling beds, and recirculation units.

(a) Environmental Risks

- Significant use of water for quenching and cooling operations.
- Risk of over extraction in water stressed regions if unmanaged.
- Discharge of hot wastewater can elevate receiving water temperatures if not adequately cooled or recirculated.
- Oil and grease contamination from rolling equipment and bearings entering cooling water systems.
- Suspended solids (scale particles) in cooling water.
- Electricity usage for pumps, cooling towers, and water circulation systems.

(b) Social Risks

- Scalding and burn injuries from hot steel and pressurized water sprays.
- Slip and fall hazards due to wet floors and poor drainage.
- Mechanical hazards from pumps, pipelines, and moving cooling bed equipment.
- Exposure of workers to hot surfaces and high ambient temperatures.
- Noise from high pressure water sprays, cooling fans, and pumping systems.

Categorization of activities in Cooling and Thermo Mechanical Treatment processes - Category: B (Moderate Risk)

Rationale for the categorization of Cooling and Thermo Mechanical Treatment processes:

- Cooling and thermo-mechanical treatment operations are classified as Category B because: Environmental impacts are site-specific, predictable, and reversible. Water and thermal impacts can be effectively managed through closed-loop cooling systems, cooling towers, and oil-water separation units.
- Occupational risks are primarily operational and can be mitigated using engineering controls, safe operating procedures, and PPE.
- The activity does not involve hazardous chemicals, land acquisition, or displacement of communities.
- Impacts are confined within industrial premises and are governed by standard regulatory norms.

Applicable IFC Performance Standards in Cooling and Thermo Mechanical Treatment

- **PS 1 – Assessment and Management of Environmental and Social Risks and Impacts:** Identification and management of water use, effluent quality, and OHS risks. Integration of cooling operations into the Environmental and Social Management System (ESMS).
- **PS 2 – Labor and Working Conditions:** Occupational health and safety measures for heat, water, and mechanical hazards. Worker training, emergency preparedness, and PPE provision.
- **PS 3 – Resource Efficiency and Pollution Prevention:** Efficient water use through recycling and reuse. Prevention of thermal pollution and water contamination via treatment and recirculation systems.
- **PS 4 – Community Health, Safety, and Security:** Prevention of off-site impacts related to wastewater discharge and water abstraction. Safe management of infrastructure to avoid risks to nearby communities.
- **PS5 to PS8** are conditional because they apply only if projects involve land acquisition affecting biodiversity-sensitive areas, indigenous communities, or cultural heritage without regulatory compliance.

SIDBI's ESMS and GCF ESS require these checks during screening and due diligence.

1.3.5 Acid Pickling Process

Acid pickling is a surface treatment process used in steel re-rolling and downstream rolling operations to remove mill scale, rust, oxides, and surface impurities from steel products before further processing such as cold rolling, wire drawing, galvanizing, coating, or finishing. It is generally carried out using mineral acids such as hydrochloric acid (HCl) or sulphuric acid (H₂SO₄). In the context of steel pickling, the activity is recognized as a higher-pollution process and is classified under CPCB's "Rolling and Pickling" Red Category.

(a) Environmental Risks:

- Acid mist/fume emissions (HCl/H₂SO₄)
- Acidic wastewater generation
- Spent acid generation
- Hazardous sludge generation
- Soil and groundwater contamination from leaks/spills

(b) Social/OHS Risks:

- Chemical burns
- Eye injuries
- Respiratory exposure
- Emergency spill incidents

Categorization of activities in Acid Pickling Process - Category B (Moderate Risk) due to site-specific and manageable impacts. The Acid Pickling Process is classified as Category B (Moderate Risk) under the FMAP Environmental and Social Risk Categorization Framework because its environmental and social impacts are site-specific, predictable, reversible, and can be effectively managed through established engineering controls, operational procedures, and regulatory compliance measures.

The process involves the use of mineral acids such as hydrochloric acid (HCl) or sulphuric acid (H₂SO₄) for removal of mill scale, rust, and oxide layers from steel surfaces. While the process generates acid fumes, acidic wastewater, spent acid, and hazardous sludge, these impacts are generally confined within the facility boundary and can be mitigated through proven pollution control and occupational health and safety measures.

Key reasons for Category B classification include:

- Environmental impacts are localized and limited to the project site.
- Acid mist and fume emissions can be controlled using enclosed tanks, local exhaust ventilation, and wet scrubbers.
- Acidic wastewater can be treated through neutralization and effluent treatment systems prior to discharge or reuse.
- Spent acid and sludge can be safely managed through authorized hazardous waste treatment, storage, and disposal facilities.
- Risks of soil and groundwater contamination can be prevented through acid-resistant flooring, bunding, and spill containment systems.
- Occupational hazards such as chemical burns, eye injuries, and inhalation exposure can be effectively managed through PPE, worker training, emergency showers, eyewash stations, and standard operating procedures.
- No significant land acquisition, involuntary resettlement, biodiversity impacts, or irreversible environmental damage are normally associated with pickling operations within existing industrial facilities.
- Potential impacts are readily mitigable using Good International Industry Practices (GIIP) and applicable regulatory requirements.

Accordingly, acid pickling does not constitute a Category A activity; however, due to the use of hazardous chemicals and generation of hazardous waste streams, it requires structured environmental and social management through a project-specific ESMP and monitoring programme.

Applicable IFC Performance Standards in Acid Pickling Process

PS 1 – Assessment and Management of Environmental and Social Risks and Impacts

- Identification and assessment of chemical handling, wastewater, air emissions, hazardous waste, and occupational health risks.
- Development and implementation of Environmental and Social Management Systems (ESMS).
- Monitoring, reporting, corrective actions, and emergency preparedness procedures.
- Stakeholder engagement and grievance management mechanisms.

PS 2 – Labor and Working Conditions

- Protection of workers from chemical exposure and hazardous operations.
- Provision of adequate Personal Protective Equipment (PPE).
- Occupational health surveillance and worker training on chemical handling.
- Emergency response procedures, first aid, eyewash facilities, and safety showers.

- Compliance with national labour and occupational health regulations.

PS 3 – Resource Efficiency and Pollution Prevention

- Minimization of acid consumption through process optimization.
- Installation of fume extraction and scrubbing systems for acid mist control.
- Treatment and neutralization of acidic wastewater.
- Safe storage, handling, recycling, recovery, and disposal of spent acid and hazardous sludge.
- Prevention of soil, surface water, and groundwater contamination through secondary containment and bunding.

PS 4 – Community Health, Safety, and Security

- Prevention of off-site impacts from acid fumes, accidental releases, and hazardous material transportation.
- Spill response and emergency preparedness planning.
- Safe storage and handling of acids to prevent community exposure.
- Communication of emergency procedures where relevant.

PS 5 to PS 8 (No Applicability)

The following standards are generally not triggered for acid pickling operations within existing industrial premises but must be screened during ESDD:

- **PS 5:** Land Acquisition and Involuntary Resettlement
- **PS 6:** Biodiversity Conservation and Sustainable Management of Living Natural Resources
- **PS 7:** Indigenous Peoples
- **PS 8:** Cultural Heritage

These standards become relevant only where a Greenfield facility or expansion project involves land acquisition, biodiversity-sensitive areas, Indigenous Peoples, or cultural heritage impacts. Projects triggering these standards would be assessed separately under SIDBI's ESMS and FMAP eligibility requirements.

Applicable IFC Performance Standards for Acid Pickling Process: PS1, PS2, PS3, and PS4; PS5–PS8 conditional based on project.

1.3.6 Cutting, Straightening & Finishing

After completion of the rolling process, finished steel products such as TMT bars, rods, flats, angles, and sections undergo cutting, straightening, and finishing operations to meet market and customer specifications. The key activities involved are:

- **Cutting:** Rolled products are cut to standard or customer specified lengths using flying shears or crop shears synchronized with rolling speed to ensure continuous operation.
- **Straightening:** Products are passed through mechanical straightening machines to correct bends, twists, or dimensional deviations caused during rolling and cooling.
- **Finishing & Inspection:** Finished products are visually inspected for surface defects, dimensional accuracy, and straightness.

- **Defective products are either:** Reprocessed through re rolling or relegated to lower grades or scrap.
- **Bundling & Weighing:** Acceptable products are bundled, tagged, weighed, and prepared for storage and dispatch.

(a) Environmental Risks

- High noise levels generated by flying shears, straightening machines, and material handling equipment. Potential exceedance of occupational and ambient noise limits if not adequately controlled.
- Packaging waste such as steel strapping and wooden spacers.
- Electrical energy consumption by cutting machines, straighteners, and conveyors.
- Inefficient equipment can increase overall plant energy intensity.
- Leakage of lubricating oil and hydraulic fluids from cutting and straightening equipment.
- Risk of localized soil or water contamination.

(b) Social Risks

- Risk of cuts, entanglement, and crush injuries from moving shears and rollers.
- Injuries from sharp edges and hot finished products.
- Mechanical hazards during manual handling and bundling operations.
- Prolonged exposure to high noise levels leading to hearing impairment.
- Need for hearing protection and exposure monitoring.
- Manual handling during bundling and stacking.
- Repetitive motions causing musculoskeletal strain.
- Accidents due to congested finishing areas.
- Higher risk where contract labor is used without adequate training.

Categorization of activities in Cutting, Straightening & Finishing process -Category: B (Moderate Risk)

Rationale for the categorization of Cutting, Straightening & Finishing process:

- Environmental impacts are localized, low-intensity, and reversible.
- No significant air emissions or hazardous waste generation.
- Social risks are primarily occupational and manageable through:
 - Machine guarding and safety interlocks
 - Standard operating procedures (SOPs)
 - Use of PPE and worker training
- No land acquisition, resettlement, or major community-level impacts are associated with this activity.

Applicable IFC Performance Standards in Cutting, Straightening & Finishing process

- **PS 1 – Assessment and Management of Environmental and Social Risks and Impacts:** Identification and mitigation of operational and OHS risks. Implementation of Environmental and Social Management Systems (ESMS).
- **PS 2 – Labor and Working Conditions:** Occupational health and safety measures, Training, PPE provision, and accident prevention.

- **PS 3 – Resource Efficiency and Pollution Prevention:** Efficient use of electricity and materials. Proper management of solid waste, oil, and grease.
- **PS 4 – Community Health, Safety, and Security:** Control of noise and safe handling of finished products during storage and dispatch.
- **PS5 to PS8** are conditional because they apply only if projects involve land acquisition affecting biodiversity-sensitive areas, indigenous communities, or cultural heritage without regulatory compliance.

SIDBI's ESMS and GCF ESS require these checks during screening and due diligence.

1.3.7 Material handling and dispatch

Material handling and dispatch covers all post finishing activities required to move finished steel products (e.g., TMT bars, angles, channels, flats) from the mill to storage yards and onward to customers. It includes plant handling (transfer from cooling beds/finishing lines to finishing yards, stacking, bundling, weighing, tagging), internal logistics (EOT cranes, gantries, forklifts, trailers), yard management (layout, stacking plans, drainage, housekeeping), and outbound logistics/dispatch (loading onto trucks/trailers, documentation, and gate control).

In the Indian MSME re rolling context, these steps are integral to operational efficiency and compliance with energy, environment, and safety good practices.

(a) Environmental Risks

- Movement of steel bundles, truck traffic on unpaved surfaces, and yard operations can generate fugitive dust affecting local air quality if not controlled (watering, paving, speed control).
- Crane operations, forklifts, truck engines, and loading/unloading cause elevated noise within yards; poor acoustic management can lead to boundary noise concerns.
- Steel strapping, wooden dunnage, scrap off cuts from rework, and damaged bundles accumulate in yards; poor segregation affects recyclability and housekeeping.
- Leakages from mobile equipment (hydraulic oils, diesel) and crane gearboxes can contaminate yard soils; inadequate drainage can spread contamination, especially during monsoon.
- Electric overhead cranes, yard lighting, and diesel forklifts impact overall resource efficiency; inefficient equipment elevates specific energy consumption for dispatch operations.

(b) Social Risks

- Pinch/crush points during lifting and slinging, falling loads, and stack collapses.
- Bundling, strapping, and tag fixing can cause musculoskeletal injuries if not mechanized or ergonomically managed.
- Outdoor yards expose workers to heat, glare, and monsoon hazards (slips, trips, falls).
- Off-site impacts from truck traffic (dust, noise, road safety) on adjoining communities; need for disciplined dispatch windows, speed control, and route management. However, High use of contract labour requires structured induction and safety training, license checks for operators, and continuous toolbox training aligned to cluster capacity building initiatives.

Categorization of activities in Material handling and dispatch - Category: C (Low Risk)

Rationale for the categorization of Material handling and dispatch:

- Impacts are low-intensity, short-term, site-specific, and fully reversible, with no process emissions or wastewater generation, and are manageable through standard operational controls such as paved yards, traffic management, spill control, waste segregation, PPE use, and operator training.
- No land acquisition, resettlement, biodiversity impacts, or cumulative off-site impacts are inherent to this activity when undertaken within existing industrial estates and under standard regulatory oversight.

Applicable IFC Performance Standards in Material handling and dispatch:

- **PS 1 – Assessment and Management of Environmental and Social Risks and Impacts:** Applicable as material handling and dispatch involve manageable operational risks that require basic ESMS procedures such as risk assessment, traffic control, and incident reporting.
- **PS 2 – Labor and Working Conditions:** Applicable due to the use of permanent and contract workers engaged in lifting, loading, and yard activities requiring safe working practices and OHS training.
- **PS 3 – Resource Efficiency and Pollution Prevention:** Applicable on a limited basis to manage minor dust, noise, spills, waste segregation, and energy use associated with yard operations.
- **PS 4 – Community Health, Safety, and Security:** Applicable on a limited basis to manage traffic movement, noise, and safety risks at plant boundaries during dispatch operations.
- **PS5 to PS8** are conditional because they apply only if projects involve land acquisition affecting biodiversity-sensitive areas, indigenous communities, or cultural heritage without regulatory compliance.

SIDBI's ESMS and GCF ESS require these checks during screening and due diligence.

Risk Mitigation / Adaptation Technologies for Steel Re- Rolling Sector

SIDBI has identified following energy efficient technologies for Steel Re- Rolling Sector:

Sl. No.	Technology / Machine Name	Process Category	Project Category
1	Liquid and Gaseous Fuel Ratio Controllers	Automation & Combustion Control	Category C
2	AC and DC Drives for Control of Fuel and Air	Automation & Drives	Category C
3	Oxygen sensor and monitoring system for reheating furnace	Automation & Process Control	Category B
4	Provision of IR Sensors for Material Movement	Automation & Process Control	Category B
5	High Speed Metal Cutting Band Saw with PLC and VFD Control	Cutting & Finishing	Category C
6	High Efficiency Burners with Multifuel Capacity	Heating & Combustion	Category B
7	High Efficiency Industrial Furnace	Heating & Heat Treatment	Category B
8	Electrical Resistance Heat Treatment Furnace	Heating & Heat Treatment	Category B
9	Manganese Steel Heat Treatment Furnace with Recuperator	Heating & Heat Treatment	Category B

10	Hi-Chrome Grinding Media Oil-Fired Heat Treatment Furnace with Recuperator	Heating & Heat Treatment	Category B
11	Pusher Type Reheating Furnace with Suspended Roof, Multi-fuel Capacity and Automated Temperature Controls	Heating & Reheating	Category B
12	Wire Drawing Machine (with Variable Frequency Drive Control)	Rolling & Forming	Category C
13	Spooling Machines (with Variable Frequency Drive Control)	Rolling & Forming	Category C
14	Semi-Automatic High Speed Rolling Stands with DC Drives	Rolling & Forming	Category C
15	Copper Inserted Collector Installation in Potline	Utilities (Electrical Efficiency)	Category C
16	Dry Type Starter for Slip Ring Motor	Utilities & Electrical Control	Category C
17	Shell-in-Shell Type Recuperator for Reheating Furnace with Modified Pulverized Coal Firing System	Utilities & Heat Recovery	Category B
18	Heating and Pumping Units	Utilities (Fuel Handling & Heating)	Category B
19	Oxygen Plant (Manufacture of Oxygen and Nitrogen by Air Separation Method)	Utilities (Gas Generation)	Category B
20	Solar Photo Voltaic power projects for captive use within the existing operating / manufacturing premises	Renewable Energy Tech	Category - C
21	Electric mobility - 2 Wheelers, 3 Wheelers, 4 Wheelers, E-buses, E-trucks etc. for transit of passengers / industry staff / transport of consumer goods & finished products etc.	Green Mobility & Logistics	Category - C
22	Charging infrastructure and Battery swap set up within the existing operating / manufacturing premises	Green Mobility & Logistics	Category - C
23	Rainwater harvesting systems, surface water storage units, stormwater management equipment and aquifer recharge solutions	Water-efficient technologies	Category - C
24	Green Buildings using locally suited, durable materials for housing and infrastructure to withstand extreme weather	Climate-resilient materials	Category - C

Note- (i) The above list is indicative and not exhaustive; additional technologies/machines may be considered by the AE for funding only where they fall within the approved scope and eligibility criteria of FMAP, are screened and categorized in accordance with the ESMS, and comply with applicable E&S standards.

