PLEASE Project
Plastic Free Rivers and Seas for South Asia

South Asia Co-operative Environment Programme (SACEP) Plastic free Rivers and Seas for South Asia (P171269)

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) OF MATERIAL RECOVERY FACILITY - ICHCHHAKAMANA

GRANTEE: CREASION - NEPAL

Implemented by: SACEP
Supported by: UNOPS
Supported by: WORLD BANK GROUP

Environmental and Social Management Plan (ESMP)
Collaborative Approach for Preventing Plastic Waste Leakages in Rivers of Nepal-CREASION

Environmental and social risks and impacts are strongly linked to subproject location and scope of activities. This ESMP should be customized for each specific subproject location and activities.

1. Subproject Information

Subproject Title:	**Construction of Material Recovery Facility (MRF) in Ichchhakamana**
Estimated Cost:	USD 18,350
Start/Completion Date:	1st Feb 2024 / 31st Jan 2025

2. Site/Location Description

Material Recovery Facility (MRF) at Ichchhakamana Rural Municipality-04, Chitwan District is the sub project of the Project CAP (Collaborative Approach for Preventing Plastic Leakages in Rivers of Nepal), a project under PLEASE Project of South Asia Co-operative Environment Program (SACEP).

The Material Recovery Facility (MRF) is dedicated to reducing the volume of plastic waste recovered from landfills and riverbanks using baling machines to enable cost-effective transportation to the respective recycling facility. The goal of the MRF is to provide raw materials to the plastic recycling facility and to manage the plastic waste through value addition which automatically manages potential negative impacts and enhances positive outcomes.

The proposed MRF site is in Ichchhakamana Rural Municipality, Ward No. 04, in the Chitwan District of Bagmati Province (Annex 1). The facility is conveniently located around 1 kilometer (km) from Prithivi highway and 800 meters away from busy Kurintaar Bazar with easy access to transportation with paved roads up to the Ichchhakamana MRF. Similarly, it is 1 km away from the Trishuli River from the north. The municipality of the proposed MRF site is bounded on the east by Dhading district, on the west by Bharatpur municipality and Tanahu District, on the north by Gorkha District separated by the Trishuli River and on the south by Kalika municipality.

The facility is located at geographical coordinates 27° 52' 04" N latitude and 84° 37' 17" E longitude, with an altitude of 284 meters above mean sea level (AMSL). It lies within a humid, sub-tropical climatic zone and is surrounded by open, barren, and uncultivated agricultural land. Geographically, the area is part of the mid-land group within the sub-Himalayan topographic belt. The soil in the municipality comprises phyllites, shale, alluvial deposits, sandy and silty clay, gravel, and small pebbles. Baseline air quality measurements at the proposed MRF

site indicate PM 2.5 levels of 41 µg/m³, with a humidity level of 65% and a temperature of 29°C. Noise levels ranged from a minimum of 23 dB to a maximum of 64 dB, with an average of 46 dB.

The proposed project site is categorized as private land, located within the rural zone of Ichchhakamana Rural Municipality (RM) in Chitwan District. Covering an area of 994.75 square meters, 71.25 square meters of the total land will be used to develop the main project infrastructure, while the remaining 923.5 square meters will accommodate parking, loading and unloading areas, raw and finished product storage, a security guard area, and other auxiliary purposes. The master plan for the Ichchhakamana Material Recovery Facility (MRF) outlines the tentative land use for these various functions.

The site is well-served by a 4-meter-wide RCC road, transportation facilities, and municipal and hand-pump drinking water supplies. Its proximity to the Manakamana Temple, high-end hotels, and resorts highlights its tourism potential. The area experiences a humid, subtropical climate with summer temperatures reaching up to 34°C and winter temperatures dropping to 1°C. Average annual rainfall is approximately 138 millimeters.

Within a 1 km radius, the settlement density is sparse, with fewer residential houses compared to other parts of the municipality. Nearby amenities, including a college, the Armed Police Force's Disaster Management Training Center, and a local market, provide logistical advantages for raw material collection. The surrounding area consists mainly of open spaces and agricultural land, home to various tree species like Sisso, Pipal, Botdairo, Chilaune, Amala, Khirro, Koiralo, Siris, and Chir Pine, which are utilized by local communities for timber and fodder. The proposed site itself supports plant species such as Sisso, Bamboo, Bakain, Guava, Banana, and Koiralo etc.

The project site lies outside any national park or buffer zone of protected areas, with no significant impact anticipated on natural resources or vegetation. The terrain is characterized by gentle slopes with a gradient of less than 3°, situated in the mid-hill region. The project area has no significant forest zones, and solid waste will be managed at a designated landfill site, while wastewater will be treated through a septic tank system connected to the municipal sewage network.

The local community within a 1 km radius comprises Hindu, Buddhist, and Christian residents, primarily from the Chepang, Brahmin, Chhetri, and Gurung communities. The project's location and features ensure minimal environmental impact while promoting community engagement and sustainable development.

