

Meghalaya Logistics & Connectivity Improvement Project (MLCIP)

ENVIRONMENTAL & SOCIAL MANAGEMENT FRAMEWORK

Disclaimer: This is a draft version and is being reviewed by the World Bank.

Meghalaya
Infrastructure
Development
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List of Abbreviations

ASCI –Administrative Staff College of India

CEE –Centre for Environmental Education

CERC –Contingent Emergency Response Component

CPF – Country Partnership Framework

CSC – Construction Supervision Consultant

DOA – Department of Agriculture & Farmer’s Welfare

DFO – Divisional Forest Officer

DPIU –Divisional Project Implementation Unit

E&S Cell – Environmental & Social Cell

ERP – Emergency Response Plan

ESCP – The project Environmental and Social Commitment Plan

ESF – World Bank Environmental and Social Framework

ESIA –Environmental and Social Impact Assessment

ESIMS – Environmental and Social Information Management System

ESIRT – Environmental and Social Incident Response Toolkit

ESMF –Environmental and Social Management Framework

ESMP –Environmental and Social Management Plan

ESRC –Environmental and Social Risk Classification

ESS – Environmental and Social Standards

FPIC – Free Prior Informed Consent

GAP –Gender Action Plan

GMS –Grievance Management System

GRM –Grievance Redress Mechanism

GRS – Grievance Redress Services

ICR –Implementation Completion Report

IIMA –Indian Institute of Management Ahmedabad

IP – Indigenous Peoples

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ITNDP –Integrated Transport Network Development Plan

MBMA –Meghalaya Basin Management Agency

MDF – Moderately Dense Forest

MDR – Major District Roads

MIDFC –Meghalaya Infrastructure Development and Finance Corporation

MIG –Meghalaya Institute of Governance

MITP –Meghalaya Integrated Transport Project

MLCIP –Meghalaya Logistics and Connectivity Improvement Project

MPWD –Meghalaya Public Works Department

NEERI –National Environmental Engineering Research Institute

ODR – Other District Roads

OF – Open Forest

OHS – Occupational Health and Safety

PA – Protected Area

PIU –Project Implementation Unit

PMC –Project Management Consultant

PMU –Project Management Unit

POM –Project Operations Manual

PTCS – Pla Tangka Cooperative Society

RPF – Resettlement Policy Framework

SEA/SH – Sexual Exploitation & Abuse / Sexual Harassment

SH – State Highway

TL – Team Leader

TMP – Traffic Management Plan

TOR – Terms of Reference

WII –Wildlife Institute of India

WPR – Working Participation Rates

EXECUTIVE SUMMARY

This Executive Summary sets out the purpose, scope, methodology, implementation arrangements, monitoring & reporting, capacity development and training components of the Environmental and Social Management Framework (ESMF) that governs the Meghalaya Logistics & Connectivity Improvement Project (MLCIP). The ESMF follows the mitigation hierarchy—avoid, minimize, Indigenous Peoples considerations, labor and working conditions, and grievance redress as auditable requirements in contracts, supervision, and reporting.

Purpose and Scope of the ESMF

The ESMF provides a uniform, robust method to screen, assess, consult, disclose, mitigate, and monitor environmental and social (E&S) risks for all MLCIP investments. It specifies processes, methodology, documentation, and approvals to ensure E&S due diligence is completed before procurement and that implementation remains compliant and traceable during construction and operation. Instruments foreseen by the ESMF include, as triggered, Environmental and Social Impact Assessment (ESIA), Environmental and Social Management Plan (ESMP) and Contractor ESMP (C-ESMP), Resettlement Action Plan (RAP), Labor Management Procedures (LMP), Indigenous Peoples Development Plan (IPDP), Stakeholder Engagement Plan (SEP), Biodiversity Management measures, Cultural Heritage procedures, Traffic/Road Safety plans, and emergency preparedness. The framework functions as a living document that can be updated to reflect design development, field findings, or regulatory change without diluting safeguards.

Project Context and Development Objectives

MLCIP supports resilient, efficient, and safe logistics and connectivity in Meghalaya's hill context while strengthening institutions. The development results include improved road safety outcomes, reduced travel time and transport costs on project corridors, and better movement of agri-produce through logistics improvements. The project's approach is corridor-based with an emphasis on climate-resilient engineering, slope stability and drainage, and inclusion of vulnerable users. Sub-projects will pass through detailed and exhaustive screening & categorization steps so that the depth of ESIA/ESMP and engagement matches the site sensitivity and the scale, nature, and location of impacts.

Project Components (Overview)

Component 1 focuses on climate-resilient roads and bridges with embedded road safety audits, signage, calming, and emergency response arrangements. **Component 2** strengthens institutions through data systems, asset management practices, capacity building for implementing agencies and contractors, and the standardized supervision and audit regime. **Component 3** entails the Contingent Emergency Response Component (CERC) to enable rapid restructuring for disaster response in line with Bank procedures.

The ESMF provides cross-cutting protocols and a single compliance architecture across these components.

Risk Classification and Mitigation Strategy

The project's overall risk rating is high because of.

- i. **Environmental risks:** the terrain, and steep slopes susceptible to landslides and erosion; biodiversity sensitivity in forested stretches and wildlife corridors in parts of the state; the presence of sensitive streams and wetlands vulnerable to linear infrastructure impacts; typical construction-stage pollution and resource-use risks including dust, noise, fuel and lube spills, unsafe handling and storage of hazardous materials (bitumen, cement), and poor waste management at camps and plants;
- ii. **Social and Community Risks:** the presence of Indigenous Peoples; community safety risks during construction (traffic hazards, occupational health and safety); and **documented** land acquisition and access restrictions affecting livelihoods and assets;
- iii. **Additional Environmental and Social Risks:** potential impacts on cultural heritage sites and chance-find protocols; labour and occupational health and safety risks; resource extraction impacts from quarrying and borrow areas; and water-quality protection requirements for construction activities in sensitive catchments.

The ESMF manages these through: (i) early, geo-enabled screening and alternative analysis; (ii) site-specific ESIAs/ESMPs proportionate to risk; (iii) enforceable C-ESMP obligations with method statements for camps, borrow areas, waste, traffic, and emergency response; (iv) structured stakeholder engagement and disclosure; (v) targeted plans for land and livelihood impacts where applicable; and (vi) routine supervision, third-party audits, and corrective action tracking. No-go rules apply to certain critical habitats or cultural heritage sensitivities unless specific clearances and mitigation conditions are satisfied.