(ii) The category indicated in the table reflects the typical risk profile of the technology/process itself. Where the same technology is proposed as part of (a) a brownfield enterprise expanding/modernizing in a new location, (b) a greenfield enterprise, or (c) an off-site RE/EE project, the final categorization of the overall subproject shall be determined through ESDD and site/legal screening. In such cases, the sub-

project may be classified as Category B where land-related, siting, community health and safety, or other site-specific risks are assessed as moderate, site-specific, and manageable.

Currently, **24 technologies/machines are documented under Steel Re- Rolling Sector processes**, along with an additional indicative **351 cross-functional technologies listed** which are not exhaustive and can be used by MSMEs in the Steel Re- Rolling segment is considered under **Annexure 3**.

In addition to it, SIDBI highlights that MSME is required to prepare and maintain the minimum mandatory documentation. These documents collectively demonstrate compliance with GCF ESS, IFC PS, and SIDBI's ESMS. Each MSME must prepare the ESDD Checklist (Annexure 4 of SIDBI ESMS) as part of screening and categorization under FMAP Programme.

Cumulative cluster-level effluent and wastewater-related risks, including CETP capacity, performance, and compliance with regulatory norms, will be explicitly assessed as part of the Environmental & Social Due Diligence (ESDD) for all Category B steel re-rolling sub-projects.

During ESDD (Annexure 4 of ESMS), and through the ESG Rating Tool (Annexure 7), SIDBI's loan officer/relationship manager and E&S expert will:

- verify the operational status, performance, and regulatory compliance of the ETP/ CETP to which the MSME is connected, as appropriate, particularly for cooling water, roll-cooling water, descaling water, and wash water.
- examine whether the additional wastewater, oil & grease, heat, or scale-related load from the proposed sub-project may exceed CETP capacity or receiving-environment limits.
require that MSMEs implement simple effluent minimization measures, basic in-house pre-treatment where required, and source-level pollution reduction practices as part of the site-specific ESMP.

During inspection, assessment identifies whether the process wastewater is non-compliant, or projected incremental loads would exceed treatment or disposal capacity, or environmental compliance cannot be assured even after mitigation, then the sub-project will be:

- (a) excluded from FMAP financing, or
- (b) phased/deferred until adequate treatment capacity and regulatory compliance are demonstrably ensured.

This approach is fully consistent with SIDBI's ESMS and ESIA framework, which already screens out non-compliant proposals, excludes higher-risk activities, and requires risk-based appraisal and verification before approval. For all Category B MSMEs need to have prescribed Wastewater within the limit, site-specific ESMP conditions will include effluent minimization, pre-treatment, monitoring, and compliance reporting of Environmental parameters.

1.4 Regulatory compliance analysis (Indian environmental laws + GCF standards)

1.4.1 Central Pollution Control Board (CPCB) of India: Classification of Sectors into Red, Orange, Green, White and Blue Categories, 2025¹

Based on Pollution Index (PI) derived from water emissions, air emissions, hazardous waste generation, and resource consumption, CPCB categorizes 419 industrial sectors into four color-coded groups. CPCB has classified total 419 sectors and sub-sectors under Red (125), Orange (137), Green (94), White (54) and Blue (9) categories.

Table 1: List of Industrial Sectors Classified Under Red, Orange, Green, And White Category

Sl. No	CPCB Sl. No.	Steel Re-rolling Industry	Industry Category (Based Upon the Pollution Index – PI)
1	103.1	Rolling and pickling	RED
2	103.2	Rolling mills (oil and coal fired)	ORANGE
3	103.3	Rolling mills (gas fired)	GREEN
4	103.4	Cold rolling mill (without heat treatment)	WHITE

Whereas,

- 1) Red Category industries are High pollution requires frequent monitoring.
- 2) Orange Category industries are Moderate pollution is less frequent, but regulated control.
- 3) Green Category industries are Low pollution—minimal regulatory oversight.
- 4) White Category industries are Practically non-polluting—often exempt from routine consent procedure
- 5) Blue Category industries are essential Environmental Services e.g. Waste Management.

Pollution Index (PI) Ranges & Categories: methodology with equal weighting of **Air pollutant Score** (PI_A), **Water pollutant Score** (PI_W), **Waste Pollutant Score** (PI_H). Each pollutant group is scored out of 100, and the Cumulative Pollution Index is calculated.

- **$PI \geq 80$:** Red
- **$55 \leq PI < 80$:** Orange
- **$25 \leq PI < 55$:** Green
- **$PI < 25$:** White.

Additionally, State Pollution Control Boards (SPCBs) and Pollution Control Committees (PCCs) were authorized to categorize any new or leftover sectors according to the CPCB's 2016 methodology.

¹ CPCB, 2025, "Report on Classification of Sectors into Red, Orange, Green, White and Blue Categories (A tool for progressive environmental management)" - 2025
<https://cpcb.nic.in/openpdf.php?id=TGF0ZXN0RmlsZS9fMTczNzYxMzk2OV9tZWVpYXBob3RvMTEzODMucGRm>

1.4.2 IFC Performance Standard (PS) will be checked by Third-party and SIDBI

For Environmental & Social Risk, assessment by Third Party and SIDBI need to be considered the IFC Principles Standard for throughout the process which has been stated above in each process of the Steel Re-Rolling segment (Section 2.2).

PS1- Assessment and Management of Environmental and Social Risks and Impacts: Verified through ESDD, ESG Screening Sheets, and ESMP documentation (Annexure 2).
PS2 - Labor & Working Conditions: Checked via OHS audits, PPE, gender safeguards in ESMP.
PS3 - Resource Efficiency & Pollution Prevention: Confirmed through energy/water efficiency measures, Environmental performance reports.
PS4 - Community Health & Safety: Linked to GRM, community disclosure, and effluent/air emission compliance.
PS 5 to PS 8 are not applicable because they apply only if projects involve land acquisition affecting biodiversity-sensitive areas, indigenous communities, or cultural heritage without regulatory compliance.
PS 5 to PS 8 - The details for applicability and requirements are given as under: IFC Performance Standard 5 – Land Acquisition and Involuntary Resettlement • Applicability: - o Not applicable where Greenfield or expansion projects are undertaken within industrial area, industrial estate, notified industrial zone, special economic zones, Land parcels already designated by the Government for non-agricultural use, or privately purchased land through willing buyer–willing seller transactions with clear title or solar / wind farms etc. where all the necessary statutory permission / infrastructure are available. - o May be triggered if land acquisition results in economic displacement (loss of livelihoods, access restrictions) or physical displacement, even in the absence of formal resettlement. • Requirements: Screening to confirm no involuntary land acquisition; projects involving resettlement or displacement of households are excluded.
IFC Performance Standard 6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources • Applicability: - o Not applicable where Greenfield or expansion projects are undertaken within industrial area, industrial estate, notified industrial zone, special economic zones, Land parcels already designated by the Government for non-agricultural use, or privately purchased land through willing buyer–willing seller transactions with clear title or solar / wind farms etc. where all the necessary statutory permission / infrastructure are available. - o Screening is required to ensure no conversion or degradation of natural habitats, wetlands, forests, or protected areas. • Requirements: - o Any project with potential impacts on critical habitats is ineligible under the programme.

IFC Performance Standard 7 – Indigenous People

- **Applicability:**
 - o Not applicable where Greenfield or expansion projects are undertaken within industrial area, industrial estate, notified industrial zone, special economic zones, Land parcels already designated by the Government for non-agricultural use, or privately purchased land through willing buyer–willing seller transactions with clear title or solar / wind farms etc. where all the necessary statutory permission / infrastructure are available.
 - o Screening is required to confirm absence of Indigenous People / communities are not affected by the project.
- **Requirements:**
 - o Any project with potential impacts on Indigenous People / communities are ineligible under the programme.

IFC Performance Standard 8 – Cultural Heritage

- **Applicability:**
 - o Not applicable where Greenfield or expansion projects are undertaken within industrial area, industrial estate, notified industrial zone, special economic zones, Land parcels already designated by the Government for non-agricultural use, or privately purchased land through willing buyer–willing seller transactions with clear title or solar / wind farms etc. where all the necessary statutory permission / infrastructure are available.
 - o Screening is required to ensure that there is no known impact on sites of cultural, archaeological, or religious significance.
- **Requirements:** No financing of projects involving significant impacts on cultural heritage.

For Brownfield projects set up by an existing enterprise within its existing industrial premises, the Environmental and Social Impact Assessment (ESIA) confirms that IFC Performance Standards PS 5 to PS 8 that is relating to land acquisition and involuntary resettlement; Indigenous Peoples; biodiversity and critical habitats; and cultural heritage are not applicable, as these activities do not involve land acquisition, displacement, impacts on sensitive ecosystems, or disturbance of cultural assets.

However, in case of brownfield enterprises going in for expansion or modernization in a new location and for setting up of a Greenfield enterprise, land is generally acquired. SIDBI ensures that in the above scenario, the E&S risks are adequately identified, assessed, and mitigated within the scope of this ESIA & ESMP, ensuring no adverse environmental or social impacts i.e., land acquisition for the project does not affect biodiversity-sensitive areas, indigenous communities, or cultural heritage. If the land acquisition affects any of the PS 5-8 triggers, SIDBI will not assist the project under GCF-FMAP Programme.

Accredited Entity (SIDBI) clarifies that any subproject that triggers PS5–PS8 requirements will be automatically deemed ineligible under the FMAP programme as currently structured. This aligns with SIDBI's existing ESMS, which already: screens out high-risk proposals and all Category A / I-1 activities during initial screening and due diligence.

Detailed ESDD, ESG risk rating, and site verification to confirm safeguard compliance prior to sanction of project. Rejects any project that fails to meet E&S compliance or falls under the exclusion list.

Under FMAP Programme, SIDBI will not finance any MSME subproject that involves: land acquisition with physical/economic displacement of people, impacts on Indigenous Peoples, activities located within or adversely affecting critical habitats or legally protected ecosystems, any kind of risks to cultural heritage or archaeological resources.

Social Risks & Safeguards

Social risks in the steel re-rolling sector are primarily associated with workplace health and safety, including exposure to high temperatures, dust, noise, and physically demanding rolling and material-handling tasks. Additional considerations include the presence of contract or migrant workers and the adequacy of basic welfare facilities. Safeguards will focus on compliance with labour laws, provision and use of appropriate PPE, and availability of basic sanitation and welfare facilities to support worker safety and well-being.

1.5 Stakeholder Engagement & Monitoring

Stakeholder engagement begins at the appraisal stage for all the sub-projects. Engagement activities include: -

- Consultations with MSME owners, workers, machinery supplier and other stakeholders (if necessary) about the project
- Awareness sessions on Energy conservation, Emission reduction, OHS, chemical safety, E&S risk assessment & mitigation, and social, labour & Gender rights etc.;
- Disclosure of applicable safeguard requirements, ESMP obligations, and mitigation responsibilities.
- SIDBI shall ensure continuous stakeholder engagement throughout implementation, including periodic site visits, safety meetings, and environmental monitoring interactions.

Stakeholder engagement will focus on transparency and inclusivity throughout project implementation. Key actions include community disclosure on environmental management practices, establishment of a worker grievance redressal mechanism, and regular safety briefings for all operational staff and workers.

Monitoring will be guided by measurable indicators such as compliance with applicable discharge norms (where relevant), personal protective equipment (PPE) usage, and adherence to occupational health and safety requirements related to high temperatures, dust, noise, reheating furnaces, rolling mills, and machine operations (Refer section number 6). These indicators will ensure accountability and continuous improvement in environmental and social performance.

The FMAP programme integrates stakeholder engagement, public disclosure, and grievance redressal as core elements of its Environmental & Social Management System. MSME subprojects are embedded within densely populated industrial clusters. Therefore, meaningful engagement with workers, nearby communities, and institutional stakeholders is critical to ensure transparency, risk communication, and participatory monitoring.

1.6 Impact Category & GCF Linkages

The overall impact of steel re-rolling operations is assessed as moderate, site-specific, and reversible with the implementation of appropriate environmental and social controls. Based on GCF categorization, core steel re-rolling processes such as Reheating of Billets, Rolling Process, Cooling & Thermo-Mechanical Treatment, and Cutting, Straightening & Finishing are classified as **Category B** due to their association with high-temperature operations, fuel and electricity use, air emissions, dust and noise generation, waste handling, and occupational health and safety risks.

Lower-risk activities such as Raw Material Procurement and Material Handling and Dispatch are classified as **Category C**, as these activities primarily involve mechanical handling, storage, and

logistics operations with no process emissions or effluent generation and only localized, manageable occupational risks.

The rationale for this classification lies in the fact that Category B steel re-rolling processes involve reheating furnaces, hot rolling operations, controlled cooling, and finishing activities that require basic pollution-control systems and structured occupational safety measures but remain manageable and reversible with standard controls. Category C activities, by contrast, involve post-production or preparatory operations with low environmental footprint and limited social risks, resulting in minimal environmental and social impacts.

Site-Specific Risk Considerations

While steel re-rolling operations is generally associated with limited and manageable environmental and social risks, risk levels may vary depending on the nature of the supplier, sourcing practices, transportation arrangements and practices nearby proximity to environmental or socially sensitive receptors. Accordingly, higher-risk procurement scenarios, where relevant, will be identified through SIDBI's Environmental and Social Due Diligence (ESDD), ESG risk assessment, and site verification processes. Any process related risks identified during appraisal shall be addressed through appropriate mitigation measures and incorporated into the unit-specific Environmental and Social Management Plan (ESMP).

1.7 Community Health and Safety

In line with Community Health & Safety, the ESIA recognizes that MSME steel re-rolling operations require appropriate arrangements for emergency preparedness, furnace fire, fuel spill, hot billet/rolling incident, crane or load fall, electrical incident, gas/oxygen/nitrogen incident where applicable, emergency contacts and responsibilities, exits and assembly points, first-aid/burn response, firefighting equipment, commissioning or periodic drills, and reporting of serious incidents to SIDBI.

Potential impacts on surrounding communities may arise from fire or emergency incidents, emissions from reheating furnaces and auxiliary equipment, noise from rolling operations, and transport of billets and finished steel products. As most MSME steel re-rolling units operate within designated industrial areas or re-rolling clusters with planned infrastructure, these risks are generally localized and manageable through standard engineering controls, safe operating practices, and compliance with applicable regulations.