Master Plan Ichchhakamna.pdf

3. Subproject Description and Activities

The key activity of the MRF is to reduce the volume of the plastics waste commonly found disposed of on the landside and the riverbank. The primary purpose of the MRF is to collect, sort, and bale the PET plastics into smaller volumes, thereby reducing the amount of plastic waste transportation cost and increasing the recycling efficiency. The proposed MRF aims to collect 12 Tons of PET bottles monthly. This facility conserves natural resources, reduces energy consumption, costs and minimizes pollution associated with producing new plastic materials.

The key activity of the MRF is listed below:

A) Construction Phase

1. Land leasing
2. Land clearance and Fencing
3. Excavation and Foundation laying
4. Wall construction
5. Roofing and flooring
6. Changing rooms
7. Electric wiring / plumbing and sanitaryware fitting / finishing
8. Gardening and tree plantation

B) Operation Phase

1. Machineries import and fitting
2. Material Sorting
3. Operation of the facility and Baling of PET bottles
4. Generation of solid wastes, wastewater, air pollution

I) Solid waste sources: Raw material segregation, office wastes
II) Waste water sources: Sewerage
III) Air pollution sources: Loading and unloading by transporting trucks, vehicles, Baling machine

5. Transfer to PET Recycling Facility

4. ESMP Matrix: Risk and Impacts, Mitigation, Monitoring

The Environmental and Social Management Plan (ESMP) for the proposed MRF at Ichchhakamana aims to minimize the potential environmental and social risk due to the proposed Material Recovery Facility. Likewise, it also tries to address environmental sustainability and community development through enhanced waste management and economic opportunities. In Table 1 and 2 of the ESMP, it lists all the potential site specific adverse environmental and social risk and its impact and the parallel mitigation measures to be implemented in both construction and operation phase of the MRF. The identified risk is under the Environmental and Social Standards 1-10 given by the World Bank and the ESMP is prepared as per the procedures outlined in the Environmental and Social Management Framework ESMF of PLEASE project. The pre-identified this risk will ensure the project efficiency and outcomes.

Table 1 : ESMP for the construction Phase[1]

Anticipated E&S Risks & Impacts	**Risk Mitigation & Management Measures**	**Impact Mitigation**		**Impact/Mitigation Monitoring**			**Monitoring & Mitigation Cost (USD)**
		Location/Timing/ Frequency	**Responsibility**	**Indicators to be monitored**	**Methodology, including Location & Frequency**	**Responsibility[2]**	
Acquisition of applicable permits and licenses (urban development permit)	I) Submission of complete requirements for the processing Municipal Approval	Project Location/Before construction begins	Focal Person/ CREASION	Compliance to conditions of applicable public hearing minutes, municipal approval documents	Monitoring method: Provision of compliance matrix Monitoring period: Prior to start of construction activities	ES Officer Creasion/ UNOPS Country Team	*Included in Project USD 1200
Loss of existing vegetation and vegetative soil due to land clearance and preparation	I) No trees / vegetations need to be cut II) Green belt will be developed III) 30 native plants will be planted after the completion of construction work IV) Establishment of garden	Project Location/After Construction period	ES Officer /CREASION	Number of native plants, Survey reports	Monitoring method: Direct Observation Monitoring Period: Semi-annually	ES Officer Creasion/ UNOPS Country Team	*Included in Construction cost USD 400

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2 **Overall Monitoring and supervision of the implementation of ESMP will be done by the PIU and UNOPs Program team**

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Monitoring & Mitigation Cost (USD)
		Location/Timing/ Frequency	Responsibility	Indicators to be monitored	Methodology, including Location & Frequency	Responsibility[2]	
Vehicular traffic congestion and hindrance to public access due to heavy vehicle movement like material loaded trucks and trippers and risk of accidents	The MRF is stationed 1 kilometers (Km) south from the Prithivi highway, and 10 km from Mugling Bazar which will not impact vehicular movement; Measures Includes: I) Proper traffic signs will be installed in and around the MRF sites to caution highway vehicles to speed down II) Preparation and implementation Traffic Management Plan (TMP) with clear timeline for loading and unloading, speed limit and parking areas	Project Location/Continuous During Material transportation for construction Continuous	Contractor/CREASION	Use and no. of sign boards, Number of vehicular traffic congestion / accidents, Traffic Management Plan (TMP)	Monitoring method: Verification of Traffic Management Plan (TMP) Visual inspection of construction sites.	ES Officer Creasion/ UNOPS Country Team	*Included in Project Cost USD 50