Policy, Legal, and ESF Alignment

The ESMF integrates the applicable Indian and Meghalaya environmental and labor statutes and operationalizes the World Bank in its Entirety as follows

The ESMF integrates the applicable Indian and Meghalaya environmental and labor statutes and operationalizes the World Bank ESF in its entirety as follows:

ESS 1 (Pollution Prevention and Management): Addresses pollution from construction activities (dust, noise, fugitive emissions), hazardous materials handling (bitumen, cement, fuel), water-quality impacts on streams and wetlands, and waste management protocols including construction and demolition waste and hazardous waste disposal.

ESS 4 (Community Health and Safety): Establishes protocols for traffic management and road safety during construction, emergency response procedures, and community-level occupational health safeguards at construction camps and plants.

ESS 5 (Land Acquisition, Restrictions on Land Use and Involuntary Resettlement): Provides targeted assessments and management plans for land acquisition impacts and livelihood restoration where applicable, with special attention to asset and access restrictions.

ESS 7 (Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities): Ensures culturally appropriate stakeholder engagement, grievance mechanisms, and benefit-sharing arrangements for Indigenous Peoples in project-affected areas.

ESS 8 (Cultural Heritage): Sets out chance-find procedures, protocols for identification of cultural heritage sites during screening, and no-go zones where specific clearances and mitigation conditions are required before activity commencement.

ESS 10 (Stakeholder Engagement and Information Disclosure): Mandates structured, early disclosure; free, prior, and informed consultation with affected communities and Indigenous Peoples; and accessible grievance redress mechanisms.

The ESMF sets out triggers and seeks approval pathways for forest/wildlife permissions and Eco-Sensitive Zone requirements where relevant, pollution control consents for plants and camps, construction and demolition waste management, hazardous waste handling, and any cultural heritage chance-find procedures. It aligns contractor obligations with LMP requirements on working conditions, non-discrimination, equal pay, and worker grievance, and with community health and safety protocols. The ESMF maps responsibilities, submission formats, and sequencing so that statutory and ESF requirements are met without duplication, and so that Bank prior review and disclosure requirements are respected.

Environmental Baseline and Key Risks

The framework uses a baseline narrative appropriate for Meghalaya's hill ecology: steep slopes, high rainfall, and landslide susceptibility in places; forested stretches and wildlife movement; and sensitive streams and wetlands that can be affected by linear works if not planned well. Typical construction risks include slope cutting and spoil, obstruction of natural drainage, dust and noise, fuel and lube spills, unsafe storage and handling of bitumen and cement, and poor housekeeping at camps and plants. The ESMF template requires drainage and erosion control, sediment traps, slope stabilization and bio-engineering where feasible, regulated materials storage, spill prevention and response, dust suppression, noise control near settlements and receptors, water-quality protection, and progressive site reinstatement. Material sourcing is restricted to permitted quarries and borrow areas with rehabilitation requirements.

Social Baseline, Land, and Vulnerable Groups

The ESMF recognizes Meghalaya's social landscape and the relevance of distinct indigenous communities in several sub-project areas. Land impacts will vary by site; where requirements or access restrictions are unavoidable, the Resettlement Policy Framework and subsequent RAP/ instruments guide eligibility, valuation, assistance, and livelihood restoration, including provisions for non-titleholders consistent with ESS5. The framework sets consultation and Free, Prior and Informed Consent-aligned practices where applicable under the given circumstances for indigenous communities in ESS7, with documentation and culturally appropriate engagement. It also mainstreams universal access and road safety features for pedestrians, school children, older persons, and persons with disabilities in design and work-zone management.

Labor Management, OHS, and Community Safety

Labor Management Procedures (which would be standalone document) apply to all workers engaged on the project, covering fair recruitment, terms and conditions, prohibition of child and forced labor, and worker accommodation standards where relevant as mandated in the ESS2. Contractor EHS plans must address hazard identification, job safety analysis, PPE, training, medical facilities, incident reporting, and emergency preparedness, including heat, heavy rainfall, landslide, or traffic-related events. Community health and safety measures include work-zone traffic control, signage, speed management, safe pedestrian diversions, and interface management at schools, markets, and health centers. A code of conduct addressing SEA/SH is required for all site personnel, reinforced by induction, refresher training, and confidential reporting pathways integrated with the project GRM.

Biodiversity, Forests, and Cultural Heritage

Screening identifies sensitive habitats, protected areas, wildlife corridors, and Eco-Sensitive Zone considerations. Where works are in proximity, sub-projects will apply avoidance and minimization first, adjust design footprints, time works to avoid sensitive periods, and implement site-specific biodiversity measures consistent with permits and ESMPs. Tree felling requires authorization and compensatory plantation as applicable, with species selection aligned to local ecology and survival monitoring. Chance-find procedures are embedded for tangible and intangible cultural resources; work must stop in the affected area and competent authorities be notified, with resumption only after clearances and agreed protection measures.

Climate and Disaster Resilience

The engineering approach emphasizes resilient siting and design: hydrology-aware drainage, culvert sizing and placement, slope stabilization, scour and erosion protection, debris-flow considerations, and materials and detailing suitable for high-rainfall hill environments. Construction planning accounts for monsoon windows and emergency preparedness. The ESMF requires climate and disaster-risk considerations to be reflected in screening, options analysis, ESMP measures, and O&M practices so that climate risks are managed across the asset lifecycle, including vegetation management, drainage upkeep, and slope inspection protocols.

Stakeholder Engagement and Disclosure

Stakeholder engagement follows the SEP and includes early-stage information sharing, site-specific consultations in local languages, and continued dialogue through construction and operation using culturally appropriate mechanisms as practiced in the communities. The approach balances inclusivity with practicality, ensuring representation of women, Indigenous groups, shopkeepers and transporters, farmers, and vulnerable households in meeting formats they can access. Disclosure covers ES instruments, permits, audit summaries, and GRM performance at accessible locations and online. Feedback is captured, tracked, and closed with documented actions; material viewpoints and their treatment are summarized in ESIA/ESMP chapters. This process of engagement aptly aligns with the ESS10 of the World Bank's ESF.

Grievance Redress Mechanism (GRM)

The GRM provides multiple intake channels (in-person, phone, web/toll-free) and service standards for acknowledgment, assessment, resolution, and escalation. A PMU focal point oversees registration and tracking; contractors maintain a site-level register for quick fixes. SEA/SH cases are handled under survivor-centered, confidential protocols with appropriate referral pathways. The ESMF requires the GRM to be operational before civil works commence, with periodic public reporting of categories, status, and resolution timelines while protecting personal data.