Steel re-rolling MSMEs will maintain site-specific emergency response arrangements, adopt measures to manage vehicle movement and material handling safely, and implement practices to minimize off-site impacts. Where relevant, local authorities and nearby communities will be informed of applicable safety measures and emergency procedures, consistent with the stakeholder engagement and disclosure provisions outlined in the ESIA.

1.8 Disclosure Requirements & GCF linkages

- **Category B** : Requires ESIA & ESMP and 30-day advance disclosure before GCF Board consideration.
- **GCF Linkages**
 - o Applies to Reheating of Billets, Rolling Process, Cooling & Thermo-Mechanical Treatment, and Cutting, Straightening & Finishing processes/operations due to high-temperature operations,

fuel and electricity use, air emissions, dust and noise generation, waste handling, and occupational health and safety risks.

- o Requires ESIA & ESMP and 30-day advance disclosure under GCF Information Disclosure Policy.
- **Category C:** No advance disclosure required under GCF Information Disclosure Policy.
- **GCF Linkages**
 - o Applies to Raw Material Procurement and Material Handling and Dispatch, which involve controlled, mainly mechanical and logistics-related operations with minimal or no adverse environmental and social impacts.
 - o For this, no advanced disclosure is required.

Site-Specific Risk Considerations

Raw material handling activities generally involve localized environmental, occupational health and safety, and operational risks. However, this risk significance may increase depending on storage methods, housekeeping practices, material movement, dust generation potential, safety arrangements, and site-specific conditions on health and safety along with preparedness. Such risk will be captured through ESDD, ESG risk assessment and site verification, with appropriate mitigation incorporated into the unit-specific ESMP.s

1.9 Steel Re-Rolling Sector: Environmental Risks, Mitigation, and GCF Classification

Table 2: E&S Risk Assessment with Mitigation Measures Across Steel Re-Rolling Manufacturing Processes

Process	Key Environmental & Social Risks	Mitigation Measures	Indicative risk level	Rationale	Applicable IFC PS
Raw Material Procurement	• Fugitive dust during unloading and storage • Solid waste (off cuts, scrap, packaging) • OHS risks: sharp edges, handling injuries, noise • Soil contamination from oil/grease leaks - Social: Manual material-handling injuries; minor traffic movement within premises.	Dust suppression; covered storage of billets and scrap; scrap segregation; oil/grease spill control; PPE use; safe manual handling; controlled internal traffic; good housekeeping.	C	Impacts are localized and operational; no hazardous chemicals or irreversible impacts; risks manageable through dust suppression, PPE, waste segregation, and yard management	PS1, PS2, PS3, PS4

Process	Key Environmental & Social Risks	Mitigation Measures	Indicative risk level	Rationale	Applicable IFC PS
Reheating of Billets	• High GHG emissions (CO₂) • Air pollutants (NO_x, SO_x, PM, CO) • High fuel consumption & heat losses • Worker exposure to extreme heat, fire/explosion risks	Energy-efficient furnaces; optimized combustion; waste heat recovery; proper insulation; APCDs; regular maintenance; heat-resistant PPE; fire safety systems; SOPs.	B	Most energy intensive stage but impacts are predictable, controllable via efficient combustion, WHR, and OHS systems; no off-site irreversibility	PS 1, PS2, PS3, PS4
Rolling Process	• High electricity consumption • Noise & vibration from rolling stands • Mill scale generation • Mechanical injury risks (entanglement, burns)	Energy-efficient motors; machine guarding; noise control measures; proper mill-scale collection; regular maintenance; PPE; operator training.	B	Risks are confined within plant boundaries and manageable through guarding, efficient motors, preventive maintenance, and training	PS1, PS2, PS3, PS4
Cooling & Thermo Mechanical Treatment	• High water consumption • Thermal pollution from hot water discharge • Oil contamination of cooling water • Burn & slip hazards	Closed-loop cooling; water reuse; oil traps/skimers; controlled discharge temperature; non-slip floors; PPE; SOPs and regular maintenance.	B	Water-related impacts are localized and reversible; closed-loop cooling, oil traps, and SOPs are proven controls	PS1, PS2, PS3, PS4
Acid Pickling Process	• Acid mist and fume emissions (HCl/H₂SO₄) • Generation of acidic wastewater • Spent acid and hazardous sludge generation • Soil and groundwater contamination from leaks and spills • Chemical burns, eye injuries, and respiratory exposure to	• Enclosed pickling tanks and local exhaust ventilation systems • Installation of acid fume extraction and scrubber systems • Neutralization and treatment of acidic wastewater before discharge/reuse • Safe storage, handling, and	B	Acid pickling involves the use of hazardous chemicals and generates acid fumes, wastewater, spent acid, and sludge. However, the resulting environmental and social impacts are generally site-specific, predictable, reversible, and can be effectively managed through established	PS1 PS2 PS3 PS4

Process	Key Environmental & Social Risks	Mitigation Measures	Indicative risk level	Rationale	Applicable IFC PS
	- workers • Hazardous chemical storage and handling risks • Community health and safety risks from accidental releases or transportation of acids	- disposal of spent acid and sludge through authorized hazardous waste handlers • Spill control kits and emergency response procedures • Chemical-resistant PPE, worker training		pollution-control technologies, hazardous waste management practices, and occupational health and safety measures.	
Cutting, Straightening & Finishing	• High noise levels • Solid waste (crop ends, rejects) • Ergonomic and mechanical injury risks • Oil & grease leakage	Noise control measures; proper collection of crop ends and rejects; ergonomic work practices; machine guarding; oil/grease spill control; PPE; routine maintenance.	B	Low intensity impacts; no major emissions; OHS and waste risks manageable through standard factory controls	PS1, PS2, PS3, PS4
Material Handling and Dispatch	• Dust from truck movement • Noise from cranes and vehicles • Traffic & workplace accident risks • Oil/diesel spills	Paved yards; controlled vehicle movement; traffic management plan; dust suppression; noise control; spill prevention and cleanup; PPE; good housekeeping.	C	Impacts are short term and site specific; manageable via traffic management plans, paved yards, spill control, and PPE	PS1, PS2, PS3, PS4

Through the Exclusion list (attached as annexure 1) screening, Environmental and Social Due Diligence (ESDD) process, supported by SIDBI's ESG risk rating tools, and site-level verification visits, the Environmental and Social Impact Assessment (ESIA) has been done for the Steel Re-rolling Industry sector. Risks have been considered and aligned with GCF standards.

Notwithstanding the indicative classification of individual technologies or processes as Category B, the final environmental and social risk categorization of each sub-project shall be determined on a case-by-case basis through Environmental and Social Due Diligence (ESDD), site verification, and application of the FMAP Exclusion List under SIDBI's ESMS.

Any sub-project that, based on ESDD and site-specific conditions, exhibits characteristics consistent with Category A/I-1 activities under the GCF Environmental and Social Policy including impacts that are diverse, irreversible, unprecedented, or otherwise non-mitigable shall be deemed ineligible and excluded from financing under the FMAP Program.”

Further, Category B classification shall also apply in the following scenarios:

- (a) Brownfield enterprises undertaking expansion, modernization, or capacity augmentation within existing or appropriately designated sites; and
- (b) Greenfield enterprises or new locations where land is procured through willing buyer–seller arrangements, located in non-sensitive areas, and where screening confirms absence of impacts related to involuntary resettlement, biodiversity, Indigenous Peoples, or cultural heritage.

Any subproject where screening identifies material impacts under PS5–PS8 shall be deemed ineligible and excluded from financing under the FMAP Programme.

Such classification is based on the nature and scale of impacts, which are generally site-specific, reversible, and readily mitigable through standard environmental and social management measures. Accordingly, these projects are subject to proportionate Environmental and Social Due Diligence (ESDD) in line with SIDBI's ESMS.

In addition to the EE projects set up / to be established in a new location or any RE Projects (solar, wind, hybrid, etc.) established by MSME units for captive or own consumption and located outside the borrower's operating premises may trigger IFC Performance Standards (PS) 5–8, primarily due to land-related considerations. These projects are typically developed on land classified as barren or dry land under applicable national land-use regulations, with no existing residential or commercial usage. The project site is generally selected based on technical considerations viz., systematic process balancing high resource availability (wind/solar) with proximity to grid infrastructure for power evacuation, no adverse environmental impact, and favorable topography.

Similarly, a Greenfield or brownfield enterprise setting up a standalone offsite RE project (solar, wind, hybrid, etc.) for non-captive purpose under GCF-FMAP Programme, shall be classified as “Category-B” as these projects involves land acquisition. In such cases, the PS 5–8 may be triggered due to land acquisition, SIDBI ensures that these risks are adequately identified, assessed, and mitigated within the scope of this ESIA & ESMP, ensuring no adverse environmental or social impacts i.e., land acquisition for the project does not affect biodiversity-sensitive areas, indigenous communities, or cultural heritage. If the land acquisition affects any of the PS 5-8 triggers, SIDBI will not assist with the project under GCF-FMAP Programme.

Prior to sanction and disbursement, SIDBI ensures that all statutory approvals and clearances related to land and project development are in place, including valid land registration or lease documentation and approvals from relevant authorities such as State Electricity Boards and local Distribution Companies (DISCOMs).

Land acquisition for such projects is undertaken strictly on a willing buyer–willing seller basis in compliance with applicable Indian laws. SIDBI verifies the reasonableness of land costs through third-party valuation by bank-empanelled valuers and validates title and ownership through legal due

diligence conducted by empaneled advocates to identify any encumbrances, disputes, or litigation risks. Review of land records and plot maps forms part of the appraisal process stage.

Accordingly, while PS 5–8 may be triggered in these cases due to land acquisition and land-use aspects, SIDBI ensures that these risks are adequately identified, assessed, and mitigated within the scope of this ESIA& ESMP, ensuring no adverse environmental or social impacts i.e., land acquisition for the project does not affect biodiversity-sensitive areas, indigenous communities, or cultural heritage. If the land acquisition affects any of the PS 5-8 triggers, SIDBI will not assist with the project under GCF-FMAP Programme.

Moving forward, the focus shifts to the documentation and implementation of the Environmental and Social Management Plan (ESMP). ESMP will operationalize the ESIA findings by translating them into actionable safeguards, including specific mitigation measures, monitoring indicators, and clear responsibilities for each Category B subproject under the Steel Re-rolling sector.

Below are the tailored ESMPs for all Category B subprojects based on the outcomes of ESDD and site inspections. This ESMP plan will then be formally shared with the borrowers, accompanied by structured training sessions to build their capacity in implementing the safeguards. MSMEs will be required to provide a formal undertaking, committing to applicable compliance with the ESMP, including adherence to pollution control measures, occupational health and safety standards, gender and inclusion safeguards, and grievance redressal mechanisms. This integrated approach ensures that risks remain site-specific, reversible, and effectively mitigated, while embedding ESG principles and inclusive practices into every financed project by the Accredited Entity.

Material handling, transportation, and dispatch activities are typically associated with low to moderate and manageable environmental and social impacts and risks. However, certain facilities may present elevated risks related to occupational health and safety, vehicle movement, dust emissions, noise, congestion, community safety, or storage and material management. Such risk will be captured through ESDD, ESG risk assessment and site verification, with appropriate mitigation incorporated into the unit-specific ESMP.

Section 2:

2. Environmental and Social Management Plan (ESMP): Implementation Framework for Category B Sub-projects of Steel Re-rolling sector

Under direct financing, SIDBI is responsible for ensuring that all subprojects under the Program adhere to the Green Climate Fund (GCF) Environmental and Social Safeguards (ESS) and follow a proportionate, risk-based due diligence process. This responsibility is rooted in the GCF revised Environmental and Social Policy.

SIDBI shall ensure that every financed sub project; regardless of scale or sector, meets the GCF Environmental & Social Policy requirements. This includes:

- Applying GCF's risk screening and categorization system (A/B/C) to each subproject.
- Ensuring that the GCF ESS (aligned with IFC Performance Standards) are triggered, assessed, and managed based on the potential environmental and social impacts.
- Ensuring alignment with national regulatory requirements and ongoing compliance monitoring. GCF explicitly requires accredited entities to integrate the GCF ESP and safeguards into their due-diligence and project-approval processes.

SIDBI's own ESMS further strengthens this responsibility by requiring systematic identification, appraisal, risk classification, and monitoring of E&S risks across all financed MSME subprojects. SIDBI ensures that E&S assessments are proportionate to the level of risk and appropriately tailored to the specific attributes, scale, and sensitivities of the Steel Re-Rolling sector. This includes Fit-for-Purpose ESIA for the sub-projects mentioned in the Section 1.2.

2.1 Objective of the ESMP

- Identify potential Environmental and Social issues or threats associated with the proposed project activities and suggest procedures and measures to avoid, prevent, mitigate or compensate for them in line with the standard mitigation hierarchy.
- Integrate environmental and social safeguards into MSME financing as a mandatory standard for all Category B subprojects.
- Ensure that after ESDD, this tailored ESMP is shared with MSME borrowers.
- Create awareness and encourage MSMEs to adopt E&S framework and to build capacity to implement the same.
- Align MSME's operations with National Environmental legislation and GCF Environmental and Social Policy, ensuring risks remain site-specific, reversible, and fully mitigated.

2.2 Screening and Categorization of Activities

- **Initial Screening:** All MSME proposals are screened against SIDBI's Exclusion List; Category A projects are rejected outright.
- **ESDD Process:** Category B projects undergo detailed due diligence using SIDBI's checklist, ESG risk rating tool, and site verification.

- **ESMP Preparation:** Based on ESDD findings, this project-specific ESMPs outlining mitigation measures, monitoring indicators, responsibilities, and timelines.
- **Sharing with MSMEs:** ESMPs are formally shared with borrowers, ensuring clarity on obligations.

2.3 Risk Identification and Assessment

- Risks identified during ESDD (cooling-water discharge, mill-scale and solid-waste handling, air emissions from reheating furnaces, occupational health and safety concerns, labour and gender-related risks) are mapped into the ESMP.
- Each ESMP specifies:
 - **Mitigation measures** (APCDs for reheating furnaces, dust control, PPE, safe reheating/rolling operation, fuel-handling precautions, cooling-water and solid-waste management).
 - **Monitoring indicators** (emission compliance, dust/noise levels, PPE usage, adherence to safe operating practices, wastewater and waste-handling records).
 - **Responsible people** within the MSME.
 - **Timelines** for implementation.
- MSMEs are trained to understand risk categories and mitigation pathways, ensuring ownership of safeguards.
- SIDBI stipulates that MSMEs must ensure standard working conditions and requisite worker amenities, consistent with the availability and operational requirements of all Category B MSMEs. These expectations are aligned with India's National Labour Code, which consolidates 29 existing labour laws into four comprehensive codes (1) Wages, (2) Social Security, (3) Industrial Relations, and (4) Occupational Safety—effective from 21 November 2025.
- These obligations are already embedded within several Environmental & Social (E&S) risk sections under Performance Standard 2 (PS 2), which mandates compliance with national regulations on fair wages, working hours, employee benefits, non-discrimination, and occupational health and safety.

2.4 ESMP Implementation

- **Training Workshops:** SIDBI organizes training sessions for MSMEs covering Environmental & Social Risk like pollution control, OHS, gender equality, SEAH prevention, stakeholder engagement, and grievance redressal.
- **Undertaking from MSMEs:** Borrowers sign a formal undertaking committing to implement ESMP measures, comply with national laws and GCF safeguards, and submit monitoring reports.
- **Suitable covenants:** Undertakings for ESMP implementation become part of loan sanction conditions, making compliance enforceable.