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Monitoring & Mitigation Cost (USD)
		Location/Timing/ Frequency	Responsibility	Indicators to be monitored	Methodology, including Location & Frequency	Responsibility[2]	
Soil Pollution due to excavation and deposits of mucks, Generation of Construction waste, Debris, and mixed spoils like soil, dirt and gravels	I) Precautionary measures like use of the safety nets, tarpaulin, water sprinkles, use of the PPEs will be conducted during the construction for debris and deposits II) Construction will only take place adhering to the national standards III) Any construction waste and debris generated during the construction will be disposed in permitted municipal disposal site	Project Location/Construction period when necessary	Contractor/Implementing partner	Use of nets/clothes, condition of tools and equipment, Records and accumulation of waste and the disposal	Monitoring method: Direct observation, Site inception Monitoring Period: Monthly	ES Officer Creasion/ UNOPS Country Team	*Included in Construction Cost USD 250
Overuse of local water resources cause the community disputes,	I) Given requirement of the water	Project Location/During the Construction period	Contractor	Water usage records	Monitoring method: Direct observation	ES Officer Creasion/ UNOPS Country Team	*Included in Construction & Project Cost USD 150

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Monitoring & Mitigation Cost (USD)
		Location/Timing/ Frequency	Responsibility	Indicators to be monitored	Methodology, including Location & Frequency	Responsibility[2]	
pressure on local resources	municipal supply will be enough II) Hand Pumps will be installed for domestic water purpose				Monitoring Period: Monthly water usage checks		
Air pollution due to dust from:- Excavation and earthworks, Loading and unloading of construction materials, Emission from diesel generator, Machineries like dozer, release of air pollutants and particulate matters and its impacts on the health and safety of the workers and community	I) Precautionary measures will be adopted during the construction such as nets/ Tarpaulin for dust reduction and blowing II) Dust in the surrounding areas will be controlled through water sprinkling when necessary III) Use proper safety gears like N 95 masks as per the requirements for the protection of	During material storage, Project Location/Construction period	Contractor/Implementing partner	Air quality parameters, Air quality (PM 2.5), Use of nets/tarpaulin during construction	Monitoring method: Air Quality Monitoring, Baseline Air Quality Monitoring Report, Air Quality Monitoring Device, machineries maintenance record sheet, GRM form, Monitoring Period: Weekly, mid-term and end-term of construction	ES Officer Creasion/ UNOPS Country Team	*Included in Project USD 100

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Monitoring & Mitigation Cost (USD)
		Location/Timing/ Frequency	Responsibility	Indicators to be monitored	Methodology, including Location & Frequency	Responsibility[2]	
	the construction workers IV) Use of the good machineries and regular maintenance V) GRM form will be placed to gather any grievances from communities and the worker						
Noise and vibrations during construction activities due to excavation activity, Metal works and machinery use lead to public nuisance and health implications for workers	I) Prior notification to the community before the start of the project construction activities II) Greenery belt will be developed III) Use of earplugs IV) Assurance of construction work during the daytime	Project Location/Construction period/Daily	Contractor/Implementing partner	Noise level (dB) use of PPE. work schedule	Monitoring method: Baseline Data, Direct Observation, Decibel Meter, GRM form Monitoring method: Daily/Weekly/ Monthly	ES Officer Creasion/ UNOPS Country Team	*Included in Project USD 300

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Monitoring & Mitigation Cost (USD)
		Location/Timing/ Frequency	Responsibility	Indicators to be monitored	Methodology, including Location & Frequency	Responsibility[2]	
	V) Grievance Redress Mechanism (GRM) form will be placed to gather any grievances from communities and the worker VI) Schedule Work to Control Workers' Exposure to Noise						
Accumulation of the construction wastewater led to sanitation and hygienic concerns to workers and community, foul smell and water contamination	I) Temporary channel for the wastewater release to the municipality drainage for the period of construction work II) Construction of the safety tank for the toilet related wastewater management	Project Location/Construction period/Monthly	Contractor/Implementing partner	Channel of the waste water, clogging of the waste water, septic tank	Monitoring method: Direct Observation Monitoring method: Monthly	ES Officer Creasion/ UNOPS Country Team	*Included in Project USD 100

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Monitoring & Mitigation Cost (USD)
		Location/Timing/ Frequency	Responsibility	Indicators to be monitored	Methodology, including Location & Frequency	Responsibility[2]	
Accumulation of solid waste led to sanitation and hygienic concerns to workers and community and foul smell	I) Segregation of solid waste into decomposable, non-decomposable and reusable waste II) Regular disposal of other wastes to the designated landfill in coordination with local bodies III) GRM form will be placed to gather any grievances from communities and the worker	Project Location/During and After Construction period/Weekly	Contractor/Implementing partner	Storage area for solid waste, Records of regular disposal	Monitoring method: Visual inspection of storage area Verification of records, GRM form records Monitoring period: Weekly/Monthly	ES Officer Creasion/ UNOPS Country Team	*Included in Project USD 100
Theft and vandalism	I) Installation of security measures (fences, cameras)	Project Location/during Construction period /Monthly	Contractor/Implementing partner	Security incident reports, visitor registry	Monitoring method: Security logs, visitor logs Monitoring period: Weekly	ES Officer Creasion/ UNOPS Country Team	*Included in Project USD 300

