

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

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN
FOR PROJECT: THE GREEN INITIATIVE TO REDUCE
PLASTIC POLLUTION

GRANTEE: THE GREEN ROAD - BHUTAN

Implemented by:



Supported by:



Supported by:



Environmental and Social Management Plan (ESMP)

Green Road

1. Subproject Information

Subproject Title:	Utilization of Waste Plastic in Road- Green Road by Green Road Bhutan
Estimated Cost:	USD 120,000
Start/Completion Date:	1 July 2024 - 31 st March 2025

2. Site/Location Description

The sub-project "Utilization of Waste Plastic in Roads," implemented by Green Road, will be carried out at the Bjemina Industrial Estate.

Bjemina Industrial Estate is a government-owned industrial area located in the Thimphu Valley of Bhutan. The estate was allocated by the Department of Industry (DoI), Ministry of Industries, Commerce, and Employment (MoICE), among various other manufacturing, fabrication, and construction material industries. The estate serves as a hub for industrial development while mitigating environmental and social impacts on urban settlements. One notable enterprise within the estate is The Green Road, a company pioneering the use of plastic waste in road construction. Established in 2015, The Green Road collects plastic waste, processes it at their Bjemina facility, and utilizes it to blacktop roads, promoting environmental sustainability. The surrounding area of Bjemina is characterized by its industrial activities, with several factories and plants operating within the estate. The locality is accessible via the main highway connecting Thimphu to the southern regions, making it a strategic location for industrial operations.

Bjemina Industrial Estate is accessible by road, branching off from the Thimphu-Phuentsholing highway at Khasadrapchu. The estate is about 15 kilometers from Khasadrapchu, crossing the Thimphu River and following the Bjemina Chhu (stream) upstream. Established in the early 2000s, the industrial zone was developed to relocate industries away from Thimphu's urban center, ensuring a more sustainable and regulated industrial expansion.

As the site is located in Bjemina Industrial Estate, the surrounding area consists of scattered rural settlements, but the industrial estate is fully demarcated with stone masonry walls and hollow brick boundaries. The Bjemina Chhu flows approximately 200 meters downhill in the valley, with no other water bodies passing through the estate aside from stormwater drains from individual industries. A dedicated 33/11kV power substation ensures a stable hydroelectric supply, and all industrial units have access to three-phase power connections.

On the upper side of Green Road, the Highland Wood Factory, located adjacent to the Green Road Facility, is a metal fabrication workshop and a woodworks industry located on the upper hillside, with the main industrial access road running in between. A hollow brick manufacturing unit is situated on the downhill boundary of the facility.

The site features an existing small structure with a concrete floor and plinth protection. The foundation is constructed with Random Rubble Masonry (RRM), and the superstructure consists of CGI sheet walls and roofing, supported by a steel truss framework.

Climatic conditions in Bjemina are similar to other parts of Thimphu District, with an altitude of approximately 2360 meters above sea level. The valley is relatively narrow, with weather patterns comparable to Babesa, Dechencholing, and Motithang. The region experiences dry months from December to March, followed by seasonal rainfall.



[The geographical coordinates for the location are 27.4241139° North latitude and 89.5517486° East](#)

3. Sub-Project Description and Activities

3.1 Project interventions

The project aims to establish a waste plastic collection network in Thimphu, promoting improved plastic waste management and ensuring a sustainable, consistent supply of plastic waste for recycling. Green Road sources plastic waste through multiple channels, including:

- Municipal waste collection partnerships – Collaborating with local waste management authorities to recover plastic waste from urban centers.
- Community engagement programs – Encouraging households, businesses, and schools to participate in plastic waste collection through initiatives such as the Eco-Bricks Challenge and advocacy campaigns.

- Direct Plastic Procurement – Purchasing plastic waste from individuals and businesses to incentivize responsible waste disposal practices.

Upon collection, the plastic waste will be sorted and processed. New plastic shredding units will be installed at the facility to shred the material into plastic flakes. These flakes will then be directed into the recycling process for further utilization, ensuring efficient material recovery and promoting sustainable recycling practices.