Gender and Inclusion

The framework (GAP) integrates gender and inclusion throughout the project cycle. Engagement activities seek meaningful participation of women and vulnerable groups; designs incorporate safer crossings, lighting where feasible, and context-sensitive features. Contractors enforce equal wages for equal work, provide facilities that meet women's needs, and implement codes of conduct. Monitoring uses sex-disaggregated indicators for participation, employment, and grievance uptake. Where the risk of SEA/SH is higher, specific prevention and response measures are scaled accordingly and are made visible in tender documents and supervision checklists.

Monitoring, Supervision, and Corrective Action

The ESMF prescribes indicator-based monitoring, supervision frequency, and documentation standards. Contractors submit C-ESMPs, method statements, training logs, waste and materials records, and incident registers. Supervision consultants and PIUs perform routine and unannounced inspections using checklists aligned to ESMP commitments, with photo-geotagged evidence and time-bound non-compliance reports. The PMU consolidates monthly/quarterly progress and ensures corrective actions are closed. Third-party audits provide independent assurance and recommend systemic improvements; recurrent issues lead to targeted training or contractual remedies.

Institutional Arrangements and Capacity

Roles are defined from the PMU to PIUs, supervision consultants, and contractors. Each PIU maintains dedicated environment and social specialists with clear lines of reporting to the E&S Cell. Standard templates are provided for screening, ESIA scope, ESMP/C-ESMP structure, engagement minutes, GRM logs, site-inspection records, and audit terms of reference. Capacity building is continuous, including induction for new staff, refresher sessions for engineers and site managers, and toolbox talks for workers. The ESMF links performance on E&S to contract management through payment conditions, retentions, and, where warranted, penalties as per contract.

Contingent Emergency Response (CERC)

The ESMF defines how the CERC may be activated and supervised under the ESF. It requires screening and the application of proportional ES instruments even when activities are fast-tracked, ensuring that essential mitigation, stakeholder communication, and monitoring arrangements remain in force. Roles, documentation, and disclosure practices follow the same accountability standards, adapted to emergency timelines.

Budgeting and Resource Provision

Budget lines are provided for staffing, capacity building, monitoring and audits, site-specific mitigation and restoration, GRM operations, and contingency. Costs are integrated into contract BoQs and PMU/PIU budgets to avoid under-resourcing. This ensures that E&S actions are implementable and sustained through operations and maintenance.

Results and Commitments

By standardizing screening and ES instrument quality, integrating road safety and climate resilience into design and construction, protecting sensitive habitats, addressing land and livelihood impacts where they occur, and making inclusion and accountability visible through engagement, GRM, and audit, the ESMF turns safeguards from a compliance checklist into day-to-day project management. The framework commits the implementing agencies and contractors to measurable performance and transparent reporting. Lessons from ongoing supervision will be used to update procedures and training so that risk is progressively reduced across the project portfolio and benefits reach intended users safely and equitably.

1 INTRODUCTION

1.1 Background

Meghalaya is one of the eight states of the North-Eastern part of India. The state plays an important role in the connectivity of two important river valleys in the region i.e. Brahmaputra and Barak, which are important production centers. The state is thus important from the logistics point of view in transportation of the produce. A large part of Meghalaya is a highland between these two river valleys it has different agro-climatic conditions and is thus endowed with various natural resources. It is also part of the North-eastern Biodiversity Hotspot and is thus endowed with natural resources

The state has a heavy reliance on road transport. Over 80 percent of freight and nearly 100 percent of passenger movement within the state rely on roads. However, about half of the residents lack all-weather road access. Additionally, many semi-permanent timber bridges are in poor condition, limiting the maximum allowable axle load. The problem is worsened by rugged terrain and extreme climate conditions, which increase road maintenance costs. Similarly, rapid urbanization has created a large gap between the demand for and supply of urban services and infrastructure. It has been estimated that, besides the capital area, urban mobility in other cities and towns of the state is less than satisfactory.

The Government of Meghalaya has undertaken a program for the upgradation of the roads. Accordingly, the Meghalaya Integrated Transport Project (MITP, P168097) was developed with support of The World Bank and is presently under implementation and is due for completion in the coming year. The project focused on i) Improving transport infrastructure of more than 300 Km and ensure effective maintenance delivery., ii) Strengthening institutional capacity and transport services by implementing asset management, modernization, and climate-resilient strategies component, iii) Supporting efficient project management, supervision, and preparation through provision of technical assistance, iv) Providing funding support for immediate response to crises or emergencies. The project is being implemented by MIDFC (*Meghalaya Infrastructure Development Finance Corporation*) but has Public Works Department, Government of Meghalaya as the major implementing partner.

Given the requirement of further road improvement and enable logistics support for movement of the agricultural produce from the farms to the market so that the people can market their produce the Government of Meghalaya (GoM) is developing the Meghalaya Logistics & Connectivity Improvement Project (MLCIP).

The objective of the MLCIP is to enhance the climate and disaster resilience of public infrastructure, particularly roads and bridges, improve road safety, strengthen agro-logistics infrastructure, and build institutional capacity for effective emergency preparedness, including a Contingent Emergency Response Component (CERC).

Under Component 1, approximately 600 km of state roads, Major District Roads, bridges, and feeder roads will be rehabilitated or upgraded with climate-resilient features, including improved drainage, slope

protection, and resurfacing of damaged sections, verified through engineering reports. Road safety will be strengthened through audits, monitoring systems, public awareness campaigns, accident data management, and establishment of emergency response posts equipped with paramedics, ambulances, and tow trucks, with a target of reducing accidents by 20% on project roads.

Under Component 2 will develop multi-modal logistics parks and rural transport hubs, along with supporting facilities such as storage, grading, digital transport services, and solar-powered amenities, aiming to increase the volume of agricultural produce transported efficiently through these hubs by 25%. Policy and institutional strengthening.

Under Component 3 will include adoption of climate-resilient and road safety frameworks, establishment of an Environment and Social Safeguards Management Unit, and training of PWD/MIDFC staff and contractors, targeting at least 150 personnel trained. Private sector engagement will mobilize at least two major investments in state logistics infrastructure through PPPs, while community and gender inclusion efforts aim to train and employ 500 local participants, with at least 40% women. Finally, the CERC will ensure timely emergency response, with funds disbursed within 30 days of an eligible crisis and support for one to two emergency interventions per event. All targets will be monitored through official reports, site inspections, and operational data to ensure effective project implementation and results.