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Monitoring & Mitigation Cost (USD)
		Location/Timing/ Frequency	Responsibility	Indicators to be monitored	Methodology, including Location & Frequency	Responsibility[2]	
Community Health and Safety issue due to occurrence of physical hazards, accidents and injuries	Measures Includes: I) Install barriers and signages II) Compulsory Registration of visitors at the entrance of the construction site III) Provision of PPE to visitors during the entry of construction site IV) Operate night light at the vicinity of construction sites V) Provision of adequate safer passageways for the public crossing the construction sites VI) Code of Conduct for Workers to ensure that they are inside the	Project Location/Construction period/weekly	Contractor/Implementing partner/GESI and Safeguarding Officer	Safety control such as signages, lightings, and barriers Health and safety records (near miss, first aid, lost time accident) Presence of security personnel, GRM	Monitoring method: Visual inspection of site Monitoring period: weekly	ES Officer Creasion/ UNOPS Country Team	*Included in Project USD 500

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Monitoring & Mitigation Cost (USD)
		Location/Timing/ Frequency	Responsibility	Indicators to be monitored	Methodology, including Location & Frequency	Responsibility[2]	
	camp in night time VII) Maintaining Accident Registry VIII) Provision of First Aid facility IX) Installation of the GRM mechanism						
Complaints Due to Project	Measures Includes: I) Establish the approved Project's Grievance Redress Mechanism (GRM), actions and implementation measures to GRM II) Publicize the existence of the Project's GRM through campaigns, websites, billboards, etc.	Project Location/Construction period/monthly	Contractor	Number of community complaints, status of grievance resolution	Monitoring method: Grievance Redress Mechanism, Complaint log and implementation measures on received complains Monitoring period: Monthly	ES Officer Creasion/ UNOPS Country Team	*Included in Project USD 200

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Monitoring & Mitigation Cost (USD)
		Location/Timing/ Frequency	Responsibility	Indicators to be monitored	Methodology, including Location & Frequency	Responsibility[2]	
	III) Ensure that the contact details are placed on notice boards and/or websites						
Occupational Health and Safety	Measures Includes: I) Provision of appropriate PPE as per the need of activities, safety training programs, and group accidental insurance to laborers/employees II) Strict safety protocols will be implemented for all electrical wiring activities. III) Emergency Health services, First Aid Kits, Emergency exit doors, and fire extinguishers	Project Location/Construction period/weekly	Contractor/ GESI and Safeguarding Officer	Number of incidents, training records; Verification of health and safety plan and records, availability of first aid, fire extinguisher, PPE etc	Monitoring method: direct observations, MoU with the health institutions, availability of the first aids Monitoring Period: Monthly	ES Officer Creasion/ UNOPS Country Team	*Included in Project USD 200

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Monitoring & Mitigation Cost (USD)
		Location/Timing/ Frequency	Responsibility	Indicators to be monitored	Methodology, including Location & Frequency	Responsibility[2]	
	IV) Provision of workers with adequate and well-ventilated camps, clean eating areas, and separate sleeping V) Separate changing rooms for male and female workers						
Risk of child labor	All recruitments will be conducted in accordance with the minimum age requirements of the Project, in compliance with national laws and ESS2 (Labor and Working Conditions). The age of all workers will be documented at the time of hiring to ensure adherence to these regulations.	At the site, throughout construction	Contractor and the Environmental and Social officer	Number of workers' grievances filed	Monthly monitoring	ES Officer Creasion/ UNOPS Country Team	Practical measure that does not need additional cost

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Monitoring & Mitigation Cost (USD)
		Location/Timing/ Frequency	Responsibility	Indicators to be monitored	Methodology, including Location & Frequency	Responsibility[2]	
Risk of forced labor	A Workers' GRM will be established, ensuring workers have access to the Project's GRM. Awareness will be raised in communities.	Throughout construction	Contractor	Number of grievances filed in workers' GRM	Monthly monitoring	ES Officer Creasion/ UNOPS Country Team	Practical measure that does not need additional cost
Non-compliance with the local regulatory requirements and workers' dissatisfaction due to extensive work requirements	A workers' GRM will be developed and implemented. An LMP will be developed and implemented in line with PLEASE Project LMP and national labor laws. Wages will be paid for workers as per Labor Management Procedures (LMP)	On-site, throughout activities	Contractor and HR Officer	Number of workers' grievances filed Availability and implementation of code of conduct. Payrolls Site visit and reviewing received complaints	Monthly Monitoring	ES Officer Creasion/ UNOPS Country Team	Practical measure that does not need additional cost