2.5 Mitigation Plan for Category B Subprojects for stakeholders understanding to adopt process specific mitigation plan

Category B processes in steel re-rolling mills (e.g., reheating of billets, rolling process, cooling and thermo-mechanical treatment, and cutting, straightening & finishing) involve moderate, site-specific, and reversible impacts. Below is the process-specific plan:

1. Reheating of Billets

Risks

- High greenhouse gas (CO₂) and air pollutant emissions
- Excessive fuel consumption and heat losses
- Occupational exposure to high temperatures
- Fire and explosion hazards

Mitigation

- Optimization of air-fuel ratio and combustion control
- Installation of high-efficiency burners and refractory insulation
- Waste heat recovery (WHR) systems where feasible
- Furnace safety interlocks and emergency shut-down systems
- Heat-stress management: ventilation, rest breaks, hydration

Validation

- Fuel consumption and specific energy consumption (SEC) monitoring
- Stack emission monitoring reports
- Furnace inspection and safety audit reports
- WHR performance and heat-loss assessment records

2. Rolling Process

Risks

- High electricity consumption
- Noise and vibration from rolling stands
- Mechanical injuries from moving rolls and drives
- Scale generation and housekeeping issues

Mitigation

- Use of energy-efficient motors and variable frequency drives (VFDs)
- Acoustic enclosures and noise-reducing engineering controls
- Machine guarding, emergency stop systems, and interlocks
- Regular cleaning and collection of mills scale for recycling

Validation

- Energy meter readings and motor efficiency records
- Noise monitoring results
- Machinery guarding inspection reports
- Incident and near-miss registers

3. Cooling and Thermo-Mechanical Treatment

Risks

- High water consumption

- Water pollution from hot water discharge
- Oil contamination from cooling systems
- Slips, burns, and scalding hazards

Mitigation

- Closed-loop or semi-closed cooling water systems
- Cooling towers and heat exchangers for temperature control
- Oil traps and water treatment units
- Non-slip flooring, barricades, and warning signage

Validation

- Water consumption and recycling records
- Effluent quality monitoring reports
- Cooling system maintenance logs
- Workplace safety inspection records

4. Acid Pickling Lines

Risks

- Acid fumes and exposure to worker and employees
- Acid spills and leaks
- Acidic wastewater generation
- Hazardous sludge generation
- Chemical burns and emergency incidents

Mitigation

- Enclosed pickling tanks
- Acid-resistant bunding and impervious flooring
- Fume extraction systems with scrubbers
- pH neutralization and wastewater treatment prior to discharge
- Spent acid and sludge disposal through authorized hazardous waste handlers
- Emergency eyewash stations and safety showers
- Spill response kits and secondary containment
- Chemical-resistant PPE
- Emergency preparedness and mock drills
- Worker training on chemical handling

Validation

- Scrubber performance records
- pH monitoring records
- Hazardous waste manifests
- Acid consumption and disposal logs
- Emergency drill records
- PPE inspection records
- Incident and spill registers

5. Cutting, Straightening & Finishing

Risks

- High noise levels from shears and straightening machines
- Mechanical injuries and sharp-edge hazards
- Solid waste from crop ends and rejects
- Ergonomic stress during manual handling

Mitigation

- Noise enclosures and mandatory hearing protection
- Proper machine guarding and lock-out/tag-out procedures
- Recycling of crop ends and rejected products
- Use of handling aids and ergonomic work practices

Validation

- Noise compliance and audiometric test and records
- Machine safety inspection checklists
- Scrap recycling and waste disposal records
- Safety assessment and training records

In addition to the subprojects assisted under the above-mentioned activities which are already classified as “Category-B”, the subprojects which falls under activities such as Raw Material Procurement and Material Handling and Dispatch would also be classified as Category B when an MSME undertakes a Greenfield project / expansion project by a brownfield enterprise in a new location. Accordingly, the following process shall be followed w.r.t risks mitigation and validation.

1. Raw Material Procurement

- **Risks:** Dust generation during handling and cutting; noise from material handling equipment; manual lifting and movement injuries.
- **Mitigation:** Good housekeeping and dust suppression; use of PPE; mechanized handling where feasible; safe material storage and clear movement pathways.
- **Validation:** Dust and noise levels within statutory limits; adherence to workplace safety norms and proper material storage practices.

2. Material Handling and Dispatch

- **Risks:** Dust generation from truck movement; noise from cranes and vehicles; traffic and workplace accident risks; oil/diesel spills.
- **Mitigation:** Paved yards; controlled vehicle movement; traffic management plan; dust suppression; spill prevention and cleanup; PPE; good housekeeping.
- **Validation:** Compliance with traffic management and safety procedures; effective dust and spill control; safe yard and dispatch operations maintained.

2.5.1 Asset-based Environmental & Social Mitigation measures

SIDBI has adopted an asset-anchored, risk-cluster approach, which aligns with FMAP’s asset-specific financing model and SIDBI’s experience under previous green-lending programme(s). This approach ensures consistent, practical and uniform application of mitigation requirements across all Category B MSMEs, regardless of location.

To operationalize this approach, risk clusters aligned with international Steel Re-rolling E&S standards like IFC Performance Standards for pollution control, OHS, CHS, labour & GRM, gender & SEAH/POSH.

Detailed asset-based mitigation tables, summarizing:

- (I) key E&S risk drivers linked to FMAP-financed assets, and
- (II) mandatory mitigation and O&M measures to be included in sub-project ESMPs.

This structure reflects good international practice, ensures compliance feasibility for MSMEs, and provides a clear and scalable framework that can be uniformly implemented across India's diverse Steel Re-rolling sector.

To ensure asset-specific environmental and social risk management across Steel Re-rolling sub-projects, a consolidated asset-anchored mitigation has been added in table 3 below. The table summarizes, for each key asset or technology, the associated process step, principal E&S risk pathways identified in the ESIA, and the minimum mitigation and O&M requirements to be included in sub-project ESMPs. This format aligns with internationally recognized good practice. The credit officers during sub-project appraisal and evaluation shall customize and expand the listed measures based on the actual technologies, scale, and site conditions.

Table 3: Asset Based Environmental & Social Mitigation measures

Assets / Technology	Process Step	Key E&S Risks	Mitigation Measures (to include in ESMPs)	O&M Requirements	Responsible Parties
Raw Material Yard (Billets / Scrap)	Raw Material Procurement	• Dust during unloading and stacking • Sharp-edge injuries • Oil/grease leaks from vehicles	• Water spraying for dust suppression • Covered storage / proper stacking • PPE (gloves, safety shoes) • Spill trays and housekeeping	• Daily yard inspection • Spill cleanup records	MSME Owners / Store In-charge / Supervisor
Reheating Furnace (Coal / FO / Gas / Electric)	Reheating of Billets	• High heat and burn risk • Air emissions (PM, NOx, CO) • Fire/explosion risk	• Energy- efficient furnace design • APCDs / chimney stack • Heat-resistant PPE • SOPs and safety interlocks	• Furnace lining & burner checks • Stack inspection and logbooks	MSME Owners / Furnace Operator / Supervisor
Rolling Mill (Stands, Motors)	Rolling Process	• High electricity use • Noise & vibration • Entanglemen	• Machine guarding • Noise control measures • Energy-efficient	• Preventive maintenance • Guard and coupling checks	MSME Owners / Production Supervisor

Assets / Technology	Process Step	Key E&S Risks	Mitigation Measures (to include in ESMPs)	O&M Requirements	Responsible Parties
		t / crush injuries	motors • PPE and training		
Acid Pickling Line (Tanks, Scrubbers, Neutralization System)	Pickling	Acid fumes, wastewater, hazardous sludge, chemical burns	Enclosed tanks, bunding, scrubbers, neutralization, PPE, emergency systems	pH monitoring, scrubber maintenance, waste manifests, emergency drills	MSME Owner / Production Supervisor / Environmental officer
Cooling / TMT System	Cooling & Thermo-Mechanical Treatment	• Hot water discharge • Oil contamination • Burn and slip hazards	• Closed-loop cooling • Oil traps/skimers • Controlled discharge temperature • Non-slip flooring & PPE	• Water reuse monitoring • Drain and oil-trap cleaning	MSME Owners / Maintenance Team
Shearing / Cutting Machines	Cutting	• High noise • Flying metal pieces • Cuts and hand injuries	• Machine guarding • Goggles, gloves, ear protection • Restricted access zones	• Daily tool and guard checks	MSME Owners / Shift Supervisor
Straightening & Finishing Line	Straightening & Finishing	• Ergonomic injuries • Noise exposure • Oil & grease leakage	• Ergonomic work practices • Proper collection of crop ends • Spill control and PPE	• Housekeeping and waste logs	MSME Owners / Production Supervisor
Mill Scale / Scrap Area	Waste Handling	• Dust and waste scattering • Slips and falls	• Covered storage • Regular collection and reuse/sale	• Waste tracking records	MSME Owners / Store In-charge
Fuel Storage Area (FO / Coal / Gas)	Utilities	• Fire risk • Fuel spills • Fume exposure	• Clearly marked storage • Spill trays and kits	• Daily visual inspection • Spill and stock registers	MSME Owners / Utility Supervisor

Assets / Technology	Process Step	Key E&S Risks	Mitigation Measures (to include in ESMPs)	O&M Requirements	Responsible Parties
			• Fire extinguishers		
DG Set (if installed)	Utilities	• Stack emissions • Noise disturbance	• Stack/chimney • Acoustic enclosure	• Emission & oil checks	MSME Owners / Electrician
Air Compressor	Utilities	• High noise • Pressure hazards	• Safety valves • Noise enclosure	• Pressure and leak checks	MSME Owners / Maintenance Team
Material Handling Equipment (Crane / Forklift)	Handling & Dispatch	• Collision risk • Load falls • Ergonomic injuries	• Trained operators only • Marked pathways • Traffic management	• Daily equipment inspection	MSME Owners / Warehouse In-charge
Dispatch Yard & Loading Area	Dispatch	• Dust from truck movement • Traffic accidents • Diesel spills	• Paved yard • Speed control • Spill control & PPE	• Yard safety checks	MSME Owners / Security / Supervisor
Worker Welfare Facilities	All Areas	• Poor hygiene and health risks	• Clean toilets and drinking water	• Daily cleaning inspection	MSME Owners / Supervisor
Fire Safety System	Entire Unit	• Fire accident risks	• Fire extinguishers, alarms, exits	• Monthly fire safety checks	MSME Owners / Supervisor / EHS Focal Person

Responsible parties might not have Technical Environmental expert at Micro and Small -MSME. In such cases, they may consider the unit head, and capable individuals may be assigned as the responsible person.

MSMEs in India are generally small and EHS personnel / service provider would be required appropriate to the scale and risk profile of operations to perform ESS-related tasks. MSMEs may assign staff with defined EHS responsibilities and train them through capacity-building and training initiatives facilitated by SIDBI under the programme or can train the staffs on their own.

Compliance will be ensured through ESDD screening and periodic monitoring, including site visits to verify that staffing arrangements remain proportionate to risk levels and effective in implementing ESS requirements.

Residual risks that remain after technology adoption include: chemical exposure, heat stress, noise, emergency preparedness gaps, labour welfare considerations, women-friendly facilities, and SEAH/harassment risks. These are addressed through unit-specific ESMP measures described in Section 2.5.2 below.

2.5.2 SIDBI's Activity-Wise Environmental & Social Management Plan (ESMP)

Section 2.5.1 outlines SIDBI's internal environmental and social management procedures for FMAP direct-lending operations. These steps form part of SIDBI's institutional ESMS and run parallel to the MSME-level ESMP requirements presented in Section 2.5.3.

Table 4: SIDBI's Activity Wise ESMP

Sl. No.	Activity	Description	Responsibility	Frequency
1	Project Screening / E&S Risk Categorization	Ensure projects listed in the FMAP Exclusion List are not taken up. Initial risk categorization is applied to screen out high-risk (Category A/I-1) proposals.	SIDBI	At project evaluation and loan application stage
2a	Environmental and Social Due Diligence (ESDD)	Evaluation of E&S risks, compliance gaps and identification of applicable mitigation measures. Projects not meeting E&S requirements will either be rejected or asked to strengthen compliance before appraisal.	Borrower (MSME)	With each loan application
2b	Review of ESDD Report	Examination and verification of ESDD documents and evidence for completeness, adequacy, and alignment with FMAP requirements.	SIDBI	At loan application review
3	Technical Assessment	Assessment of energy/resource savings, pollution reduction, OHS improvements, and other E&S benefits of the proposed assets.	SIDBI	During loan appraisal
4	E&S Rating	Scoring of environmental and social performance using SIDBI's ESG/Green Rating Tool to support decision-making.	SIDBI	During loan appraisal
5a	Environmental & Social Management Plan (ESMP) Review	Based on ESDD findings, SIDBI reviews the MSME's ESMP or ESHS strengthening plan, ensuring inclusion of: (i) mitigation measures, (ii) monitoring indicators, (iii) responsibilities, (iv) timelines, and (v) residual-risk actions. ESMPs are shared with MSMEs during the lending process.	SIDBI + MSME	During loan appraisal
5b	Training & Undertaking	MSMEs receive guidance/training on ESMP implementation and submit undertakings committing to compliance with FMAP E&S requirements.	SIDBI / MSME	Need based

Sl. No.	Activity	Description	Responsibility	Frequency
6a	E&S Supervision	Site visits, document reviews and verification of ESMP implementation using M&V protocols, ESDD formats and the ESG Rating Tool.	SIDBI	Periodical visit during tenure of loan [generally once in a year]
6b	Monitoring & Reporting	Independent third-party monitoring (sample-based) may be undertaken to assess ESMP implementation, including checks on SEAH safeguards, labour and gender measures, and asset-specific mitigation. Findings will be integrated into FMAP programme-level reporting.	SIDBI / Third-Party Agency (if appointed)	As per program requirement

2.5.3 MSME Stage-wise for Assets based monitoring under Environmental & Social Management Plan (ESMP)

This MSME stage-wise ESMP sets minimum E&S actions and responsibilities for each stage of the sub-project cycle screening/appraisal, installation, commissioning, routine operation, monitoring & reporting, and decommissioning.

Actions are explicitly linked to the risk clusters in Section 2.5 (Pollution & Resource Efficiency; OHS & Workplace Safety; Community Health & Safety; Labour & GRM; Gender, SEAH/ POSH & Inclusion) and anchored to FMAP-financed asset types (e.g., Reheating Furnaces, Rolling Mills, Cooling and TMT Systems, Cutting and Straightening Machines, Material Handling Equipment, Rooftop PV, Mobility).