3.2 Use of collected plastic for road construction activities

The plastic materials collected through the project will be sent to the asphalt plant at the Bjemina Industrial Estate, which is equipped with modern technology to process plastic into usable materials for road construction. The process involves melting and blending plastics with bitumen for road resurfacing.

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

4.1 ESMP matrix for Plastic collection and shredding unit under PLEASE project

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring cost in USD
		Location/ Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
Exposure to dust during loading and unloading of plastic waste can lead to respiratory issues, eye irritation, and other health problems among workers	<ol style="list-style-type: none"> 1. Providing required PPEs 2. Preparation of SOPs with the guidelines on safety. 3. Daily safety briefing to the workers 4. Conducting frequent medical check-ups for employees 	During the loading and unloading at the site throughout the project period	Project Manager Green Roads	Use of PPEs Availability of guidelines/ SOP Records of medical check-ups	Monthly visit throughout the project period	Executive Director Green Roads Technical Expert-UNOPs Bhutan Country team	USD 500 (PPEs-200 Medical check ups-120)
Transporting plastic via narrow, mountainous roads may cause delays, increased fuel use, emissions, and noise, impacting the environment and causing public nuisance.	<ol style="list-style-type: none"> 1. Optimized routing using GPS tracking to reduce fuel consumption and emissions 2. Adjustment of collection schedules to avoid peak traffic hours 3. Vehicle load management to ensure safe and efficient transport 4. Provide GRM for communities. 	During scheduling and transportation	Project Manager Green Road	Collection/transportation schedules fuel consumption records Frequency of transportation Report grievances	Monthly visit throughout the project period	Executive Director Green Roads Technical Expert-UNOPs Bhutan Country team	USD 100 (GRM -100)

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring cost in USD
		Location/ Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
Noise generation during machines' operations may cause public nuisance and health implications to workers	<ol style="list-style-type: none"> Maintaining noise level at the boundary limit as per the National Standards Providing appropriate PPEs for the workers Limiting work exposure & providing a resting hour Selection of machines with less noise 	<p>Daily at the Bjimena facility</p> <p>During Machinery procurement phase</p>	Project Manager Green Roads	<p>Noise level at the boundary</p> <p>Use of earplugs by workers</p> <p>Machine maintenance record</p>	Monthly site audits	Executive Director Green Roads Technical Expert-UNOPs Bhutan Country team	USD 150 (PPEs - 150)
Workers' exposure to hazardous waste during the sorting process	<ol style="list-style-type: none"> Conduct training sessions for households and suppliers on proper waste segregation Minimize the acceptance of hazardous waste Implement proper training for workers on handling hazardous waste safely. Establish clear protocols for 	<p>Daily at the Bjimena facility</p> <p>During Machinery procurement phase</p>	Project Manager Green Roads	<p>Availability of training records</p> <p>Availability of medical check-up records</p> <p>Availability of protocols for hazardous waste handling</p>	Monthly site audits	Executive Director Green Roads Technical Expert-UNOPs Bhutan Country team	USD 200 (Training and awareness of households and suppliers-50 Training for workers on handling hazardous

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring cost in USD
		Location/ Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
	<p>hazardous waste handling and disposal to minimize exposure.</p> <p>5. Ensure regular health check-ups for workers to detect any early signs of health issues.</p>						<p>waste-50</p> <p>Medical check-ups for workers (-100)</p>
Operations OHS risks for workers during the operation	<ol style="list-style-type: none"> 1. Separate sanitary facility for male and female 2. Access to safe drinking water and a clean dining area 3. Training on safety and proper use of personal protective equipment (PPE) and daily safety briefing 4. Provision of a First aid box 5. Installation of fire extinguisher 6. Adopt and train on the Emergency preparedness plan 7. Maintain accident registry 8. Perform regular 	At Facility, daily	Project Manager Green Roads	<p>Availability of adequate sanitary facilities,</p> <p>Use of PPEs</p> <p>Availability of valid Fire extinguishers,</p> <p>Availability of First Aid box</p> <p>Accident records and follow up actions available</p> <p>Availability of Emergency Preparedness plan</p>	Monthly site audits	<p>Executive Director Green Roads</p> <p>Technical Expert-UNOPs Bhutan Country team</p>	<p>USD 500</p> <p>(Provision of separate sanitary facilities, clean dining area, and safe drinking water-150</p> <p>PPE and safety training-50</p> <p>First Aid box & fire extinguisher -100</p> <p>medical</p>