Table 2: ESMP for the Operation Phase

Anticipated E & S Risks and Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring Cost in USD
		Location/Timing/Frequency	Responsibility	Parameter to be monitored	Methodology/Location/Timing/Frequency	Responsibility	
High energy consumption and release of Greenhouse Gases (GHGs) due to use of machineries impacts on resource efficiency and use	I) Provision of rainwater harvesting II) Incorporating good ventilation in the design to reduce the energy consumed by air conditioning system	Project location, Water tank, electricity dashboard/monthly	Implementing partner	Energy consumption records, Assessment of carbon footprint reduction	Monitoring method: Energy usage reports Monitoring period: Monthly	ES Officer Creasion/ UNOPS Country Team	USD 300.00 *Included in the project cost
Traffic Management risks from movement from of vehicle around the MRF access due to movement of heavy vehicle movement like material loaded trucks and tippers for dropping and collecting materials for collection of PET bottles	i) Proper traffic signs will be installed in and around the MRF sites to caution highway vehicles to speed down, parking area will be allocated for the loading and unloading of the PET bottles ii) Traffic Management Plan to be prepared and implemented with clear timeline for loading and unloading the materials, parking area, speed limits and others	Project Location/Continuous during operation phase	Implementing Partner/CREASION	Use and no. of sign boards, Number of vehicular traffic congestion / accidents, Traffic Management Plan (TMP)	Monitoring method: Verification of Traffic Management Plan (TMP) Visual inspection of construction sites. Monitoring period: Continuous	ES Officer Creasion/ UNOPS Country Team	*Included in Project Cost USD 50

Anticipated E & S Risks and Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring Cost in USD
		Location/Timing/Frequency	Responsibility	Parameter to be monitored	Methodology/Location/Timing/Frequency	Responsibility	
Air pollution (vehicular movement, gravel roads)	I) Watering of roads, use of tarps/mesh tarps in vehicles during raw material transport	Near the project location, Generator, Semiannual air quality reports	Implementing Partner/CREASION	Air quality measurements	Monitoring method: Air quality measurements, Baseline Air Quality Monitoring Report, Semiannual air quality reports Monitoring period: Monthly/semi annual	ES Officer Creasion/ UNOPS Country Team	USD 200.00 *Included in the project Cost
Emission of pollutants (generator unit, Baling Machines; noxious gasses, Fumes and vapor, Foul smell from decomposed organic waste in PET bottles)	I) Mildly generated dust/emission by baling machines will be overcome by using N-95 masks as per the requirements II) Proper ventilation channel will be ensured in the MRF site III) Use of industrial fan to circulate the air into the MRF IV) Work schedule will be developed to reduce the impact of the emission to one worker	Project location, Inside MRF Weekly air quality monitoring	Implementing Partner/CREASION	Emission levels/ Use of mask/workers health checkup records, use of PPE, Grievance relevant to the dust/emission, availability of large ventilations	Monitoring method: Air quality monitoring, Baseline Reviewing Air Quality Monitoring Report Monitoring Period: Weekly	ES Officer Creasion/ UNOPS Country Team	USD 200.00 *Included in the project Cost

Anticipated E & S Risks and Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring Cost in USD
		Location/Timing/Frequency	Responsibility	Parameter to be monitored	Methodology/Location/Timing/Frequency	Responsibility	
	V) Work to be carried out only in day time						
Noise from Baling machine impacts on health of the workers and community	I) Use of safety gears, PPE, ear plugs II) Regular service, oiling and maintenance of machineries and vehicles used III) Maintenance of greenery IV) Works/activities confined to daytime	Generator, Project Location, Machinery, weekly Noise monitoring	Implementing Partner/CREASION	Noise level measurements, PPE, Maintenance record /Direct observation	Monitoring period: Daily (Mobile device) Monitoring Method: Noise monitoring, Baseline Noise Data	ES Officer Creasion/ UNOPS Country Team	USD 200.00 *Included in the project Cost
End waste handling and management, organic and sewage waste from washrooms	I) Introducing Standard Operating Procedure (SoP) II) Segregation of solid waste into decomposable, recyclable and non-recyclable waste; III) Decomposable waste will be converted into manure and use in MRF gardens	Project location, different departments of the project, Quarterly waste audits/monthly	Implementing Partner/CREASION	Waste handling records, use of PPE, SoP, waste audits	Monitoring method: Waste handling records, Waste audits, Monitoring period: Quarterly	ES Officer Creasion/ UNOPS Country Team	USD 300.00 *Included in the project Cost

Anticipated E & S Risks and Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring Cost in USD
		Location/Timing/Frequency	Responsibility	Parameter to be monitored	Methodology/Location/Timing/Frequency	Responsibility	
	IV) Recyclable PET waste will be sent to PRF site V) Proper disposal of non-recyclable waste to the designated municipal landfill sites						
Water pollution (Impact on water quality of receiving body of water from discharge of untreated wastewater from the facility)	I) Use of septic tank for toilet/domestic waste or connect to municipal sewer lines only after treatment (by chemical or aeration)	Project location, water sources, Monthly water quality tests	Implementing Partner/CREASION	Direct Observations	Monitoring period: Monthly Monitoring method: Inception reports/Direct observations	ES Officer Creasion/ UNOPS Country Team	USD 200.00 *Included in the project Cost