1.2 Environment and Social Management

To systematically handle the environmental and social issues in the Meghalaya Integrated Transport Project (MITP), the Environmental and Social Management Framework (ESMF) was developed. It provides the approach to identifying, assessing and managing environmental and social risks in transport infrastructure development in line with the requirements of the national regulations, and the World Bank's safeguard policies (including OP/BP 4.01, 4.04, 4.36, 4.11, and 4.12), it outlines procedures for screening, impact assessment, and preparing site-specific ESMPs.

The framework emphasizes stakeholder consultation, disclosure, grievance redress, and compliance monitoring, supported by clear institutional arrangements and capacity-building measures. By integrating safeguards into planning, procurement, and implementation, the ESMF ensures that MITP interventions are environmentally sustainable, socially responsible, and aligned with national and World Bank standards. Since MITP focused on only road, the processes are focused only on Public Works Department, Government of Meghalaya.

The ESMF of MITP was developed under the Operational Policies of the World Bank. However, in the intervening period, the World Bank policies on sustainability have transitioned from Operational Policies to the Environmental and Social Framework (ESF) which represents a paradigm shift in safeguard architecture .. The new ESF framework will serve as the foundation for developing the ESMF of the MLCIP. The ESF focuses on a proportionate risk-based approach and adaptive management across the full project life cycle. It includes increased and renewed focus on functional areas including.

- **Labor and working conditions, including worker grievance redress mechanisms (ESS 2):** Ensures fair wages, safe working conditions, freedom of association, non-discrimination, and accessible worker grievance mechanisms. (fully applicable)
- **Resource efficiency and pollution prevention (ESS 3):** Addresses efficient use of resources, pollution prevention and abatement, waste management, and greenhouse gas (GHG) emissions reduction.
- **Community health and safety (ESS 4):** Protects community members from project-related hazards including traffic safety, emergency preparedness, disease vectors, and occupational exposure.
- **Land acquisition, restrictions on land use, and livelihood restoration (ESS 5):** Ensures that land-related impacts are managed through transparent, participatory processes with due compensation and livelihood restoration.
- **Biodiversity conservation and sustainable management of living natural resources (ESS 6):** Protects critical habitats, maintains ecosystem services, and prevents conversion of natural habitats except under strict conditions.
- **Indigenous Peoples' engagement and inclusion (ESS 7):** Ensures Free, Prior, and Informed Consent (FPIC), cultural respect, and benefit-sharing with Indigenous Peoples in project-affected areas.
- **Cultural heritage protection (ESS 8):** Protects cultural heritage sites and establishes chance-find procedures for heritage discoveries during project implementation.
- **Stakeholder engagement and information disclosure (ESS 10):** Mandates early, continuous, and inclusive stakeholder engagement, free access to project information, and transparent grievance redress.
- **Not applicable:** ESS 9 (Financial Intermediaries), as MLCIP does not involve financial intermediary instruments.

The ESMF of MLCIP was thus adapted to the requirement of the ESF, with additional focus and process established to handle the additional focus areas. The MLCIP also has additional components on agri-logistics. The agro- logistics components would be decided during the course of implementation of the MLCIP. The ESMF would thus be upgraded with an outline which will be detailed once the components are further known. The implementation of the ESMF for MITP also gave meaningful insights which need to be integrated back into the process. Review of the MITP and Lessons Learnt

The Environmental and Social Management Framework (ESMF) for -Meghalaya Integrated Transport Project (MITP) has been implemented across the different interventions. A review of Aide Memoires, Environmental and Social Audit Reports, and Implementation Support Mission findings of the MITP highlights critical strengths and gaps that shape MLCIP's environmental and social (E&S) design and process flow.

1.3 Strengths

MITP demonstrated that a strong E&S implementation entails systematic process and discipline, strong oversight, effective tracking of performance and measurable outcomes. While health & safety measures were effective, social performance faced temporary challenges and was downgraded at certain points. Learning from these experiences, MLCIP will institutionalise the required discipline through quarterly E&S reviews, balanced E&S monitoring indicators, and contractual clauses that embed proven safety provisions together with strengthened social safeguards (Codes of Conduct, GBV/SEA measures, grievance mechanisms, and enforceable C-ESMPs).

A robust, tiered Grievance Redress Mechanism (GRM) integrated with traditional village institutions effectively resolved community concerns. MLCIP will strengthen this structure to increase efficiency in grievance redressal by appointing GRM focal points at village, block, and state levels with clear resolution timelines, introducing a simple mobile-based system for lodging and tracking complaints, conducting quarterly performance reviews, and regularly training staff and local institutions. These steps will make grievance redressal faster, more transparent, and more efficient.

Biodiversity sensitive practices, such as canopy bridges and wildlife signage, will be expanded through mandatory design reviews for forest-adjacent works. Adaptive management measures, including realignments and improved camp management, will continue under strengthened guidance. Stakeholder engagement was another MITP strength; MLCIP will require all consultations and disclosures in local languages to enhance inclusion and transparency.

MITP demonstrated that structured environmental and social procedures work effectively when backed by regular implementation support and guidance from the Bank, clear compliance tracking, and routine audits. Key successes included:

- **Avoidance and minimization of major impacts** by confining civil works primarily to existing Rights of Way (RoW), which was critical in Meghalaya's unique tribal land tenure system, thereby avoiding significant land acquisition and large-scale displacement.
- **Incorporation of basic safety measures** (such as barricades, flagmen, reflectors, and TMPs) and maintained effective GRM tiers experienced smoother construction processes and quicker resolution of issues.
- **Adoption of environmentally friendly practices and innovations** including bamboo crib walls for slope stabilization in landslide-prone terrain, bamboo dustbins for waste segregation, check dams for water harvesting, and native vegetation for slope protection, drawing from local materials and IRC guidelines.

- **Biodiversity mainstreaming:** Elephant crossing signages, speed-calming devices (rumble strips) to habitat-sensitive design reviews reduced ecological risk without derailing delivery or compromising on the objectives of the project.
- **Establishment of a monitoring and evaluation (M&E) system** through site visit reports, Quarterly Progress Reports (QPRs), Monthly Progress Reports (MPRs), and third-party audits, with PMU experts conducting quarterly reviews has helped in developing a robust mechanism of review feedback and management action; and
- **Upstreaming of the environmental and social aspects into the design:** The shift to data-driven maintenance (MegRAMS) laid a foundation for transparent, needs-based planning. Importantly, course corrections (realignments, JVRs, labour-camp upgrades) showed that adaptive management can contain risks when escalation pathways and supervisor authority are clear.