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring cost in USD
		Location/ Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
	<p>medical check-ups for workers</p> <p>9. Display Instruction Boards</p> <p>10. Provide workers GRM</p>			<p>Number of awareness sessions on the plan</p> <p>Medical check-up records</p>			check-ups-100)
Risks of Sexual exploitation and abuse (SEA) and sexual harassment (SH) among workers and between workers and community members at the facility	<p>1. Develop PSEA policy and conduct training for the workers.</p> <p>2. Provide a workers' grievance redress mechanism (Workers' GRM), incorporating SEA/SH Focal Points for both genders and an effective referral mechanism.</p> <p>3. Provide an anonymous reporting system along with protection measures for individuals who report.</p> <p>4. Provide referrals to SEA/SH service providers as required.</p> <p>5. Provide training on recognizing, preventing, and responding to SEA/SH</p>	At Facility, daily	Project Manager Green Roads	<p>Availability of workers' GRM and SEA/SH Focal Points</p> <p>Availability of reporting system</p> <p>Number of SEA/SH awareness sessions for a) workers, and b) surrounding communities</p> <p>Availability of CoC</p> <p>Percentage of workers that have signed the CoC</p>	Monthly site audits	Executive Director Green Roads Technical Expert-UNOPs Bhutan Country team	USD 350 - (PSEA policy and training-250 GRM-100)

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring cost in USD
		Location/ Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
	<p>for workers and communities.</p> <p>6. Prepare a Code of Conduct for workers at the facility that includes reference to SEA/SH</p> <p>7. Ensure workers at the facility sign a Code of Conduct (CoC)</p>						
Risk of child labor and forced labor at facility	<ol style="list-style-type: none"> 1. Comply with minimum age requirements of national laws and document age of workers upon hiring. 2. Verify age of workers with communities where required 3. Provide workers' GRM and access to Project GRM 4. Raise awareness in communities 	At the Facility, daily during the recruitment	Project Manager Green Roads	<p>Availability of meeting and training records</p> <p>Availability of a GRM</p>	Monthly site audits	Executive Director Green Roads Technical Expert-UNOPs Bhutan Country team	No additional cost involved
Gender discrimination in job opportunities and wages	<ol style="list-style-type: none"> 1. Preparation of non-discriminatory guidelines for recruitment process and operations 	At Facility, daily	Project Manager Green Roads	<p>Availability of HR Policy</p> <p>Grievance Redress Mechanism</p>	Monthly site audits	Executive Director Green Roads Technical Expert-UNOPs	No additional cost involved

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring cost in USD
		Location/ Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
	<p>affecting all levels of workers.</p> <p>2. Equal wages to male and female workers.</p>					Bhutan Country team	
Lack of stakeholder engagement	<p>1. Establish a site-specific stakeholder map that includes vulnerable groups, project-affected parties, and other interested parties</p> <p>2. Define information dissemination channels for the identified stakeholders and provide sub-project related information</p> <p>3. Define consultation channels of the mapped stakeholders and conduct consultations of all stakeholders, including on environmental and social risks and mitigation measures</p>	Through our project period	Project Manager Green Road	<p>Availability of stakeholder mapping</p> <p>Number of project information dissemination events</p> <p>Number of consultations with identified stakeholders</p> <p>Number of consultations with identified members of vulnerable groups</p>	Monthly site audits	<p>Executive Director Green Roads</p> <p>Technical Expert-UNOPs Bhutan Country team</p>	No additional cost involved