Anticipated E & S Risks and Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring Cost in USD
		Location/Timing/Frequency	Responsibility	Parameter to be monitored	Methodology/Location/Timing/Frequency	Responsibility	
Gender discrimination in job opportunity and wage	I) Compliance of Labour Act 2017 II) Preparation of Non discriminating guidelines for recruitment process III) Equal wages to male and female workers/employee IV) Anonymous reporting mechanism for incidence along with protection measures for individuals who report. V) Complain box/issue box installation VI) Timely payment on monthly basis VII) Guidelines, trainings and workshops on Gender Based Violence (GBV), SEA/SH	Project Location/Operation Period/ Daily	Operation officer/ Human Resource Officer/ GESI & Safeguarding Officer	Employee records; Complaint box; Anonymous report; Sex ratio or workers involved; Payment sheet, Guidelines on Gender Based Violence (GBV)	Monitoring method: Contract Agreement, Labor audits, site inception; Verification of sex ratio of the workers; Survey on Pay scale across different genders and ethnicities Monitoring Period: Daily/Monthly	ES Officer Creasion/ UNOPS Country Team	USD 200.00 *Included in the project cost
Occupational Health and Safety Issues	I) Implementation of Occupational Health	Project Location, as needed,	ES Officer/ Implementing	Number of incidents, training	Monitoring period: Monthly	ES Officer Creasion/	USD 200.00

Anticipated E & S Risks and Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring Cost in USD
		Location/Timing/Frequency	Responsibility	Parameter to be monitored	Methodology/Location/Timing/Frequency	Responsibility	
	and safety management plan II) Provision of PPE as per the work, safety training programs III) Accidental insurance to laborers/employees IV) Preparation and implementation of Emergency Evacuation Plan V) Provision of Safety kits, Emergency Health services, First Aid Kits, Emergency exit doors, fire extinguishers VI) Provision of waste workers with adequate and well-ventilated camps, clean eating areas VII) Separate changing rooms for male and female workers	Monthly safety audits	Partner / GESI and Safeguarding Officer	records, Use of PPE, emergency exit plan, availability of First Aid kits, availability of fire extinguisher, workers shelters	Monitoring method: Direct observation, accidents records, safety audits, review of Emergency evacuation plan	UNOPS Country Team	*Included in the project cost

Anticipated E & S Risks and Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring Cost in USD
		Location/Timing/Frequency	Responsibility	Parameter to be monitored	Methodology/Location/Timing/Frequency	Responsibility	
Sexual Exploitation, Abuse and Harassment	I) Prepare and implement a simple SEA/SH action plan. II) Code of Conduct for all workers to be implemented. III) Proper safety measures for workers from sexual exploitation, abuse and sexual harassment IV) Availability of a separate washroom, and changing room V) Provision of anonymous reporting and complaining system VI) Regular t mandatory training sessions for all employees on recognizing, preventing, and responding to SEA/SH.	Project location / Operation period	GESI and Safeguarding Officer	Direct interviews with workers	Monitoring method: Site observation, direct interviews and group discussion with women workers Monitoring period: Monthly, Depends on Number of complain received and the measures taken	ES Officer Creasion/ UNOPS Country Team	USD 100.00 *Included in the project cost

Anticipated E & S Risks and Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring Cost in USD
		Location/Timing/Frequency	Responsibility	Parameter to be monitored	Methodology/Location/Timing/Frequency	Responsibility	
	VII) GRM to be established						
Poor working conditions due to insufficient office space, safety gears, pay scale, basic facilities impact on employee morale, productivity, mental health, Hygiene, workers disputes	I) Implementation of employee welfare programs like Employees Provident Fund, Allowances II) Regular workshops and trainings to the workers and employee III) Implementation of safer hygienic workplace IV) Availability of the food and the services V) Availability of separate rest room and toilets for the male and female workers	Project location, Bi-annual surveys	Implementing Partner/ES Officer	Employee satisfaction surveys, GRM, training/workshops numbers, implementation of labour law and company HR policy	Bi-annual surveys Standard Operation Procedure	ES Officer Creasion/ UNOPS Country Team	USD 200.00 *Included in the project cost

Anticipated E & S Risks and Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring Cost in USD
		Location/Timing/Frequency	Responsibility	Parameter to be monitored	Methodology/Location/Timing/Frequency	Responsibility	
Community Health and Safety	I. Provision of security personnel to restrict public access II. Operate night light at the vicinity of MRF site III. Installation of Complaint box, availability of the contact number of focal person	Project Location/Operation period	Implementing Partner/CREASION	Monitoring method: Safety control such as signages, lightings, and barriers Health and safety records (near miss, first aid, lost time accident) Presence of security personnel, complain box Monitoring period: Monthly	Monitoring method: Visual inspection of site Monitoring period: Daily	ES Officer Creasion/ UNOPS Country Team	USD 200.00 *Included in the project cost
Complaints Due to Project	Measures Includes: I. Establish the approved Project's Grievance Redress Mechanism (GRM) and actions for the GRM II. Publicize the existence of the Project's GRM through campaigns, websites, billboards, etc.	Project Location/Operation period	Implementing Partner/CREASION	Number of community complaints	Monitoring method: Grievance Redress Mechanism, Complaint log and implementation Monitoring period: Monthly	ES Officer Creasion/ UNOPS Country Team	USD 200.00 *Included in the project cost