1.4 Gaps

Persistent issues included weak geo-enabled screening, incomplete pre-DPR assessments, and inadequate documentation for ancillary facilities. These gaps resulted in inconsistent application of safeguard standards, inadequate risk identification in early stages, and weak accountability for the compliance. MLCIP introduces GIS-based screening, public disclosure, and a “No-Mobilization Without Compliance” checklist for borrow areas, R&R issues, disbursement of compensations, subsistence allowances and camps. Labour and SEA/SH provisions will be standardized through Labour Management Procedures (LMPs) and performance audits. Inconsistent documentation of legal applicability under FRA, RFCTLARR, and the Sixth Schedule will be rectified by requiring Village Council endorsed confirmations. Finally, MLCIP establishes project-wide climate and E&S indicators on GHG emissions, water, waste, and energy to ensure measurable, accountable sustainability outcomes. Several gaps consistently slowed delivery or raised compliance risk.

- **Incomplete and inconsistent application of the ESMF across subprojects** resulted in some lacking systematic environmental and social assessments, with temporary land use effects (borrow pits, camps), cumulative ecological risks near protected areas (elephant corridors), and labor influx issues (community conflicts, GBV risks) inadequately documented, violating requirements for Cumulative Impact Assessments and Labor Management Procedures.
- **Institutional capacity and staffing limitations** were critical as the PMU relied on intermittent consultants instead of full-time specialists as mandated by the ESMF, resulting in inconsistent monitoring with World Bank Supervision Missions repeatedly flagging this gap and noting delays in documentation; weak coordination among PWD, MIDFC, contractors, and field staff with unclear roles further hindered
- **ESMP Implementation and Supervision:** While Contractor ESMPs (CESMPs) was prepared per ESMF templates, on ground compliance faltered, with third-party audits revealing lapses in waste

disposal, labour camp maintenance, PPE provision and usage, and emergency response; irregular PMU and Construction Supervision Consultant site visits delayed corrections, undermining contractor accountability.

- **Oversight of the Safeguards Implementation:** Inadequate monitoring and documentation systems relied heavily on qualitative metrics without established baselines, hindering thorough evaluation of safeguards like biodiversity monitoring or grievance resolution, despite the ESMF mandating specific indicators and a centralized database
- **Gaps in social safeguards implementation** included inconsistent documentation of land donations, despite ESMF guidelines requiring voluntary processes with Free, Prior, and Informed Consent (FPIC), which was also poorly documented. Additionally, there was uneven application of the Entitlement Matrix to non-titleholders/tenants, resulting in inequities and subsequent addendum changes, as well as deficiencies in meeting ESS5 standards for land acquisition on tribal lands.
- **Integration of climate change and GHG considerations** was lacking—although the ESMF highlighted climate resilience (drainage designs, bioengineering), no GHG baseline or monitoring occurred, and EMPs lacked indicators for energy efficiency or carbon reduction.
- **Stakeholder engagement and disclosure gaps** included one-off rather than continuous consultations violating the ESMF's call for ongoing engagement, and limited disclosure of ESMPs, audits, and GRM reports with no structured feedback mechanisms, reducing transparency in tribal communities.
- **Sustainability** of environmental measures suffered from inadequate maintenance monitoring, leading to low sapling survival rates and post-construction deterioration of initial tree plantations and bio-engineering works, with no long-term plans or budgets for ongoing audits or community-led upkeep.
- **Process Gaps:** Pre-DPR, geo-enabled screening not applied uniformly, weakening early avoidance and social readiness.
- **CESMP not Comprehensive:** CESMPs sometimes lacked labour/SEA-SH depth (contracts, worker-GRM privacy, subcontractor controls, labour camp requirement not clearly specified.).
- **Legal applicability statements** (FRA/RFCTLARR/Sixth Schedule) and climate/ES performance KPIs (GHG, water/energy/waste) were not consistently documented.
- Another key gap was the incomplete operationalization of institutional reforms and maintenance policies, such as the Transport Board, TSMP, and CoE, as well as the lack of published Annual Maintenance Plans, which hindered sustained coordination, oversight, and transparency.

1.5 Way Forward: Strengthening the ESMF

Building on the lessons from MITP, the ESMF for MLCIP will focus on strengthening institutional capacity, making process robust and building capacity, and ensuring the E&S risk management is aligned with the requirements of the World Bank ESF. The following key steps, integrated into the MLCIP ESMF based on MITP experience, represent a deliberate shift from reactive compliance to proactive, adaptive risk management. The key steps which have been integrated into the ESMF of MLCIP taking a cue from MITP are as follows.

Institutional Strengthening and Capacity Development: through the establishment of a dedicated Environmental and Social Cell (E&S Cell) within the PMU and PIU. These units will be staffed with full-time environmental, social, labour, tribal and gender specialists responsible for coordination, supervision, and documentation of safeguard activities. To ensure consistency in implementation, a capacity-building and training plan will be developed for engineers, contractors, and field staff, covering E&S requirements, occupational health and safety, labor management, GRM, SEA/SH prevention, Monitoring and Reporting documentation and community engagement. Refresher trainings and on-site mentoring will help institutionalize safeguard practices within implementing agencies.

Enhanced Screening and Risk Assessment: At the concept/pre-feasibility stage (pre-DPR), an initial rapid environmental and social screening using standardized checklists and GIS-based overlay analysis will be carried out for all proposed sites/sub-projects. These checklists cover ecological sensitivity, physical cultural resources, land availability and tenure issues, involuntary resettlement triggers, indigenous peoples, and climate vulnerability. The purpose of this initial screening is to enable early identification and avoidance of high-risk sites/locations, thereby guiding site selection and alternative analysis before significant resources are committed to detailed feasibility studies.

Subsequently, at the feasibility stage, formal screening and scoping will be undertaken as per regulatory requirements to determine the category of the sub-project, scope the Terms of Reference for detailed ESIA, and estimate costs. Outcomes of the initial rapid screening carried out at the concept stage will feed directly into this formal feasibility-stage screening and scoping exercise. Periodic field verification by PMU/PIU staff will be undertaken both at the initial rapid screening stage (to validate desk-based findings) and during formal feasibility studies.