4.2 ESMP Matric for Road Construction

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring cost in USD
		Location/ Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
Air pollution during the mixing process of plastic and bitumen for Plastic Roads and health implications for the workers.	<ol style="list-style-type: none"> 1. Use enclosed machines to minimize exposure. 2. Install proper ventilation and air filtration systems at the mixing site to reduce emissions. 3. Provision of appropriate PPEs 4. Conduct regular air quality monitoring to ensure compliance with safety standards 5. Train workers on safe handling procedures and exposure risk management 6. Regular health check-ups for the workers 	At the asphalt plant During the mixing process	Project Manager Green Roads	Use of PPEs Availability of filtration system Air quality monitoring records Training records Health check-up records	Monthly site visit	Executive Director - Green Roads Technical Expert-UNOPS Bhutan Country team	USD 500 (ventilation system-1000 PPEs-50 Air quality monitoring-100 Training of staff-50 Medical check-ups-100)

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring cost in USD
		Location/ Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
Leakages from the vehicles and other construction equipment can cause soil and water contamination.	<ol style="list-style-type: none"> 1. Regular maintenance and inspections of vehicles and construction equipment to prevent leaks. 2. Refueling to be conducted in controlled areas (away from sensitive areas) 3. Use spill containment measures, such as drip trays or absorbent pads, under parked or idling vehicles. 4. Keep spill kits readily available at work sites to enable immediate cleanup of any leaks. 5. Promptly clean up any spills using appropriate absorbent materials and dispose of contaminated waste properly. 	At Road construction sites	Project Manager Green Roads	<p>Maintenance records</p> <p>Use of containment measures</p> <p>Availability of spill kits</p> <p>Number of spill reported</p>	Monthly site visit	Executive Director - Green Roads Technical Expert-UNOPS Bhutan Country team	<p>USD 200</p> <p>(maintenance & inspections of vehicles-100)</p> <p>Cleanup and proper disposal of contaminated waste-100)</p>

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring cost in USD
		Location/ Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
Loss of vegetation due to land clearance for the road construction activities.	<ol style="list-style-type: none"> 1. Minimise removal where possible. 2. Limit land clearance, excavation works, and disturbance of natural environment to within the road reserve/right of way. 3. Avoid disturbances to flora and fauna under special conservation status 4. Re-plant/ plant indigenous tree species as a compensation measure 	At Road construction sites	Project Manager Green Roads	<p>Area of vegetation clearance</p> <p>Number of trees planted as compensation</p>	Monthly site visit	Executive Director - Green Roads Technical Expert-UNOPS Bhutan Country team	USD 200 (Re-plant/ plant Indigenous tree species -200)
Increased risk of erosion, landslide, and sediment accumulation on the surface and/or groundwater systems during the land clearance and the excavations	<ol style="list-style-type: none"> 1. Schedule/stage works to minimize cleared areas and exposed soils at all times. 2. Conduct excavation and sensitive construction activities during the dry season. 3. Avoid long exposure of opened excavated/cut areas. 4. Design stormwater management measures to reduce flow velocities and avoid concentrating runoff. 5. Silt fences or similar 	At Road construction sites, throughout the construction	Project Manager Green Roads	<p>Sign of erosions, landslides</p> <p>Availability of work schedule</p> <p>Availability of stormwater management measures, such as a Silt fence or similar structures</p>	Monthly site visit	Executive Director - Green Roads Technical Expert-UNOPS Bhutan Country team	USD 200 (Install silt fences or similar structures to reduce sediment loads-200)

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring cost in USD
		Location/ Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
	<p>structures to be installed to protect and reduce sediment loads.</p> <p>6. Utilise site barriers or fencing if excavation considered hazardous to the community</p>						
Air pollution due to the machine operations and earth works, such as ground leveling and preparations for the road constructions- due to the increase of dust generations, the spread of dust, and the emission of pollutants	<ol style="list-style-type: none"> 1. Spray water on exposed surfaces during dry periods. 2. Use a cover for trucks and vehicles that are transporting materials that are likely to be blown by the wind 3. Locate material stockpile areas as far as practicable away from sensitive receptors. Cover the stockpile if possible and appropriate. 4. Ensure all construction vehicles, plant and machinery are well maintained and in full operating condition. 5. Direct exhaust emissions of mobile plants and 	At the Road construction sites, throughout the construction, during transportation, and machine operations	Project Manager Green Roads	<p>Records of water spray</p> <p>Vehicle maintenance records</p> <p>The location of the pile area</p>	Monthly site visit	<p>Executive Director - Green Roads</p> <p>Technical Expert-UNOPS Bhutan Country team</p>	No additional cost involved