SIDBI will apply its standard procedures for internal review, including onsite verification by Relationship Manager (RM), and use of structured tools (ESG Rating Tool, ESDD formats, and M&V protocols). Technical Assistance (TA) will support MSMEs to implement unit-level ESMPs, and sample-based third-party verification will provide independent checks at portfolio level

Table 5: E&S Actions and Responsibilities by Project Stage

A. Screening / Appraisal Stage				
E&S Actions (Asset-anchored)	Asset-Specific Conditions	Responsibilities	Evidence Records Maintain / to	Verification & Frequency
Apply exclusion list; map applicable risk clusters; preliminary ESDD	Confirm the project is not on the exclusion list and all the Environmental & Social compliances are in place as per ESDD document.	MSME & RM	ESDD checklist; legal permits status; site layout; utility list	Pre-Sanction visit to the project site and during project appraisal
Legal and regulatory screening (SPCB consents, factory license);	Confirm Consent to Establish timelines;	MSME & RM	Copies of consents/ applications	Pre-Sanction visit to the project site and during project appraisal
Baseline OHS & HR due diligence: PPE, fire & emergency,	Verify (POSH), toilets/lighting,	MSME & RM	HR policies, GRM note, POSH	Pre-Sanction visit to the project site

labour contracts, women facilities & GRM	workers sanitation; contractor controls		constitution, floorplans	and during project appraisal
Residual-risk planning requirement listed in term sheet, as appropriate	Require unit-specific actions in ESMP for OHS, emergency, labour, women's safety/SEAH	MSME, RM and E&S Expert	Draft unit-specific ESMP outline	Project Appraisal stage
B. Installation Stage				
E&S Actions	Asset-Specific Conditions	Responsibilities	Evidence Records /	Verification & Frequency
Contractor OHS plan (LOTO, work at height, hot work, confined space, electrical safety); site induction & PPE	Green Technologies, reheating furnace installation and foundations; rolling, cutting and finishing equipment placement; cooling/TMT systems; dust extraction systems; DG sets and utilities; hot work protection and electrical isolators	Vendor/Installer; MSME oversight	Method statements: toolbox talk registers; Permit To Work (PTW) logs	Check at MSME end
Nuisance control dust, noise, traffic; safe receipt and storage of fuels and consumables	Temporary storage for fuels, oils, lubricants and consumables; spill kits; forklift/crane movement plan	Vendor; MSME	Housekeeping & traffic plan; spill logs	Check at MSME end
Compliance with layout and clearances (fire lanes, exits, extinguishers, hydrants)	Fire detection, alarm and suppression system compatibility with steel re-rolling layout and reheating furnaces	MSME; Vendor	Layout as-built; fire system handover	Check at MSME end
C. Commissioning Stage				
E&S Actions	Asset-Specific Conditions	Responsibilities	Evidence Records /	Verification & Frequency
Functional testing: air emission stacks (reheating furnaces), cooling / TMT systems, dust collection	Calibrate monitoring instruments where applicable; verify stack/chimney height and dispersion arrangements	Vendor (tests); MSME (witness)	Commissioning reports; calibration certificates	Technical Official spot-check
Emergency preparedness drill; verify routes, alarms,	Simulate fire, hot billet / rolling-mill related incident, or fuel spill incident; evacuation timing; assembly area	MSME; E&S Expert support	Drill records; emergency plan	Post commissioning
Operator training & SOPs (reheating furnace, rolling mill operations, cooling/TMT)	Vendor manuals translated; shift-wise SOPs	Vendor; MSME	Training attendance; SOPs; shift handover sheets	Post-commissioning at MSME end

systems, cutting and finishing, material handling, utilities)				
D. Routine Operation Stage				
E&S Actions	Asset-Specific Conditions	Responsibilities	Evidence Records /	Verification & Frequency
Air emissions and waste compliance; disposal of mill scale, slag, refractory waste,	Stack emissions from reheating furnaces; dust collection systems; waste handling as per SPCB norms	MSME (Ops)	Emission monitoring reports; waste manifests; calibration and inspection logs	By the concerned Regulators
OHS controls: PPE, machine guarding, LOTO, hot-surface insulation; periodic fire checks	Reheating furnace safety interlocks; guarding of rolling mills, cutting and straightening equipment; hot-work controls; confined space permits (where applicable)	MSME	PPE logs; PTW; incident/NMIS reports	Need based periodical review
Community safeguards: traffic management; noise timing; stack dispersion	Vehicle routing; acoustic enclosures maintained, adequate stack/chimney height for reheating furnaces	MSME	Traffic plan; noise checks	Need based periodical review
Labour & GRM: contracts, wages, hours, GRM functionality; POSH functioning; facilities for women	GRM register; POSH training; toilets/lighting	MSME; HR/Welfare	GRM logs; POSH minutes	Need based periodical review
Residual-risk actions: unit-specific SOPs and corrective actions	Upset reheating furnace or rolling conditions; abnormal emissions; dust escape; fuel handling	MSME	CAR (Corrective Action Register)	Need based periodical review
E. Monitoring & Reporting Stage				
E&S Actions	Asset-Specific Conditions	Responsibilities	Evidence Records /	Verification & Frequency
Maintain M&V logs (air emissions, energy use, water), OHS incidents, drills, training	Stack emission data from reheating furnaces, fuel/energy consumption records, cooling / TMT water data (if used), DG set operation	MSME	M&V sheets; training registers; drills	MSME shall maintain data which may be available for verification to regulatory bodies
Internal audits against cluster measures & asset conditions	Short, MSME-friendly checklists	MSME; RM support	Audit checklists; photos	MSME to keep audit data and make available for verification
Third-party verification	Evidence review; site checks; Corrective Action Plan	Independent agency; SIDBI PMU	Verification reports; CAPs	Verification on sample

(sample-based) across				basis as per requirement
Reporting to SIDBI/PMU; update MIS; track CAP closure	Align with FMAP reporting cadence	MSME; RM/ PMU	Periodic reports	As per loan conditions
F. Decommissioning Stage (recognising loan-tenure constraint)				
E&S Actions	Asset-Specific Conditions	Responsibilities	Evidence Records /	Verification & Frequency
Plan for end-of-life pathways at	Reheating furnace dismantling; disposal of refractories, oils, electrical panels, rolling mill components, cooling/TMT equipment, DG sets and fuel storage tanks	MSME (when End of Life arises); Vendor/EPR channels	Disposal certificates; handover to authorised recyclers	Verification feasible only if within loan tenure; otherwise, documented commitment at appraisal
Residual risks during dismantling: OHS, spills, traffic control	Dismantling method statements; PTW/LOTO	MSME; Contractor	PTW; spill & incident logs	At time of dismantling

This section outlines the minimum, stage-wise environmental and social (E&S) actions and responsibilities that MSME sub-projects are required to follow under FMAP. These actions are designed to be practical, asset-anchored, and implementation-oriented, helping MSME units translate FMAP safeguards into day-to-day operational practices.

This whole section, which describes SIDBI's internal ESMS procedures for appraisal, supervision, and portfolio-level reporting under FMAP's direct-lending modality.

Structure and Linkages

The stage-wise ESMP covers the full cycle of MSME sub-projects, including: screening/appraisal, installation, commissioning, routine operation, monitoring & reporting, and decommissioning.

Each action item is explicitly linked to the risk clusters identified in Section 2.5-

- Pollution & Resource Efficiency
- Occupational Health & Safety
- Community Health & Safety
- Labour & GRM
- Gender, SEAH/POSH & Inclusion

These requirements are aligned with the specific asset types financed under FMAP, such as reheating furnaces, rolling mills, cooling and TMT systems, cutting and straightening equipment, rooftop solar PV systems and mobility solutions. This ensures that MSMEs can clearly understand the E&S expectations related to the particular technologies they adopt.

Implementation and Verification

To support consistent and reliable implementation, SIDBI will apply its standard internal review processes, including onsite verification by the Relationship Manager and Technical Officials. SIDBI will also use structured assessment tools such as the ESG/Green Rating Tool, ESDD formats, and Measurement & Verification (M&V) protocols to ensure transparency and uniformity in evaluations.

MSMEs will receive Technical Training and Capacity Building (as TA workshop) to prepare and implement unit-level ESMPs or E&S strengthening plans. In addition, sample-based third-party verification will provide independent oversight across the programme, helping validate ESMP implementation and strengthen portfolio-level monitoring.

The responsibilities and actions described in this section apply to MSMEs, SIDBI, technology vendors/contractors, third-party verifiers, and Technical Assistance providers only.

2.6 Management and Monitoring Requirements

Effective E&S management requires the SIDBI to implement continuous monitoring, reporting, supervision, and corrective-action mechanisms. These obligations are established under the GCF Environmental and Social Policy, the GCF Screening & Categorization Guidance, and SIDBI's own ESMS.

Environmental & Social (E&S) performance and compliance with the ESMP:

- Monitoring the implementation of ESMP measures for each subproject throughout the project lifecycle.
- Ensuring compliance with GCF Environmental and Social Safeguards (ESS), host-country regulations, and approved subproject-specific ESMPs.
- Maintaining systematic E&S performance records, including effluent monitoring, waste management, occupational health and safety (OHS) indicators, grievance redress data, and stakeholder engagement logs.
- Reporting to the GCF on the project's E&S performance through periodic progress reports.

The GCF Environmental & Social Policy explicitly requires accredited entities to ensure implementation, monitoring, and compliance with mitigation measures identified in ESIA/ESMP. SIDBI's ESMS additionally requires ongoing E&S risk management, including monitoring and reporting across subprojects through the entire project cycle.

Conduct periodic site audits, inspections, and impact assessments:

Regular site visits/audits at a frequency proportionate to risk category are conducted and the details are as under:

- High-risk and Moderate-risk - semi-annual or annual monitoring
- Low-risk - annual or desk-based compliance checks.
- Track actual impacts versus predicted impacts identified in ESIA, adjusting mitigation measures as needed (adaptive management).
- Document non-compliances and ensure corrective action plans (CAPs) are implemented within agreed timelines.

SIDBI's ESMF and project cycle framework specify monitoring frequency, site audits, incident reviews, and corrective-action tracking as core components of E&S supervision.

The World Bank/IFC ESF and GCF guidance emphasize adaptive monitoring, disclosure, and ongoing reassessment of risks throughout implementation, requiring borrowers/accredited entities to adjust measures whenever impacts deviate from predictions.

The ESMP structure has been intentionally developed as a framework-level instrument, consistent with the programmatic nature of financial intermediation operations. However, the approach to enhance ESMP implementation, as outlined below:

1. For Category B subprojects, the project-specific ESMPs from risk identification to defined mitigation, monitoring, and reporting measures, supported by actionable procedures.
2. Recognizing the capacity constraints of MSME borrowers, SIDBI will enhance the capacity of MSME borrowers and their staffs for effective planning and implementation of project specific E&S measures / ESMP aspects. The dedicated capacity-building programmes / training of the stakeholders also address to enhance their capacity on the following core management plans including its sub-management plans:
 - a) Environmental Management Plans
 - b) Occupational Health & Safety Plans
 - c) Social Management Plans
 - d) Cross-Cutting Plans

Through the enhanced capacity building, and strengthened monitoring mechanisms, the ESMPs for Category B subprojects are fully implementable, operationally practical, and aligned with GCF ESS and IFC Performance Standards, while remaining feasible for MSME borrowers.

SIDBI adopt a structured and tiered capacity development framework to strengthen Occupational Health and Safety (OHS), and the environmental & social risk management capabilities of MSMEs and other relevant stakeholders in alignment with GCF Environmental and Social Safeguards (ESS) and applicable international best practices under the programme's TA component.

- a) **Capacity Building for MSMEs:** SIDBI will design and deliver targeted training programmes for MSME units to enhance their ability to identify, assess, and manage E&S risks associated with project activities. Training modules will cover, inter alia, environmental risk mitigation, occupational health and safety (OHS), resource efficiency, waste management, labour and working conditions, gender and social inclusion, and compliance with applicable national regulations and GCF ESS requirements. These trainings will be delivered through a mix of classroom sessions, digital platforms, and on-site technical support. Sector-specific guidance materials and toolkits will also be developed to facilitate practical implementation.
- b) **Stakeholder Engagement and Capacity Strengthening:** SIDBI will organize periodic multi-stakeholder workshops, consultations, and knowledge-sharing sessions involving financial institutions, MSMEs, local authorities, and technical experts. These engagements will focus on sharing good practices, strengthening E&S governance systems, and promoting alignment with international frameworks such as GCF ESS, World Bank and relevant national standards.

This integrated capacity-building approach will progressively strengthen the ability of MSMEs and its stakeholders to manage environmental and social risks effectively, ensure compliance with applicable safeguards, and contribute to the long-term sustainability and resilience of the programme

At the varying levels of E&S capacity across MSMEs, technical assistance (TA), capacity-building and independent verification mechanisms form an integral part of FMAP's implementation strategy. SIDBI already applies similar models across its green financing lines, including external technical partners, third-party auditors, and structured reporting formats.

Technical Assistance (TA) providers will help MSMEs prepare site-specific ESMPs strengthening plans, aligned with the risk clusters and asset-specific mitigation requirements in Section 2.5.

Under the Technical Assistance (TA) plan, dedicated workshops will be organized to build the capacity of MSMEs, PFIs, NBFCs and other MSME stakeholders on the application of environmental and social safeguards (the number of workshops can be increased as per requirement and size of participants). These workshops will provide structured knowledge on how E&S aspects are integrated during project screening, implementation, and monitoring & verification (M&V). A specialized agency will be engaged (as per the TA plan submitted during proposal) to design and deliver the workshops, preparing training materials and guidance aligned with GCF's E&S standards and the FMAP programme. SIDBI EE team will be actively involved in the preparation, review, and finalization of these materials to ensure their relevance and quality. This initiative will strengthen institutional understanding and practice of E&S compliance, thereby supporting the effective adoption of low-carbon technologies within the MSME sector.

- MSMEs will receive guidance on documentation and residual-risk management, emergency preparedness, and labour/women-safety safeguards.
- ESG Rating Tool, ESDD checklists and M&V protocols will be used to standardise assessment and strengthen implementation.

Regarding Third-Party Monitoring and Sample Based Verification, SIDBI will engage independent agencies for sample-based verification across the MSME portfolio. Third party verifiers will review implementation of ESMP actions, conduct site visits, and check evidence records like pollutant load, effluent logs, OHS training, emergency systems, GRM functioning, POSH/SEAH. Verification findings will serve into portfolio level reporting, corrective actions, and capacity-building needs.

SIDBI's Technical Officials (E&S officer) and Relationship Managers, will monitor progress at key applicable ESMP stages. TA workshop and third-party findings will be integrated into SIDBI's internal supervision, tracking, and periodic reporting to GCF as per FAA. This will strengthen alignment between implementation and program-level accountability. This combined approach ensures that MSMEs receive hands-on support to meet ESMP requirements, while SIDBI maintains a robust oversight framework consistent with FMAP safeguards and SIDBI's green lending standards.

The concerned regulator and need based periodical review by SIDBI for verification and monitoring the framework emphasizes:

- SIDBI's appraisal-stage and supervision-stage E&S compliance checks
- MSME-level maintenance of environmental, social, health and safety records
- Periodic review of monitoring records and compliance evidence on E&S
- Tracking of corrective and preventive actions on E&S risks until closure
- Compliance related to E&S is also monitored by concerned regulatory authority from time to time.
- Third party verification of sample-based audits are applicable based upon the requirement

3. Loan Processing Framework for direct lending operations²

3.1 Loan Screening and Approval Process (for direct loans)

The Loan Approval Process is a comprehensive three-stage procedure designed to rigorously evaluate loan applications and ensure adherence to the stringent criteria.

The first stage, Application and Initial Screening, is conducted at the branch level by the Relationship Manager of SIDBI. During this phase, applications are meticulously screened for completeness, including the submission of mandatory documentation such as climate-related, environmental, and social safeguards documents. Incomplete applications are promptly rejected / hand held to be completed, as the case may be, while only those deemed complete undergo initial screening against the exclusion list criteria. Further, at this stage, the individual proposals would be assessed for the following to ensure that they do not fall under the Cat. A/ I-1 activities of GCF:

1. Project outlay (if more than USD 60 million per project)
2. Whether the potential impact (environmental and/or social risks) are diverse, irreversible, or unprecedented
3. Whether the impact of the project be addressed through adequate policy implementation and workplace standards and suitable norms?

Based on the above assessment, if the project is found to be in the category Cat. A/ I-1 of, then the project will be screened out and will not be considered for financing.

Applications that meet the criteria are forwarded to the second stage, Due Diligence, while those that fall under the exclusion list (which includes the Category A/I1 projects) are rejected. The Due Diligence stage is executed in parallel at the branch level and involves several crucial assessments. The second level of screening will be done by means of the ESG rating tool (attached as Annexure 7 of ESMS). The Processing Officer conducts evaluations related to Know Your Customer (KYC) requirements, financial viability, credit due diligence and checking of ESDD checklist information (Annexure- 2). Concurrently, the Climate Expert, Technical Expert and E&S expert at the Project Management Unit (PMU) will perform climate-related, technical due diligence and will check the projects for ESS compliance (using the ESG rating tool) to ensure the soundness of the proposed project from a technical, E&S and climate perspective.