Strengthening Planning, Documentation, and Compliance: to ensure uniformity across subprojects, the ESMF will provide standard templates, checklists, and sample TORs for ESMPs, RAPs, , IPDP and Biodiversity Management Plans. Institutional roles, responsibilities, reporting lines, and binding timelines for each key deliverable and approval will be clearly defined in the ESMF. A performance monitoring dashboard, quarterly compliance reporting, and escalation protocols for delays will be established to enforce accountability and prevent delays. Monitoring will rely on field-based verification, structured site inspection forms, and consistent documentation through Monthly and Quarterly Progress Reports.

Regular joint site visits by PIU, CSC, and line departments will reinforce compliance and facilitate timely corrective actions.

Monitoring, Evaluation, and Reporting: Monitoring will be strengthened through key performance indicators covering all material risk areas, including biodiversity protection and habitat restoration, labour conditions and OHS compliance (including child/forced labour), GRM functionality and response time, FPIC processes for Indigenous Peoples, land acquisition and economic displacement, livelihood restoration and R&R effectiveness, gender mainstreaming and GBV risk mitigation, worker and community health & safety, and climate resilience measures. All indicators will be disaggregated by gender and vulnerability status wherever applicable. Each subproject will establish baseline conditions at inception to allow comparison over time. Monitoring data will be compiled through standard reporting formats and consolidated by the PMU for review during supervision missions and quarterly progress assessments. Third-party audits will continue to provide independent validation of field performance and compliance.

Stakeholder Engagement and Disclosure: The ESMF will reinforce continuous and inclusive stakeholder engagement, ensuring that consultations occur not only during planning but throughout construction and operation. Engagement processes will emphasize participation of traditional institutions, women's groups, and vulnerable households, using local languages (Khasi, Pnar, Garo). Environmental and social instruments – including ESMFs, RAPs, IPDPs, FPIC documentation and consent records, audit reports, and GRM performance updates – will be disclosed in a timely, accessible, and culturally appropriate manner through the project website, community meetings, notice boards, local-language summaries, and local administrative offices to ensure transparency and local ownership.

Comprehensive Labor and Working Conditions Management (Including Full LMP): A new ESF requirement calls for Labor Management Procedures (LMP), a dedicated worker grievance redress mechanism (GRM), ILO-aligned occupational health and safety (OHS) systems, prohibitions on child and forced labor, and ongoing monitoring of contractor labor standards to foster fair, safe, and compliant employment practices.

Relevant Standard: ESS2.

Integrated Community Health and Safety Measures: The ESF integrates previously fragmented safeguard requirements into a comprehensive and coherent framework that addresses traffic and road safety, emergency preparedness, prevention of gender-based violence (GBV), sexual exploitation and abuse (SEA), and sexual harassment (SH). It also outlines protocols for the responsible conduct of security personnel and the management of hazardous materials and public health risks. Collectively, these measures strengthen risk mitigation and promote safer, more resilient community environments throughout the project lifecycle.

Relevant Standards: ESS4, ESS2, ESS10.

Climate Change, Resilience, and Greenhouse Gas Accounting: The ESF incorporates explicit mandates for greenhouse gas (GHG) estimation, climate risk screening, resilient infrastructure design, and nature-based adaptive solutions, embedding climate resilience and low-carbon principles into project assessment and management addressing gaps not covered in prior policies.

Relevant Standard: ESS1.

Supply Chain Due Diligence Obligations: The ESF establishes new protocols for tracing key raw materials, verifying supplier compliance with labor and human rights standards, and avoiding conflict-affected resources, thereby promoting responsible production and procurement throughout project supply chains.

Relevant Standards: ESS2, ESS6.

Strengthened Free, Prior, and Informed Consent (FPIC) for Indigenous Peoples: The ESF requires FPIC for land displacement, high-impact cultural activities, and commercial use of resources or traditional knowledge, including tailored engagement, documentation, and grievance pathways advancing beyond the non-mandatory approach in OP 4.10.

Relevant Standard: ESS7

1.6 MLCIP: Project Development Objectives

The objective of the project is to enhance the Climate and disaster resilience of critical public infrastructure particularly roads & bridges and road Safety while strengthening Agro-Logistics infrastructure and related services. The project also aims to build institutional capacity and ensure readiness for effective emergency response through a dedicated Contingent Emergency Response Component (CERC).

1.7 Project Components (in Summary)

MLCIP activities are organized under the following components.

1) Component1. Climate-Resilient Roads Bridges and Road Safety

Climate-Resilient Roads, Bridges, and Road Safety finances the construction/upgradation of ~600 km of state roads, Major District Roads (MDRs), bridges, and feeder roads using climate-resilient and green technologies, including improved drainage, slope protection, and locally sourced materials to ensure all-weather connectivity between hinterland areas, Hashtag corridors, national highways, major markets, economic/social infrastructure, production/consumption centers, and interstate/international transport networks, with road selection minimizing land acquisition and social impacts; it promotes road safety via audits across design, construction, and implementation, mainstreamed monitoring/evaluation, institutional systems (database, updated codes/manuals, awareness campaigns, training), plus CCTV, Variable Messaging Systems, emergency response posts (paramedics, ambulances, tow trucks), and hospital-linked communication for post-crash care and incident reporting; and drives policy reforms by

integrating disaster-risk and climate-resilience into design, establishing a permanent Environment and Social Safeguards Management Unit at PWD headquarters, institutionalizing green tech/bio-engineering solutions and manuals, and building long-term road safety capacity through a multi-dimensional strategy in Meghalaya. The list of roads is given in **Annexure I**.

2) Component 2. Agro-Logistics Infrastructure and Services

This component supports the establishment of Multi-Modal Logistics Parks (MMLPs) in Shillong and Tura, along with various agri-logistics and rural transport facilities (district freight terminals, rural hubs, collection-point infrastructure, digital platforms, solar-powered facilities, etc.) and integrated State Logistics Policy reforms.

- 3) Environmental and social due diligence for Component 2 (Agro-Logistics and associated facilities) will be governed by a separate, dedicated Environmental and Social Management Framework that will be prepared based on the detailed technical studies to be carried out after World Bank Board approval. Site selection and specific safeguards instruments for Component 2 will follow the provisions of that future framework.