Anticipated E & S Risks and Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring Cost in USD
		Location/Timing/Frequency	Responsibility	Parameter to be monitored	Methodology/Location/Timing/Frequency	Responsibility	
	III. Ensure that the contact details are placed on notice boards and/or websites						
Non-compliance with the local regulatory requirements and workers' dissatisfaction due to extensive work requirements	An LMP will be developed and implemented in line with PLEASE Project LMP and national labor laws. A workers' GRM will be established. Wages will be paid following prevailing national laws.	At the MRF Facility, daily	Facility Manager and HR Officer	Number of workers' grievances filed Payrolls	Monthly monitoring	ES Officer Creasion/ UNOPS Country Team	Practical measure that does not need additional cost
Risk of child labor at the facility	Recruitment will be conducted in accordance with the minimum age requirements of national laws and the age of workers will be documented upon hiring. The age of workers will be verified with National Identity cards/Birth certificates and communities where required.	At the MRF Facility, daily	Operation Manager-MRF	Number of workers' grievances filed	Monthly monitoring	ES Officer Creasion/ UNOPS Country Team	Practical measure that does not need additional cost

Anticipated E & S Risks and Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring Cost in USD
		Location/Timing/Frequency	Responsibility	Parameter to be monitored	Methodology/Location/Timing/Frequency	Responsibility	
Risk of forced labor	Provide workers' GRM and access to Project GRM. Awareness will be raised within communities regarding the dangers and implications of forced labor.	Throughout operation	Operation Manager-NRC	Number of grievances filed in workers' GRM	Monthly monitoring	ES Officer Creasion/ UNOPS Country Team	Practical measure that does not need additional cost

5. Institutional Arrangement

The establishment of the Material Recovery Facility (MRF) at Ichchhakamana poses minimal risk to the surrounding environment and community due to its smaller capacity and the absence of PET bottle processing. To address potential risks, the Environmental and Social Management Plan (ESMP) outlines mitigation measures that must be implemented during both construction and operation. During the construction phase, these measures will be carried out by the Contractor and CREASION, with monitoring handled by the Environmental Safeguarding (ES) Officer of CREASION and the UNOPS Country Team. Similarly, in the operational phase, the implementing partners and CREASION will be responsible for executing the mitigation measures, while the ES Officer and UNOPS Country Team will ensure proper supervision. All parties involved are committed to adhering to the ESMP and implementing the necessary actions to minimize environmental and social risks.

6. Capacity Development

CREASION in coordination with local stakeholders will develop a training, capacity-building, and awareness program for all its employees and contractors to implement project ESMP, and other Safeguard Instruments/tools/ plans associated with the ESMP of MRF located at the Ichchhakamana. All new employees and contractors will participate in mandatory induction sessions that cover essential topics, including occupational health and safety, environmental awareness, community engagement, and other relevant areas. This training program will lead to an understanding of the standards to be followed during both construction and operation phase of the MRF. Audio Visual Presentations, newsletters, and posters, along with verbal communication during routine briefings, will be utilized to raise awareness on various occupational, health and safety, and community-related issues. This training will be targeted to provide all personnel with information about business continuity and emergency response and planning. Also, during the construction phase, emergency exercises related to earthquakes, fires, accidents, emergency health issues and emergency response plans etc. will be planned and implemented. Events such as a work accident, hazardous situation, near-miss in the field will be recorded regularly and the training program will be revised in the light of this information.

CREASION will mandate the orientation and capacity training for any new employees or the recruitment.

Training on emergency preparedness and response will consist of the following elements:

- Induction training
- Job-specific expert training (e.g. excavation operators, Machine operations, Safety measures for waste workers)
- Workshops on MRF ESMP indicators and role identification
- Training of Emergency Evacuation Plans
- Training on Personal Protective Equipment (PPE)
- Training on Grievance Redress Mechanism (GRM)
- Workshops on Gender Based Violence (GBA), SEA/SH
- Provide training on recognizing, preventing, and responding to SEA and SH
- Compliance and regulatory trainings/workshops

7. Implementation Schedule and Cost Estimates

Mitigation Measures Implementation Timeline and Cost Estimates **Construction Phase**							
Risk Mitigation and Management Measures	**Nov**	**Dec**	**Jan**	**Feb**	**March**	**Schedule**	**Estimated Cost (USD)**
I) Submission of complete requirements for the processing Municipal Approval						Prior to start of construction activities	1200.00 *Included in Project Cost
I) Green belt will be developed II) 30 native plants will be planted after the completion of construction work III) Establishment of garden						Semi-annually	400.00 *Included in project cost
I) Proper traffic signs will be installed in and around the MRF sites to caution highway vehicles to speed down II) Preparation and implementation of Traffic Management Plan (TMP) with clear timeline for loading and unloading, speed limit and parking area						Weekly	50.00 *Included in project cost
I. Precautionary measures like use of the safety nets, tarpaulin, water sprinkles, use of the PPEs will be conducted during the construction for debris and deposits						Daily	100.00 *Included in project cost
I. Construction will only take place adhering to the national standards						Daily	
I. Any construction waste and debris generated during the construction will be disposed of in a permitted municipal disposal site.						Monthly	
I. Given requirement of the water municipal supply will be enough II. Hand Pumps will be installed for domestic water purpose						Monthly	150.00 *Included in project cost