In the third stage, technically sound and financially viable applications proceed to the Credit Appraisal Memorandum preparation phase. The Processing team comprising Maker and Checker compiles a comprehensive Credit Appraisal Memorandum, which is then presented to the Loan Sanctioning Committee for final evaluation and decision-making. To maintain transparency and impartiality, no member involved in the Initial Application Screening and Due Diligence processes is permitted to be part of the Loan Sanctioning Committee.

² SIDBI, “Environment and Social Management System (ESMS) ‘Financing Mitigation & Adaptation Projects (FMAP) in Indian MSMEs”, Page 27-29, <https://www.sidbi.in/assets/front/pdf/ESMS-FMAP-E.pdf>

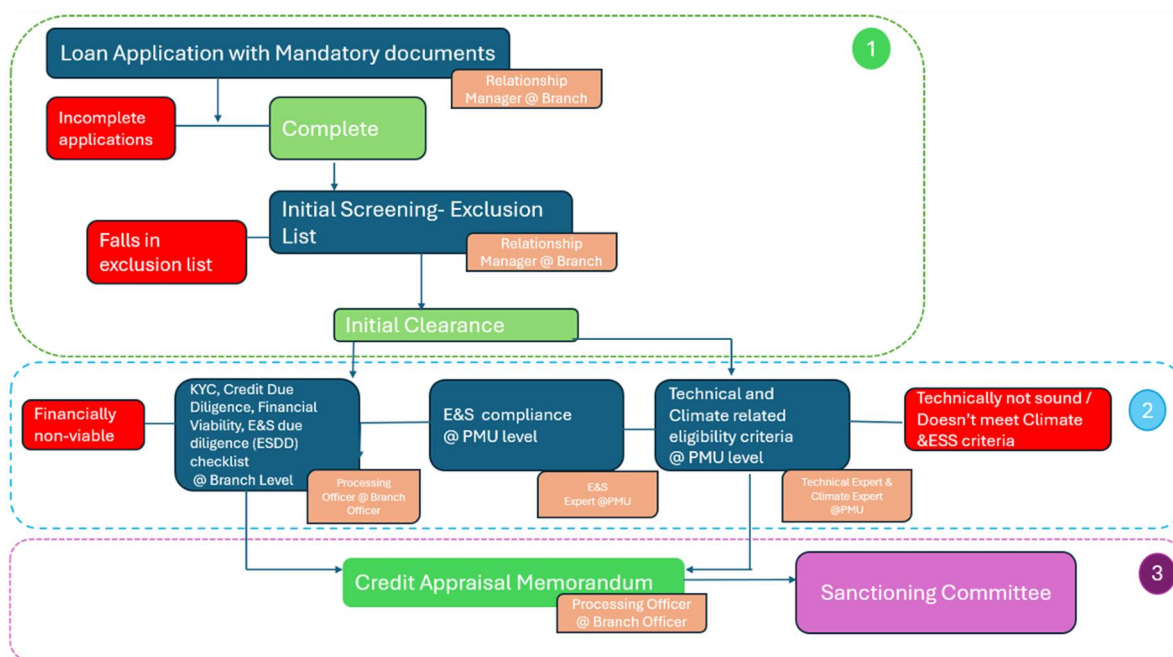


Figure 1: Loan Application Process

For direct loans, risk screening is carried out by SIDBI at the individual project level before financial approval. Each MSME proposal undergoes detailed checks against the exclusion list and Category A/I-1 criteria. Environmental and Social Due Diligence (ESDD) is performed, supported by the ESG rating tool, and project-specific ESMPs are prepared to ensure compliance with environmental and social safeguards. This ensures that only technically sound and compliant projects are financed directly by SIDBI.

Risk management for the direct loans is focused on the individual project level. Each MSME borrower must demonstrate compliance with the sectoral ESIA/ESMP and ESMS, which outlines impacts /mitigation measures, monitoring indicators, and responsibilities. SIDBI, as the Accredited Entity (AE), directly screens proposals, by ensuring that MSME's submit a holistic Environment Social Due Diligence (ESDD) and ESG rating tool which encompasses environment and social risks like (Pollution control, Labour issues, Occupational health and safety, SEAH, Grievance Redressal, Gender), and ensures that every project meets environmental and social safeguards before financial approval.

3.2 Risk Identification & Mitigation Strategy

Table 6: Identification risk and its mitigation strategy

Type	Risks Identified	Mitigation Measures
Environmental	Toxic discharges, hazardous emissions, noise fury, waste chaos	Advanced pollution control (air, water & noise whatever applicable), Waste management, wherever applicable, clean tech retrofits, real-time monitoring, Statutory and regulatory clearances, climate-smart innovation, proper hands-on training be given to the operators before operation, regular inspections, Operation & Maintenance of machineries / equipment, Fire safety guidelines /manuals, Do's & Don'ts in the facility etc.
Social	Unsafe labour conditions, gender	Institutional safeguards, Personal protective Equipment (PPE) like Masks, Goggles, Gloves, Harness must be provided, Display boards

Type	Risks Identified	Mitigation Measures
	inequity, SEAH, underpayment	with danger signs placed at electrical and hazardous areas, Wage enforcement, GRMs, Gender Action Plans
Community	Health deterioration, land stress, exclusion	Community consultations, inclusive benefits, shared infrastructure
Technological	Digital illiteracy, surveillance misuse, e-waste from sensors	Literacy drives, ethical tech use, green IoT design, traceable recycling chains

4. Grievance Redress Mechanism

The sectoral ESMP clearly outlines MSME-level expectations for grievance redressal. At the MSME/site level, each unit must prominently display the internal grievance focal point's details (name/phone/email) at entrances, shop floors, canteens, and dormitories. Worker induction and refresher toolbox talks will include a short briefing on internal grievance channels, escalation options to the Grievance Redressal Committee/Body, and access to the SIDBI GRM as described in SIDBI's ESMS-FMAP (Section 9.5 Awareness and Capacity Building) and GCF IRM.

Each MSME must maintain simple, accessible grievance channels such as a name of grievance officer as point of contact, complaint register/box and ensure basic logging, tracking, and timely resolution of labour / gender based, OHS, SEAH/POSH, and Environmental & Social grievances. SIDBI will verify MSME-level GRM performance during annual ESS Monitoring & Verification (ESS M&V) visits and through any third-party verification done under the Programme. MSMEs will also submit periodic reports to SIDBI summarizing grievance categories, acknowledgements, resolutions, open cases, and corrective actions taken.

In 2013, the Government of India notified the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act (POSH Act). The Act aspires to ensure women's right to workplace equality, free from sexual harassment through compliance with the above mentioned three elements. It is important to note that the Act provides a civil remedy to women and is in addition to other laws that are currently in force. Consequently, any woman who wishes to report instances of sexual harassment at the workplace has the right to take recourse of both civil and criminal proceedings. As a public financial institution, SIDBI has adopted the POSH policy of the Government of India (Refer Attachment 2 of ESMS in page no 125 -135).

Grievance Redressal Policy (Refer Attachment 3 of ESMS) is based on the principles of customer service and customer satisfaction which would in turn broaden its customer base. SIDBI's policy on grievance redressal follows broadly the following principles:

- Customers are always treated fairly
- Grievances raised by customers are dealt with courtesy and on time
- SIDBI will treat all grievances efficiently and fairly as they can damage the Bank's reputation and business if handled otherwise
- SIDBI's employees must work in good faith and without prejudice to the interests of the customer
- Customers are fully informed of avenues to escalate their complaints/ grievances within the organization and their rights to alternative remedy if they are not fully satisfied with the response

of the Bank to their complaints in keeping with the above policy, the GRM has the following provisions:

- (a) Registration of complaint: Customer can lodge / register his grievance through any of the following channels:
- Complaint in Person
 - Complaints through post / mail / email
 - Online Registration of Complaints and
 - Grievances lodged through the Public Grievance Portal such as Centralized Public Grievances Redress and Monitoring System (CPGRAMS) (www.pgportal.gov.in)
- (b) Mandatory display/ disclosure requirements at SIDBI Offices: The following are displayed/ disclosed at the SIDBI offices for easy filing of grievances.
- Complaint Book/Register
 - Complaints/Suggestion Box
 - Complaint form at SIDBI website homepage
 - Notice Board displaying contact details of Nodal Officers for grievances, escalation of unresolved grievances within 8 working days, and details of Chief Grievance Officer to be approached when not satisfied with the redress.
- (c) Resolution of grievances / complaints: The process includes
- acknowledgement after receipt of complaint
 - escalation matrix
 - referring unsatisfied complaints to higher levels, etc.

Anonymous complaints are not entertained. All efforts are made to resolve each complaint received by the Bank generally within stipulated time as per the following escalation matrix:

Table 7: Escalation matrix at SIDBI

Level	SIDBI Office	Official In-charge
First	Branch Office	Nodal Officer at Branch level
Second	Regional Office	Nodal Officer at Regional level
Third	Head Office	Chief Grievance Officer

There may be some complaints which require deeper analyses from all possible angles. In such cases, the Bank will try to resolve the grievance within one month from the receipt of complaint. In case of unsatisfactory resolution, the resolution can be escalated to the higher level.

4.1 SIDBI's 3-Tier GRM

SIDBI has a three-tier grievance/ complaint redressal system which can be accessed @ <https://www.sidbi.in/complaints> The details are given below:

Level 1 – Branch Office Level

At the Branch Office, a complaint can be filed in person, post/ email to SIDBI and register online. When a complaint is registered, a unique Complaint ID will be generated/issued. The following complete

details to be furnished while registering the complaints, enabling them to address the concern(s) in a holistic and timely manner:

- Full name of Complainant
- Customer ID if an existing Customer
- Complainant's Contact details (address, telephone number and e-mail)
- Reference number of Transaction/Complaint ID, depending on purpose

In case of non-receipt of reply within 8 working days of registering the complaint or unsatisfactory reply, it can be escalated to Level 2, using Complaint ID.

Level 2 – Regional Office Level

In case of non-receipt of reply within 8 working days of registering the complaint or unsatisfactory reply, the complaint can escalate it to Level 2 (Regional In-charge), using Complaint ID.

Level 3 – Head Office Level

If registered complaint is not resolved satisfactorily within 5 working days from date of escalation at regional level (Level 2), the complainant can contact Chief Grievance Officer/ Alternate Chief Grievance Officer.

SIDBI has a functional and well-structured three-tier GRM in place. The existing GRM will be utilized for the bilateral / multilateral supported programs /project. SIDBI will ensure that its GRM is adequately advertised at the levels of all stakeholders.

Additionally, a focal point for the programme will be appointed or nominated who can be contacted to obtain any project-related information or for registering suggestions/grievances. Details of the focal point for each case shall be made available on the SIDBI/project website.

To assess the overall effectiveness and efficiency of the project GRM, an evaluation will be conducted on an annual basis. Results will be shared with all concerned stakeholders to facilitate improvement in the performance of the GRM and provide necessary feedback. The following points may be assessed during such evaluations:

- Number of complaints/ queries received,
- Category of complainants (Type of stakeholder),
- Status of the complaints (rejected, closed, reopened, ongoing),
- Response time involved in the resolution of complaints,
- Feedback from the aggrieved/ complainants, if any

Further, GCF Independent Redressal Mechanism (IRM) can be accessed on the following link (<https://irm.greenclimate.fund/>), wherein affected parties/person can directly file a complaint if they are negatively affected by the projects/programmes funded by Green Climate Fund (GCF).

4.2 Grievance Redressal for Customers & Stakeholders

SIDBI ensures grievance redressal through continuous stakeholder engagement. For non-customers, awareness of mechanisms under Govt. of India/SIDBI/GCF is created via consultations. Citizens may lodge grievances 24x7 through the **Centralised Public Grievance Redress and Monitoring System**

(CPGRAMS)³, accessible via web and mobile (UMANG/Google Play). Complaints can be tracked with a unique ID, and appeals filed if resolution is unsatisfactory.

4.3 Gender-Based Violence & SEAH risk identification and management

While section 4 covers about the labour vulnerabilities including gender safeguards and compliance with India's Sexual Harassment of Women at Workplace (Prevention, Prohibition & Redressal) Act, 2013 (POSH) commonly known as the POSH Act and provides for SEAH/gender assessment under independent monitoring. Accordingly, SIDBI follows the POSH Act, ensuring zero tolerance for GBV/SEAH⁴. The Act mandates:

- Broad definition of workplace (including organized/unorganized sectors).
- Internal & Local Complaints Committees.
- Defined complaint filing and inquiry process.
- Employer duties: safe environment, awareness programs, support to complainants, treating harassment as misconduct, and timely reporting.

MSMEs must comply with institutional arrangements and report under programme mechanisms. As a Grievance/SEAH/POSH risk screening step, SIDBI ensures MSMEs undertake that Grievance/SEAH/POSH related information i.e., whether the unit has Internal Complaint Committee with respect to Grievance/SEAH/POSH and any cases registered / resolved. Further, Survivor-Centered Handling i.e., (confidentiality, non-retaliation, referral pathways) are followed as per POSH Act.

It is essential for MSMEs to institutionalize grievance redressal processes to enhance their accountability and stakeholder's trust. Accordingly, MSMEs shall maintain register/records covering the following details: -

- i. Total number of grievances received
- ii. Summary of grievances received
- iii. Details of grievances resolved, pending, reasons for delay in addressing the pending grievances, etc.
- iv. Details of number of sexual harassment complaints received and action undertaken to address such complaints.

In addition, Gender Assessment and Gender Action Plan under FMAP in GCF FMAP 241 has been captured in accordance with GCF requirement on Gender and Grievance. Reference Link:- [fp241-gender-assessment-cover.pdf](#) and [fp241-gender-action-plan-cover.pdf](#)

SIDBI explicitly stipulates that all Category B MSMEs must adhere to minimum labour and working-condition standards aligned with IFC Performance Standard 2, the GCF Environmental and Social Safeguards (ESS), and India's National Labour Code. The Labour Code—effective from 21 November 2025—consolidates 29 existing labour laws into four integrated codes covering:

1. **Wages,**
2. **Social Security,**

³ <https://pgportal.gov.in/>

⁴ SIDBI, "Environment and Social Management System (ESMS) 'Financing Mitigation & Adaptation Projects (FMAP) in Indian MSMEs", Page 71, <https://www.sidbi.in/assets/front/pdf/ESMS-FMAP-E.pdf>

3. **Industrial Relations**, and
4. **Occupational Safety, Health and Working Conditions.**

These requirements are designed to identify and manage worker-related risks while ensuring that enterprises maintain safe, fair, and legally compliant workplaces.

In addition, SIDBI mandates that all MSMEs comply with India's statutory prohibitions on child labour and forced or bonded labour. Enterprises must also ensure the protection and fair treatment of vulnerable worker groups, including contract workers, migrant workers, and women workers, along with providing all necessary workplace amenities and welfare facilities in line with national regulations and international good practice.

At MSME site, Workers can access to Nodal officer (name/phone/email) regarding the POSH/SEAH through Prominent display board at entrances, shopfloors, canteens and dormitories/restroom for their Grievance Redressal Issues. Subsequently, worker induction & refresher toolbox talks are included with a short briefing on Internal Grievance Mechanism options, escalation to Grievance Redressal Management Committee/Body and under SIDBI's report on ESMS- FMAP in Indian MSMEs - section 9.5 Awareness and Capacity building ESMP training already committed which covers ESMP implementation.

Verification will be carried out during follow-up visits by SIDBI officers or by third party verification done under the programme, which the ESMP already prescribes. Periodic MSME submission to SIDBI covers various category like Labour/Gender/OHS/SEAH/environment and resolved within the given timeline with corrective actions taken etc.