Component 3. Institutional Strengthening

Institutional Strengthening enhances road and logistics management by institutionalizing climate-resilience in asset creation, improving asset management for climate resilience, road safety, and environmental/social risk management; builds capacity of PWD/MIDFC and local contractors for Output and Performance-based Road Contracts; analyzes transport network vulnerability to climate change and disasters to develop preventive solutions; maps geo-hazard risks, establishes an early warning and disaster management control center with personnel training; and formulates a Transport Climate Emergency Management Plan; it promotes private sector participation by creating an enabling ecosystem, identifying priority logistics projects for PPP investments where viable, establishing dedicated road financing mechanisms with innovative schemes, updating PPP policies and institutions, and devising a strategy to accelerate electric vehicle uptake including private-led charging infrastructure in rural/urban areas, green hubs with solar facilities, and assessing needs for fleet greening; additionally, it provides technical assistance to build state/institutional capacity for skilling programs in resilient transport, road safety, logistics value-added services, and trade facilitation, emphasizing women's empowerment and job access for women, Village Employment Councils (VECs), and local communities.

4) Component 4. Contingent Emergency Response Component (CERC)

The CERC will support PWD/MIDFC in case of an Eligible Crisis or Emergency in responding promptly and effectively to it as per the Contingent Emergency Response Manual. Following an eligible crisis or emergency, the Recipient may request the Bank to re-allocate project funds to support emergency response and reconstruction.

1.8 Need for ESMF for MLCIP Project

Since multiple sub-projects will be developed and executed over time, the specific risks associated with each site cannot be fully identified during the appraisal phase. This ESMF provides the framework for environmental and social management across all project components except Component 2 (Agro-Logistics Infrastructure and Services). Component 2 site-specific environmental and social due diligence, including ESIAs/ESMPs and RAPs where applicable, will be undertaken separately following the ESMF screening and risk-classification procedures. This ESMF therefore: (i) sets out screening and risk-classification procedures; (ii) defines when and how ESIAs/ESMPs, RAPs, and IPDP/ will be prepared; how Free, Prior and Informed Consent (FPIC) processes will be followed and the FPIC evidence pack is to be prepared and disclosed; (iii) prescribes implementation, supervision and monitoring arrangements; and (iv) ensures compliance with applicable laws and regulations and the World Bank ESF. This ESMF also applies to any linked or associated facilities essential for achieving the project objectives, consistent with ESS requirements.

1.9 Objectives of the ESMF for MLCIP Project

The objectives of this ESMF are to:

- Set out the principles, rules, guidelines, and procedures to assess the environmental and social risks and impacts.
- Define the processes and tools to identify the measures and plans to reduce, mitigate, and/or offset adverse risks and impacts, provisions for estimating and budgeting the costs of such measures.
- Ensure compliance with applicable national, state, and local laws, regulations and World Bank Environmental and Social Standards (ESS) requirements.
- Define roles, responsibilities, and institutional arrangements specify which agencies/units implement, supervise, and monitor E&S requirements and ways to strengthen the capacities to manage environmental and social risks and impacts.
- Provide monitoring, reporting, and compliance mechanisms establish monitoring indicators, frequency, reporting lines, and corrective action protocols to ensure mitigation is implemented and effective.

1.10 Purpose of the ESMF

The primary purpose of this Environmental and Social Management Framework (ESMF) is to establish a systematic process for identifying, assessing, and managing the environmental and social risks and impacts of all investment activities financed under MLCIP, in accordance with the World Bank's Environmental and Social Framework (ESF) and applicable legal requirements. The ESMF ensures that all

sub-projects are implemented in an environmentally sustainable and socially acceptable manner in consistent with the ESSs.

1.11 Environmental & Social Categorization of MLCIP

Based on the E&S screening conducted in accordance with ESS1 and considering the nature, scale, and location of project activities, MLCIP has an Environmental and Social Risk Classification (ESRC) of High. This classification reflects:

- The project's location in hilly, ecologically sensitive areas, including proximity to forests, eco-sensitive zones, and wildlife sanctuaries (ESS6);
- High risk of biodiversity impacts, soil erosion, and landslides in fragile ecosystems.
- Limited contractor capacity to manage social and environmental issues in such sensitive landscapes.
- Pollution prevention, management of waste and resource use to minimize environmental impacts (ESS3)
- Potential for moderate to substantial adverse impacts on biodiversity, natural habitats, and ecosystem services (ESS6);
- Land acquisition and resettlement requirements (ESS5) resulting in physical and economic displacement.
- Occupational and community health and safety risks during construction (ESS2, ESS4) which will also include the new Labour Codes as announced by the Central Government on November 21st, 2025
- Limited but identifiable risks to cultural heritage (ESS8);
- Climate and disaster risk considerations requiring resilient design (ESS1, ESS4, ESS8).
- Potential impacts on Indigenous Peoples/Scheduled Tribes in project areas (ESS7);
- Stakeholder engagement requirements across diverse communities (ESS10).