Mitigation Measures Implementation Timeline and Cost Estimates **Construction Phase**							
I. Precautionary measures will be adopted during the construction such as nets for dust reduction and blowing						Weekly (as needed)	100.00 *Included in project cost
I. Dust in the surrounding areas will be controlled through water sprinkling						Daily (As needed)	
I. Use proper safety gears like N 95 masks as per the requirements for the protection of the construction workers II. Use of the good machineries and regular maintenance III. GRM form will be placed to gather any grievances from communities and the worker						Daily	
Measures Includes: I. Prior notification to the community before the start of the project construction activities						Weekly (As needed)	300.00 *Included in the project cost
I. Greenery belt will be developed						Semi annual	
I. Use of earplugs						Daily	
I. Assurance of construction work during the daytime II. Grievance Redress Mechanism (GRM) form will be placed to gather any grievances from communities and the worker						Daily	
I. Schedule Work to Control Workers' Exposure to Noise						Daily	
Temporary channel for the wastewater release to the municipality drainage for the period of construction work						Monthly	100.00 *Included in the constructio n cost
Construction of the safety tank for the toilet related wastewater management						Semi annually and Daily	

Mitigation Measures Implementation Timeline and Cost Estimates **Construction Phase**							
GRM form will be placed to gather any grievances from communities and the worker							
I) Segregation of solid waste into decomposable, non-decomposable and reusable waste						weekly	100.00 *Included in the construction cost
I) Regular disposal of other wastes to the designated landfill in coordination with local bodies						Weekly	
Measures includes: I) Installation of security measures (fences, cameras)						Weekly	300.00 *Minimal Cost included
Install barriers and signages						Monthly	500.00 *Included in the Project Cost
Compulsory Registration of visitors at the entrance of the construction site						Daily	
Provision of PPE to visitors during the entry of construction site						Daily	
Operate night light at the vicinity of construction sites Code of Conduct for Workers to ensure that they are inside the camp in night time						Daily	
Provision of adequate safer passageways for the public crossing the construction sites						Monthly	
Maintaining Accident Registry; Provision of First Aid facility Installation of the GRM mechanism						Daily	
Measures Includes: I. Establish the approved Project's Grievance Redress Mechanism (GRM), actions and implementation measures to GRM						Monthly	200.00 *Included in the project cost
I. Publicize the existence of the Project's GRM through campaigns, websites, billboards, etc.						Monthly	
I. Ensure that the contact details are placed on notice boards and/or websites						Monthly	

Mitigation Measures Implementation Timeline and Cost Estimates **Construction Phase**							
Measures Includes: I. Provision of appropriate PPE as per the need of activities, safety training programs, and group accidental insurance to laborers/employees						Monthly	200.00 *Included in the construction cost
I. Emergency Health services, First Aid Kits, Emergency exit doors, and fire extinguishers						Monthly	
I. Provision of workers with adequate and well-ventilated camps, clean eating areas, and separate sleeping						Monthly	
I. Separate changing rooms for male and female workers						Monthly	
						Monthly	500 *Included in the construction cost
Sub Total							**USD 4,250**

8. Attachments

Annex 1	Annex 1_Map of the Ichchhakamana MRF Project Location.docx
Annex 2	Company Registration.jpeg
Annex 3	Ichchhakamana Land documents
Annex 4	GRM form
Annex 5	RBG_Nepal_Creasion E&S_Ichchhakamana_20241224-RK.docx
Annex 6	OST Training .pptx
Annex 7	Occupational Safety Training Module.pdf
Annex 8	Annex 8: Mitigation Measures Implementation Timeline and Cost Estimates_Annex 7: Mitigation Measures Implementation Timeline and Cost Estimates_Construction Phase .docx
Annex 9	Baseline Air and Noise Data.docx

Annex 10	Draft Master Plan Ichchhakamana.pdf
Annex 11	GRM Format_Share_CAP.docx
Annex 12	Labour Management Procedure_Format_Share_CAP.docx

IV. Review & Approval

Prepared By: Lila Paudel and Ujjwal Upadhyay Position: ES Officer / Team Lead Date: December 11 , 2024	
 **Reviewed By:** :Rajendra Khanal (Signature) Position: Project Manager Date 11, December, 2024	 **Approved By**: Position: Environment and Social Development Specialist. SACEP Date 01,January, 2024