4.4 Conflict Sensitivity Assessment⁵

- **Community Health & Safety:** OHS safeguards are checked via ESDD/ESG tools before lending. Annual audits ensure compliance. Borrowers must provide medical care, redress, and compensation in case of incidents.
- **Land Acquisition:** Projects are screened to avoid acquisition/resettlement affecting biodiversity-sensitive areas, indigenous communities, or cultural heritage.
- **Indigenous Peoples:** Projects will not be assisted affecting people in voluntary isolation.

5. Monitoring, Evaluation & Reporting Requirements

The FMAP programme adopts a **comprehensive, multilayered Monitoring and Evaluation (M&E) system** that integrates subproject-level ESMP implementation, programme-level oversight, and reporting to the Green Climate Fund (GCF). Monitoring responsibilities are shared across SIDBI, MSME borrowers, third-party agencies, and SIDBI's Programme Management Unit (PMU). The approach ensures continuous oversight of environmental and social performance, GHG emission reductions, and compliance throughout the project lifecycle.

5.1 Continuous Monitoring and Reporting Obligations

1. Monitoring Level (SIDBI)

⁵ SIDBI, "Environment and Social Management System (ESMS) 'Financing Mitigation & Adaptation Projects (FMAP) in Indian MSMEs", Page 73- & 74, <https://www.sidbi.in/assets/front/pdf/ESMS-FMAP-E.pdf>

SIDBI conducts **end-to-end monitoring** from project appraisal through implementation and closure. This includes:

- **Pre-Sanction visits** before loan sanction, where SIDBI verifies actual site conditions through:
 - On-site walkthrough inspections
 - Stakeholder interviews (workers, supervisors, management)
 - Photographic verification and geo-tagged evidence
 - Cross-checking compliance with the exclusion list
 - ESDD and ESG scoring
- **Verification of mitigation measures** listed in the project-specific ESMPs, including:
 - Pollution control infrastructure (ETP, APCD, caustic recovery, sludge handling)
 - PPE availability and OHS practices
 - Chemical management and hazardous waste disposal
 - Gender, SEAH, and labor compliance (aligned with new National Labor Codes, effective 21 Nov 2025)
- **Annual supervision missions**, including site audits, documentation checks, and follow-ups on corrective actions. **Ensuring submission** by MSMEs, tied to undertakings signed during ESMP rollout (Section 3.4).

2. Third-Party Monitoring

During the initial six years of the programme:

- A **third-party M&E agency** develops monitoring tools, reporting formats, and conducts verification audits.
- From years **7–13**, SIDBI's PMU technical/M&E officer conducts field-level monitoring using the validated tools.
- Independent sample-based evaluations assess:
 - ESMP implementation on the ground
 - Gender and SEAH Action Plan compliance
 - E&S risk mitigation effectiveness
 - Climate benefits (GHG reductions, energy savings, water efficiency)

3. Programme-Level Monitoring by SIDBI

SIDBI monitors:

- Sub-loan performance and disbursements
- Co-financing mobilization
- Climate results (GHG reductions, energy savings)
- Progress towards outputs (beneficiaries, women-led MSMEs, EVs financed, solar projects, etc.)
- Institutional strengthening indicators

All findings feed into Performance Reports and the Annual Performance Report (APR).

5.2 Integration with GCF's Annual Performance Report (APR)

The APR consolidates monitoring results from all financing channels and fulfils SIDBI's obligations. Key elements include:

1. Subproject Disclosure & Reporting

- All directly financed subprojects are disclosed and included in APR submissions.
- APR includes:
 - Summaries of ESIA/ESDD/ESMP implementation

- o Significant changes or material variances post-disclosure
- o Portfolio-level corrective actions
- o Updates on safeguards, gender, SEAH, OHS, climate resilience, and pollution control compliance.

2. Climate & Results Reporting

SIDBI submits:

- **Traceable Excel-based GHG reduction calculations** annually, using:
 - o Energy savings data from MSMEs
 - o Internationally recognized methodologies (CDM, ISO standards)
- **Programme-level indicators**, including:
 - o Core indicator 1 (GHG emission reductions)
 - o Core indicator 2 (beneficiaries)
 - o Core indicator 3 (value of climate-resilient assets)
 - o Core indicators 5–8 (institutional strengthening, innovation, knowledge creation)

3. Compliance Confirmation

Every APR confirms that:

- Sub-loans comply with eligibility criteria
- Sectoral ESMP guidelines are met
- Co-financing ratios are maintained
- All monitoring data meets Evaluation Policy requirements
- Programme-level progress aligns with climate impacts, results framework, and ESMS commitments.

6. Conclusion

The ESIA and ESMP under FMAP is a commitment to responsible industrial transformation for Category B subprojects under direct lending component. These measures would safeguard our environment, uphold workers' dignity and safety, protect community health, and anchor our path toward a sustainable future.

Annexure 1- Negative / Exclusion List

SIDBI does not finance the following (Negative/Exclusionary List of projects) out of the GCF Proceeds:

- i. Production or trade in any product or activity deemed illegal under Indian laws or regulations or international conventions and agreements.
- ii. Production or trade in weapons and munitions.
- iii. Production or trade in alcoholic beverages (excluding beer and wine).
- iv. Production or trade in tobacco.
- v. Gambling, casinos, and equivalent enterprises.
- vi. Trade in wildlife or wildlife products regulated under CITES.
- vii. Production or trade in radioactive materials.
- viii. Production or trade in or use of unbounded asbestos fibers.
- ix. Commercial logging operations or the purchase of logging equipment for use in primary tropical moist forest (prohibited by the Forestry policy).
- x. Production or trade in products containing PCBs.
- xi. Production or trade in pharmaceuticals subject to international phase outs or bans.
- xii. Drift net fishing in the marine environment using nets in excess of 2.5 km. in length.
- xiii. Production or trade in ozone depleting substances (ODS) subject to international phase out.
- xiv. Production or trade in pesticides/herbicides subject to international phase outs or bans as agreed by GOI based on Stockholm convention.
- xv. Production or activities involving harmful or exploitative form of child labour or forced labour.
- xvi. Projects/ activities requiring land acquisition and/ or causing Loss of Land / loss of source of income / loss of livelihoods, impacts on community/ displacement of people or communities from private or public lands or any negative impacts on livelihoods.
- xvii. Projects located in areas of significant settlement or impacting the natural and cultural resources of tribal people and adversely affecting the land, culture, livelihood, and way of life of tribal and indigenous people.
- xviii. Projects located in sensitive ecological areas and natural/ cultural heritage locations. If any activities are proposed in these areas, then the beneficiaries must obtain the requisite permissions. These permissions are required if the activities are taken up within one km from the sensitive ecological areas or heritage locations.
- xix. Category A Projects with potentially significant adverse environmental and/or social risks and impacts that, individually or cumulatively, are diverse, irreversible, or unprecedented and I1 i.e. when an intermediary's existing or proposed portfolio includes or is expected to include financial exposure to activities with potentially significant adverse environmental and social.
- xx. Projects that affect in any way Indigenous Peoples with limited external contact, also known as peoples "in voluntary isolation", "isolated peoples" or "remote groups".
- xxi. Production and distribution of racist, anti-democratic and/or neo-Nazi media.
- xxii. Projects that involve the conversion or degradation of Critical Natural Habitats
- xxiii. Large agricultural or forestry enterprises (>5,000 ha) producing palm oil or wood that do not comply with recognised international certification systems (e.g. RSPO or FSC) or equivalent regulations.
- xxiv. Practices which prevent employees from lawfully exercising their rights of association and collective bargaining
- xxv. Nuclear power plants (apart from measures that reduce environmental hazards of existing assets) and mines with uranium as an essential source of extraction.
- xxvi. Prospection, exploration and mining of coal; land-based means of transport and related infrastructure essentially used for coal; power plants, heating stations and cogeneration facilities essentially fired with coal, as well as associated stub lines.
- xxvii. Non-conventional prospection, exploration and extraction of oil from bituminous shale, tar sands or oil sands.
- xxviii. Cross-border trade in waste products unless compliant with the Basel Convention and the underlying regulations.
- xxix. Production or trade of persistent organic pollutants (POPs)
- xxx. Prohibited transboundary trade in waste (under the Basel Convention)
- xxxi. Investments which could be associated with the destruction or significant impairment of areas particularly worthy of protection (without adequate compensation in accordance with international standards).
- xxxii. Production or trade in wood or other forestry products other than from sustainably managed forests.
- xxxiii. Production, trade, storage, or transport of significant volumes of hazardous chemicals, or commercial scale usage of hazardous chemicals. Hazardous chemicals include gasoline, kerosene, and other petroleum products.
- xxxiv. Production or activities that impinge on the lands owned, or claimed under adjudication, by Indigenous Peoples, without full documented consent of such peoples.

Annexure 2 - Environmental & Social Due Diligence (ESDD) Checklist

Name of the MSME enterprise:

Project Location with address:

S.No.	Particulars	Response	Remarks
A. Environmental Aspects			
1	Environmental Clearance from MoEFCC* / SEIAA**	Yes / No / Not Applicable / Applied For	- If 'Yes', attach copy of the same. - If 'Applied For', attach copy of the application submitted by the MSME unit to the concerned SPCB or the receipt copy of the fee paid to the SPCB.
2	Valid Consent(s) / Clearances from SPCB/CPCB	Yes / No / Not Applicable / Applied For	- If 'Yes', attach copy of Consent to Establish (CTE) / Consent to Operate (CTO). - If 'Applied For', then attach copy of the application submitted by the MSME unit to the concerned SPCB or the receipt copy of the fee paid to the SPCB.
3	Whether the unit has received any notice for regulatory non-compliance or violation of norms or consent conditions or faced any litigation or material settlement of convictions in court	Yes/No	If 'Yes', state reasons, which led to industry being notified as 'non-compliant' and actions undertaken to become compliant. State clearly whether the issue has been resolved or not. If not, state reasons clearly.
4	Compliance of consent - for eg. Installation of pollution control measure suggested as per consent	Yes / No / Not Applicable	list out deviations if any
B. Social Aspects			
5	Does the unit employ child and / or forced labor for its operations	Yes/No	
6	Does the unit follow minimum wages act / No discrimination on the grounds of religion/ethnicity/colour/ race/ gender and caste.	Yes/No	
7	Does the unit employ Occupational, Health and Safety related measures for its operations [For example: Workers wearing Gloves, helmet, mask during operations (especially during	Yes/No	

S.No.	Particulars	Response	Remarks
	<i>welding operations), installation of fire safety measures (e.g. workable / usable fire extinguishers having pressure gauge needle in green zone), etc.]</i>		
8	Does the unit comply with labour welfare requirements like ESI /EPF etc	Yes / No	
9	Does the unit have occupational facilities such as canteen / restroom / toilet for the worker	Yes/ No	
10	Does the unit employ women? If yes, whether separate facilities such as toilet / rest room provided to them	Yes / No	
11	Does the unit have a Grievance Redressal Mechanism (GRM) and Grievance Register to lodge complaints.	Yes / No / Not Applicable	
12	Does the unit have Internal Complaint Committee with respect to The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) POSH Act / Sexual Exploitation, Abuse, and Harassment (SEAH)	Yes / No / Not Applicable	
13	Do the unit received any complaint or any cases registered under POSH Act / SEAH till date	Yes / No	
14	Is there any provision for Physically handicapped/ Challenged person in the workforce despite of gender.	Yes / No / Not Applicable	
15	Does the unit have prominent display boards indicating GRM(MSME) contact person details / SIDBI Grievance redressal contact details/ GCF independent redressal mechanism details.	Yes / No / Not Applicable	
16	Does the unit have Emergency Preparedness Response Plan (EPRP).	Yes / No / Not Applicable	
17	Is there availability of First Aid at the site and tie up with the local hospital in case of emergency?	Yes / No / Not Applicable	
C. General Land Related Aspects – Common for all types of projects			

S.No.	Particulars	Response	Remarks
18	Does the project / unit is located in the notified industrial area & park / cluster / Special Economic Zone etc	Yes / No	<i>If no, the following questions are to be answered (Question 19, 20, 21 & 22)</i>
19	Does the project require compulsory land acquisition causing displacement of the resident / Involuntary resettlement	Yes / No / Not Applicable	
20	Does the unit / project is located in, areas of significant settlement and / or collective attachment of tribal people / Indigenous People.	Yes / No / Not Applicable	
21	Does the project involves signification alteration / damage / removal of any critical cultural heritage	Yes / No / Not Applicable	
22	Is the project / unit located closer (within 10 KM) to any eco sensitive zone such as national parks / reserved forests	Yes / No / Not Applicable	
<u>D. Land-related Aspects</u> (Only for Brownfield enterprises going for expansion and modernization of their existing operations in a new location / premises; and (ii) Greenfield projects i.e., setting up of new enterprises)			
23	Land Status / use classification	• industrial area, industrial estate notified industrial zone, • special economic zones, • Land parcels already designated by the Government for non-agricultural use, • solar / wind farms etc where all the necessary statutory permission / infrastructure are available	
24	Transaction Status - Mode of Land Access / Acquisition	• Purchased from Govt (outright / lease) • Privately purchased land through willing buyer-willing	

S.No.	Particulars	Response	Remarks
		seller transactions with clear title • Private Lease • Owned / inherited Others (please specify)	

* Ministry of Environment, Forest and Climate Change

** State Environment Impact Assessment Authority

(Promoters Signature)

It is hereby certified that the information provided in the above ESDD report by the project proponent has been duly checked/ verified by the undersigned and is found to have sufficient environment and social safeguard measures in place and therefore may be considered for providing loan.

Signature :
 Name of Person :
 Designation :
 Name of the SIDBI Branch :

For the use of SIDBI Branch

- ☐ Approved
- ☐ Conditional Approval (Specify the conditions)
- ☐ Not Approved, Reason(s) thereof

Annexure 3- List of Cross Functional Technology

The technologies mentioned below are used across all the industrial sectors which improves Energy Efficiency, results in cleaner production, enhances resource efficiency and would also result in reduction of GHG emissions which are aligned with the FMAP Programme objective. The E&S Risk Categorization of these technologies would depend on the industrial process as mentioned in this document.

Further, it is to be mentioned that these technologies are also used for projects with backward and forward integration within the eligible industrial sectors identified under the FMAP Programme.

In addition to the above, if the project includes both mitigation and adaptation measures, suitable bifurcation and tagging would be done for the purpose of inclusion in the project and reporting to GCF under the FMAP Programme.

The following cross-sectoral technologies would be funded under the FMAP Programme including the sector under reference.