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring cost in USD
		Location/ Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
	machinery, such as the concrete mixers and other machinery, away from the ground.						
Pollution of nearby water body and soil due to improper disposal of construction wastes	<ol style="list-style-type: none"> 1. Construction materials will not be stockpiled in proximity to aquatic environments that may allow for release into the environment. 2. Waste to be disposed of offsite at an approved facility agreed with the municipality and as per the national Environment Law. 3. Recyclable waste (including oil and some construction waste) collected separately and disposed of correctly, and/or designated facility 4. Orientation provided to all construction workers, and daily onsite waste management practices are carried out on site 5. Proper storage, transport and disposal of hazardous 	At Road construction sites, throughout the construction	Project Manager Green Roads	Waste accumulation records and waste disposal reports Records of training	Monthly site visit	MD-GreenRoads Technical Expert-UNOPS Bhutan Country team	USD 300 (Staff training and awareness -100 disposal of hazardous waste-200)

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring cost in USD
		Location/ Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
	wastes (oily wastes, used batteries, fuel drums) in the designated areas by the national/municipal authorities in accordance with the National Environmental Law.						
Public nuisance due to the noise generation and vibrations	<ol style="list-style-type: none"> 1. Limit work to daylight hours. Schedule noisy construction activities during specific times of the day. 2. Conducts employee and operator training to improve awareness of the need to minimize excessive noise in work practices through the implementation of measures. 3. Install noise reduction devices such as silencers and mufflers as appropriate to mobile plants and equipment. 4. Establishment of GRM for the community 	At Road construction sites, throughout the construction	Project Manager Green Roads	Work schedule Training records Availability of noise reduction devices Number of Grievances reported	Monthly site visit	Executive Director - Green Roads Technical Expert-UNOPS Bhutan Country team	USD 100 (Staff training-50 GRM training -50)
Operations of the OHS risks for workers during the	1. Provide appropriate PPE, continuous reminders to use PPE, use of signage, and	At Road construction sites,	Project Manager Green Roads	Use of PPEs	Monthly site visit	Executive Director - Green Roads	USD 550

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring cost in USD
		Location/ Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
operation	<p>continuous supervision, based on EHS Guidelines on OHS</p> <ol style="list-style-type: none"> Install barricade tape will be in place to prevent workers from entering risk areas without attention. A separate sanitary facility for males and females access to safe drinking water and a clean dining area Training on safety and proper use of personal protective equipment (PPE) and daily safety briefing Provision of a First aid box Maintain accident registry Perform regular medical check-ups for workers Display Instruction Boards Communicate and implement workers' GRM 	throughout the construction		<p>Availability of the First Aid box, the Accident registry,</p> <p>Availability of separate sanitary facilities</p> <p>Training records</p> <p>Availability of sign boards</p> <p>Records of medical check-ups</p> <p>Availability of a GRM</p>		Technical Expert-UNOPS Bhutan Country team	<p>(PPEs-500)</p> <p>Install barricade tape-1000</p> <p>Sanitary facilities-2000</p> <p>First Aid box-1000</p> <p>Medical check-ups for workers-1000</p>
Risks of Sexual exploitation and abuse (SEA) and sexual harassment (SH) among workers and between workers and community members at the facility	<ol style="list-style-type: none"> Develop PSEA policy and provide training to the workers on the policy. Provide a workers' grievance redress mechanism (Workers' GRM), incorporating SEA/SH Focal 	At Facility, daily	Project Manager Green Roads	<p>Availability of workers' GRM and SEA/SH Focal Points</p> <p>Availability of reporting system</p>	Monthly site audits	Executive Director - Green Roads Technical Expert-UNOPS Bhutan	<p>USD 250</p> <p>(PSEA policy and training-250)</p>