Sr. No.	Technology Name
1	Variable Frequency Drives
2	Energy Efficient Transformers
3	Energy Efficient Fluorescent Lamps
4	Compact Fluorescent Lamps
5	Metal Halides Lamps
6	High Pressure Sodium Vapor Lamps
7	Light Emitting Diode
8	Microprocessor Based Intelligent Control
9	Exclusive Transformer for Lighting
10	Servo Stabilizer
11	Electronic Ballast
12	Energy Efficient Air Compressors & Blowers
13	Energy Efficient Fans & Pumps
14	Capacitors
15	Automatic Power factor Controller
16	Soft Starter for Motors
17	Maximum Demand Controller
18	Automatic Temperature Controller
19	High-frequency Induction Irradiation
20	High-frequency Melting Furnace
21	Highly Sensitive and Responsive Arc Furnace
22	High-performance Electrolytic Furnace
23	Electromagnetic Irradiation
24	Common Incinerator Alongwith Power Generation Facilities
25	Screw Compressor
26	Computer Desktop Virtual Machine
27	Cooling Towers (Fills with PVC Honey Comb)
28	Wide Belt Sander

29	Spindle Moulder
30	Multi-boring machine
31	Visi cooler
32	Robot Arms
33	Enginator based on Natural Gas
34	CNC Router
35	Vacuum forming machine with thermostat control
36	Edge Bander Sprint with Power- PC Control
37	Enterprise Resource Planning (ERP) (with PPG module)
38	Automatic Book Sewing Machine
39	Tunnel Dryer for mosquito coil industry
40	Induction Lighting
41	SCADA system
42	Energy Management System
43	Water-tube Boiler (by replacing conventional Smoke-tube Boiler)
44	Condensate Recovery & Recycle System
45	Energy Efficient Boilers
46	Recuperators
47	Cogeneration
48	Heat Pumps
49	Energy Efficient Refrigeration System
50	Automatic Combustion Control for Boilers / Furnaces
51	Regenerative Burners for Furnace
52	Heat Recovery Systems for Boilers (Economizer, Air Pre- heater)
53	Outdoor Intake Control / Variable Air Volume / Heat exchanger
54	High Efficiency DG Set for Power Generation (Low Fuel Consumption with Pollution Control & Canopy)
55	Waste Heat Recovery Boiler
56	Thermal Insulation for Hot & Cold Systems
57	Dehumidification Dryer
58	Building Energy Management System
59	Municipal Solid Waste Based Power Generation
60	Building Energy Management System (BEMS) & Concentrated Solar Thermal Power (CSP)
61	Bioreactor with PLC
62	Batching Plant with Microprocessor Control
63	Wire Condensor Welding Machine equipped with PLC
64	2 Stations Auto Balancing Machine equipped with PLC
65	Standing Seam Roofing and Curving
66	Energy Efficient Air Compressors
67	Variable Frequency Drive for Screw Compressors
68	Heat of Compression Air Dryers (Replacing Desiccant Air Dryer)
69	Variable Frequency Drive for Oil Pump in Hydraulic Power Packs
70	Energy Efficient Exhaust Fans
71	Variable Frequency Drive for Hot Air Circulation Fan for Preheating Furnace
72	Air Preheater (for Furnace Flue Gas Waste Heat Recovery)

73	CNC Cutting Machine with End Former
74	Fully Automatic CNC Return Bender
75	Automatic Ring Sizing and Loading Machine
76	CNC Vertical Machining Centre
77	Vacuum Holding for Non-Ferrous Components for High-Speed Milling
78	CNC Co-ordinate Measuring Machine
79	CNC Sharpening and Profile Grinding, Automatic Broach Sharpening Machine
80	Turning Machine with Variable Frequency Drive with Regenerative Braking System
81	Servo Electric Turret Punch Machine
82	Abrasive Assisted High Pressure Water Jet Cutting
83	Inverter Based Welding Machine
84	CNC Plasma Cutting Machine
85	Double Polishing Machine (with Inverter Control)
86	Pressure Die Casting Machine
87	Semi-Automatic Pillar Type Hydraulic Hot Moulding Press (with PLC Control)
88	CNC Electronic Spring Control Machine
89	Fully Automatic Hydraulic Hot Chamber with Diesel Burner
90	Rotary Table Machine for Surface Finishing and Polishing (with Inverter Speed Regulation)
91	CNC Punching Forming Machine
92	Open Back Double Point Press - PLC Controlled
93	Automatic Transfer Unit
94	CNC Garter Spring Former
95	Electro-Hydraulic CNC Punching Machine
96	Automatic NC Control Bending Machine
97	Sensor Oxy- Height Control (OHC) and Sensor Plasma Height Control (PHC)
98	Gasifier Based Heat Treatment Furnace
99	Insulated Gate Bipolar Transistor Based Inverter
100	Cylinder Block Boring and Milling Machine (with Variable Speed and Cycle Control)
101	Duplex Roller Polishing Machine
102	Nut Former Machine
103	Double End Chamfering Machine for Pipes
104	Heavy Duty Plano Milling Machine (using AC Variable Drive)
105	Heavy Duty Multi- Coil Electromagnetic Rectangular Chuck (with Variable Control Unit)
106	NC Hydraulic Shearing Machine
107	NC Flame Cutting Machine
108	CNC Spring Making Machine
109	CNC Wire Bending Machine
110	Plano Miller with 3 Cutting Head
111	Electro Permanent Magnetic - Plate Handling System
112	Electro Permanent Magnetic - Telescopic Spreader Beam
113	Electro Permanent Magnetic - Tilting Plate Handling
114	Electro Permanent Magnetic - Billet Handling Machine
115	Modular Electro Permanent Magnets
116	Battery Operated Electro Permanent Magnetic Lifter

117	Heavy Duty EPM Systems for Rail Machining
118	EPM Modules for Fast Mould Clamping
119	Electro Permanent Magnetic Chucks (MAGNASLOT)
120	CMM Machine (Coordinate Measuring Machine)
121	High Speed Circular Sawing Machine 2, 3 & 4 Hole drilling SPM
122	15 Hole drilling SPM
123	4 Way U drilling & fine boring SPM
124	Multi spindle drilling head SPM
125	Three pillar types drilling SPM
126	2Way fine boring SPM
127	CNC Rotary Draw tube bender
128	Electronic Servo
129	CNC Straightening and cutting machine
130	Single Axis NC Tube bender with linear and rotary indexing arrangement
131	Marine engine
132	Corner cleaning machine equipped with PLC control
133	Automatic end milling machine
134	Two Glazing Bead Saw with automatic control
135	High Alumina Brick Refractories
136	Servo driven Spring Coiling Lathe Machine
137	Cold Heading Machine
138	CNC Engraving Machine
139	Pick and Place Machine
140	NC Cutter and Rotary
141	Radial CNC Multi Spindle Drilling Machine
142	Electrically heated Nitriding Furnace
143	CAM Machine
144	Travelling head clicking machine
145	Aluminum Profiling Extrusion Machines (Hydraulic using Variable Pumps with PLC Controlled)
146	Single Spindle Vertical Honing Machine with VFD control
147	Slant Bed CNC Lathe
148	Panel Cutter machine (PLC controlled)
149	CNC machining centre with Inverter controlled
150	Laser Cutting machine
151	Cylindrical Grinding Machine (with Inverter control)
152	CNC Tool and Cutter Grinder
153	CNC Column Moving Horizontal Machining Centre
154	Automatic end cutter
155	Intermix (with water cooled rotors)
156	Hydraulic Cone Crusher
157	5 axis CNC Tool and Cutter Grinding Machine
158	Flat Bed CNC Chucker
159	Vertical Sliding Head Machine
160	Turn Auto Loading and Unloading CNC Machine

161	Impregnating Plant with VFD controls
162	Automatic Vacuum Press
163	Fully Automatic Polishing Machine (with Frequency Converter)
164	Pilger Machine
165	Hydraulic Puller (with electronically controlled and brake hydraulic dynamometer)
166	Conveyor System
167	Polishing Machine
168	Hydraulic Deep Draw Press with Die Cushion complete with Hydraulic power pack (With PLC control)
169	Seam Welding Machine (with Microprocessor based weld control)
170	5 Axes Universal Milling Machine
171	Multi-wire Cutting Machine with Automatic control using PC
172	Fiber Laser Marking System
173	Gapframe Mechanical Press with PLC Control
174	Continuous Hardening and Tempering Line Furnace
175	Tube Straightening & Cutting Machine equipped with PLC
176	Serpentine Bending Machine equipped with PLC
177	Wire Flattening Mill
178	CNC/PLC based Sheet Metal Rolling and Forming Machine with VFD
179	Spooling Machines (with Variable Frequency Drive Control)
180	High Speed Metal cutting band saw with PLC and VFD control
181	AI&ML based IoT platform for Energy and Asset management
182	Air Pre Heater & Drying Bed in furnace
183	Automation and Control System
184	Automation of Withering Troughs
185	Back Pressure Turbine
186	BEE 5 Star Rated AC
187	Combustion Control System for Boiler
188	Condensate recovery system in boiler/jet drying machine
189	Desiccant-based cooling systems / DeVAP (Desiccant Enhanced Evaporative) HVAC
190	DeSuperheater for Chiller Compressors
191	Economiser in boiler/Thermic Fluid Heater
192	Electric annealing furnace
193	Electric Dry Vacuum Pumps
194	Electric Extrusion Melting
195	Electric Melting Furnace
196	Electrical Servo Drives
197	Energy Efficient Brushless Direct Current (BLDC) Fan
198	Energy Efficient Pumps - 5 Star Rating Pumps
199	Energy efficient Refrigeration Compressor
200	Energy Efficient Screw Compressor
201	Energy Efficient Turbo Blower
202	Energy recovery ventilation (ERV)
203	ETEKINA (Heat pipe technology for thermal energy recovery in industrial applications)
204	Gas Engine based co-generation technology

205	Gas fired Annealing furnace
206	Gas-fired Reheating Furnace with WHR System
207	Gasifier for Electrical Application
208	Ground & Water source Heat Pumps (GSHP)
209	Hanger Shot Blast Machine
210	Heat Exchanger
211	Heat Pump
212	Hot Air Generator from Briquette
213	Hydrogen fired Vapour absorption machine
214	IGBT based Induction furnace
215	IGBT based temperature control
216	Infrared (IR) Heaters
217	Light emitting diode (LED) Lighting
218	Light Pipe
219	Low-Grade Waste Heat Recovery System (LGWHR)
220	Magnetocaloric Refrigerator
221	Mechanical Vapor Recompression (MVR) Evaporator
222	Micro Turbine
223	Motors (IE3 or IE4 or IE5)
224	Oxy-fuel combustion in reheat furnace
225	PUF insulation
226	Recuperative burner for heat recovery for high medium temperature furnaces
227	Regenerative burners for high temperature furnaces
228	Screw Compressor with Permanent Magnet (PM) motor
229	Static Reactive Power Generator with Harmonics Filter
230	Steam operated pumping traps
231	Temperature controller for cooling tower fan
232	Thermo Compression
233	Tri-generation
234	Variable Frequency Drives (VFD)
235	Variable Refrigerant flow (VRF) in HVAC
236	Waste Heat Recovery for power generation
237	Compact Scan Digitizing System
238	Mechanical Press with PLC and VFD control
239	Electric Overhead Travelling Crane with VFD
240	PLC based Fully Automatic Sawing Machine
241	PLC based Vertical Boring Mill
242	CNC Surface Grinder Machine
243	Harmonic filter
244	Ceramic Fiber Insulation for Batch Furnaces
245	TIG welding machine (using thyristorised control)
246	Infrared Irradiation
247	Hot Water Generator
248	Turbulators (for gas fired boilers)

249	Vertical Roller Mill (VRM)
250	Alternative Fuels & Raw Material (AFR) Utilization
251	Energy efficient impeller
252	Methane Capture technology
253	Replacement of steam turbine drive with high-speed motor drive
254	Electric Vehicles and Charging Infrastructure
255	Nano composite surface treatment for condenser in power plant
256	Torrefaction Technology
257	CNC Bending Machine
258	CNC Gear Hobbing Machine
259	CNC Grinding Machine
260	CNC Horizontal M/c Centre
261	CNC Machine (Special Purpose Machine)
262	CNC Milling M/C
263	CNC Turn –Mill Centre
264	CNC Turret Punch Machine
265	CNC Wire Cut Machine
266	Falling Film Evaporator (Re-refining of Lubricating Oil)
267	Wiped Film Evaporator (Re-refining of Lubricating Oil)
268	Fine Grinding (CBN Surface Grinding Machine)
269	Gas Fired / Oil Crucible Melting Furnace
270	CNC Wire Cut
271	CNC Milling
272	CNC Lathe
273	Gas Based Generator set
274	Computerized Automatic Electroplating / Zinc Plants
275	Heavy Duty Horizontal Machining Center
276	CNC Hydraulic Press Brake
277	Automatic Electrostatic Powder Coating Machine
278	CNC Milling Machine - Vertical Machining Centre
279	PVD (Multi-arc Ion) Coating Machine
280	CNC 3 Axes Hobbing Machine
281	Sealed Quench Furnace (use of Thyristor Power Controller and PLC)
282	Paint Shop with Waste Heat Recovery System
283	CNC Hydraulic Guillotine Shearing Press
284	CNC Turret Punch Press
285	Continuous Gas Carburising Furnace with Endogas Generator
286	Electronic Spring Coiling Machines
287	CNC Gear shaving machine
288	Medium Frequency End- bar Heater
289	Electrical Annealing Bogie Furnaces
290	Gasifier for Melting and Reheating Process
291	Rotobertory Furnace

292	Aeroseal duct sealing technology
293	Energy Efficient technology for ECBC/Eco-niwas Samhita
294	Radiant Cooling
295	VAM Chillers
296	High Efficiency Automatic Door
297	High Efficiency Automatic Revolving Door
298	Woody Textile Insulator
299	Other Building Material Contributing to Increased Heat Insulation Performance of Building Equipment
300	Hollow Heading Machine
301	Heading Machine with Semi Cover
302	Carbon Fiber Fan
303	Hydraulic Coupling
304	CNC Based Gear Tester
305	Conveyorised Powder Coating Curing Oven
306	Energy Efficient Air Conditioner
307	Energy Efficient Refrigerators (High Efficiency Compressors, Improved Insulation and Precise Temperature and Defrost Mechanisms to Improve Energy Efficiency)
308	Vapour Absorption Refrigeration
309	Fuel Cell Cogeneration System
310	Energy Efficient Elevators
311	Equipment, Machinery and Construction Material Contributing to Increased Energy Savings
312	Heat Reclaim Ventilation / Air Conditioning System
313	High Efficiency Escalator
314	Inorganic Textile Insulator
315	Forming Plastic Insulator
316	Heat insulating opening material
317	Air Sealing Support Material
318	Heat Absorbing Glass / Low Emissivity Glass (Window Panel)
319	Common Effluent Treatment Plant
320	Machine Fixed-film Bio Reactor ETP
321	Membrane Bio Reactor ETP
322	Automatic Coil Winding Machine
323	Vacuum Impregnation plant
324	Semi-Automatic Press
325	Automatic CNC Core Cutting Machine
326	Hi Speed Precision Power Press with Computerized Control
327	Vacuum Impregnated Plant
328	Automatic/CNC Coil Winding Machine
329	Temperature Control Drying Oven
330	Amorphous Metal Core Transformers
331	CNC Core Cutting Machine
332	Natural Gas Based Oven
333	Microprocessor Based Electric Furnace
334	Plasma Cutting Inverter

335	Catalytic Enameling Machine
336	Extruder with Temperature Control, Pre- heating, Speed Control
337	XPLATE on FD Fan to improve boiler combustion efficiency
338	Solar PV Modules and Semi/Automatic Solar PV Module manufacturing Line
339	IGBT based welding machine
340	Windmills
341	Solar Photovoltaic
342	Micro Hydro
343	Biomass / Bagasse (Gasifier or Cogeneration)
344	Solar Water Heater
345	Wind Ventilator (Wind Powered Exhaust Fan)
346	Solar Power Inverters
347	Renewable Energy based Steam Boiler
348	Residual Derived Fuel (RDF) based Power Generation Plant
349	Powerless Ventilators
350	Renewable Energy Projects (Solar, Wind, biomass etc.) for both captive & non-captive purpose
351	Waste to Energy projects including Compressed Biogas Projects

Note-

(i) The above list is indicative and not exhaustive; additional technologies/machines may be considered by the AE for funding only where they fall within the approved scope and eligibility criteria of FMAP, are screened and categorized in accordance with the ESMS, and comply with applicable E&S standards.

(ii) The category indicated in the table reflects the typical risk profile of the technology/process itself. Where the same technology is proposed as part of (a) a brownfield enterprise expanding/modernizing in a new location, (b) a greenfield enterprise, or (c) an off-site RE/EE project, the final categorization of the overall subproject shall be determined through ESDD and site/legal screening. In such cases, the sub-project may be classified as Category B where land-related, siting, community health and safety, or other site-specific risks are assessed as moderate, site-specific, and manageable.