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring cost in USD
		Location/ Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
	<p>Points for both genders and an effective referral mechanism</p> <p>3. Provide an anonymous reporting system, along with protection measures for individuals who report</p> <p>4. Provide referrals to SEA/SH service providers as required</p> <p>5. Provide training on recognizing, preventing, and responding to SEA/SH for workers and communities</p> <p>6. Prepare a Code of Conduct for workers at the facility that includes reference to SEA/SH</p> <p>7. Ensure workers at the facility sign a Code of Conduct (CoC)</p>			<p>Number of SEA/SH awareness sessions for a) workers, and b) surrounding communities</p> <p>Availability of CoC</p> <p>Percentage of workers that have signed the CoC</p>		Country team	
Risk of child labor and forced labor at facility	<p>1. Comply with minimum age requirements of national laws and document age of workers upon hiring</p> <p>2. Verify age of workers with communities where required</p> <p>3. Provide workers' GRM and access to Project GRM</p>	At Facility, daily	Project Manager Green Roads	Availability of meeting and training records	Monthly site audits	Executive Director Green Roads Technical Expert-UNOPS Bhutan Country team	No additional cost involved

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation & Monitoring cost in USD
		Location/ Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
	4. Raise awareness in communities						
Gender discrimination in job opportunities and wage	<ol style="list-style-type: none"> Preparation of non-discriminatory guidelines for recruitment process and operations affecting all levels of workers. Equal wages to males and females. 	At Facility, daily	Project Manager Green Roads	Availability of HR Policy Grievance Redress Mechanism	Monthly site audits	Executive Director Green Roads Technical Expert-UNOPS Bhutan Country team	No additional cost involved
Lack of stakeholder engagement	<ol style="list-style-type: none"> Establish a site-specific stakeholder map that includes vulnerable groups, project-affected parties and other interested parties Define information dissemination channels for the identified stakeholders and provide sub-project related information Define consultation channels of the mapped stakeholders and conduct consultations of all stakeholders including on environmental and social risks and mitigation measures 	Through our project period	Project Manager Green Road	Availability of stakeholder mapping Number of project information dissemination events Number of consultations with identified stakeholders Number of consultations with identified members of	Monthly site audits	Executive Director Green Roads Technical Expert-UNOPS Bhutan Country team	No additional cost involved

5. Capacity Development & Training

Following Capacity Development & Training will be delivered during the project period.

Environmental & Safety Training Areas

Waste Management & Sustainability

- Proper collection and segregation of plastic waste
- Waste management laws and policies in Bhutan

Health & Safety Measures

- Workplace safety in plastic processing and road construction
- Use of protective gear (PPE) and emergency response

Air Pollution & Mitigation Measures

- Understanding emissions from plastic processing

Soft Skills & Professional Development

Project Management & Leadership

- Enhancing management skills for project leaders
- Time management and resource planning

Prevention of Sexual Exploitation and Abuse (PSEA) & GBV Training

- Ensuring a safe and respectful workplace in the organization
- Reporting mechanisms (confidentiality) and ethical conduct
- Orientation for new employees recruited
- Project GRM mechanism

6. Implementation Schedule and Cost Estimates

Mitigation measures	Timeline	Cost - USD
Occupational Health and Safety Measures (PPEs, medical checkups, etc.)	Sep 2024 to March 2025	1,550
Environmental protection measures (hazardous waste handling, air/noise pollution control, vegetation, etc)	Sep 2024- March 2025	1,400
Social Safeguards and community engagement (awareness and training on PSEA, GRM, child labour, gender, etc)	Sep 2024 - March 2025	1,350
Total Cost		4,300

2. Attachments

- [Environmental and Social screening report](#)
- [Pictures of surroundings- Green Roads](#)
- [PSEA Policy documnets](#)
- [Environmental clearance](#)
- [Land Approval from the department of industry](#)