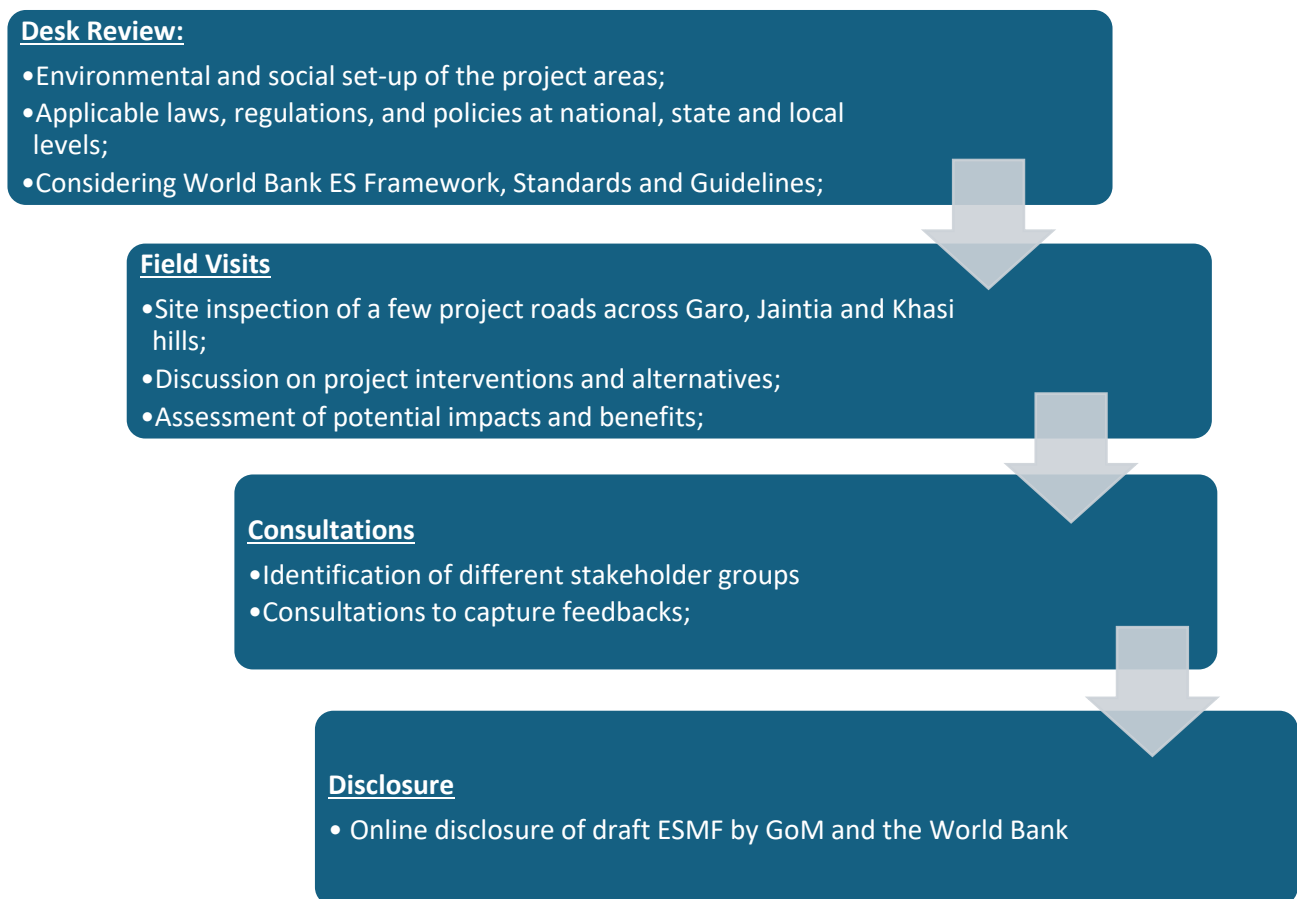
Mitigation measures following the mitigation hierarchy (avoid, minimize, mitigate, offset/compensate) as per ESS1 will be given in detail in sub-project ESMPs.

1.12 Methodology of ESMF Development

The **ESMF** was drafted through a participatory, ESS10-aligned process, consulting diverse stakeholders—line departments, technical experts, Village Employment Councils, (VECs), local men/women, road users, CBOs/NGOs, women workers, vulnerable groups, and Indigenous Peoples/Scheduled Tribes—along project roads in September 2025. Enhanced by MITP audits, missions, aide-mémoires, and compliance reports, it followed a clear sequence: (a) **desk review** of environmental/social laws, World Bank ESF,

guidelines, relevant publications and secondary baseline data [Census data 2011, NFHS 5 data, etc.]; (b) **field visits** to roads across Garo, Jaintia, and Khasi hills to evaluate interventions, impacts, and benefits; **targeted consultations** with line departments, technical experts, Village Headmen such as Rangbah Shnongs, Nokmas, Waheh Chnongs and Executive Members of the Village Councils to gather feedback; and **online disclosure** of the draft by the Government of Meghalaya and World Bank. For further details related to targeted consultations, refer to the Stakeholder Engagement Plan (SEP).

Figure 1-1: Key steps followed for drafting ESMF



Grounded in preliminary site assessments and stakeholder inputs, it delivers context-specific insights into risks and expectations. As a **living document**, it guides the entire project lifecycle and will be regularly updated—via agency and partner consultations—to reflect design changes, legal shifts, and implementation lessons. It embeds **climate resilience** using historical hazards and secondary projections. Through **adaptive management**, it integrates ongoing feedback, audits, and evolving ESF standards, with annual review workshops institutionalized to capture lessons, share best practices, and keep

environmental and social safeguards practical, responsive, and effective across Meghalaya's infrastructure initiatives.

1.13 Structure of ESMF

The structure of the ESMF shall be as per the details given below:

Table 1-1: Structure of ESMF

Chapter Name	Details Covered in the Chapter
Chapter 1: Introduction	Provides an overview of the Meghalaya Logistics and Connectivity Improvement Project (MLCIP) and the purpose of the Environmental and Social Management Framework (ESMF). Outlines project objectives, scope, and guiding principles for integrating environmental and social safeguards, along with relevance to the World Bank ESF.
Chapter 2: Existing Policy and Legal Framework	Summarizes national, state, and World Bank policies and regulations governing environmental protection, land acquisition, labor, and social inclusion. Identifies compliance obligations and institutional linkages.
Chapter 3: Baseline Study	Describes the baseline environmental and social conditions across the project area—covering physical, biological, and socio-economic aspects. Establishes key data for impact prediction and mitigation planning.
Chapter 4: Impact Assessment & Mitigation Measures	Analyzes potential environmental and social impacts of project interventions during construction and operation. Defines mitigation hierarchies and links them to Environmental and Social Management Plans (ESMPs).
Chapter 5: Process Flow for Application of ESMF	Explains the procedural steps for ESMF implementation—from screening and scoping to appraisal and monitoring. Integrates E&S safeguards into departmental business processes and project design stages.
Chapter 6: Gender Action Plan	Outlines strategies for promoting gender equality and women's empowerment within the project. Addresses gender-based risks, including GBV/SEA/SH prevention, and promotes women's participation, safe working conditions, and equitable access to employment and decision-making opportunities.

Chapter Name	Details Covered in the Chapter
Chapter 7: Institutional Arrangement	Details the organizational structure, roles, and responsibilities of the PMU, PIUs, contractors, and consultants in ESMF implementation. Defines reporting, coordination, and accountability frameworks.
Chapter 8: Capacity Development and Training	Outlines capacity needs and training plans for project stakeholders to strengthen E&S management competencies. Specifies modules, frequency, and expected outcomes.
Chapter 9: Monitoring and Reporting Framework	Defines indicators, tools, and methodologies for monitoring ESMF implementation. Includes provisions for reporting, third-party audits, community feedback, and adaptive management.
Chapter 10: ESMF Budget	Presents cost estimates for implementing ESMF, covering staffing, capacity building, monitoring, mitigation, and contingencies. Ensures financial provisions for safeguard sustainability.

2 EXISTING POLICY AND LEGAL FRAME WORK

This section provides an overview of the applicable policies, laws, and regulations at the national, state, and local levels concerning environmental and social safeguards relevant to the proposed project activities. It also highlights the environmental and social safeguard standards of the World Bank that apply to the project.

2.1 Environment Laws and Regulations

The following table(s) outlines the key provisions of the applicable laws, rules, and policy frameworks that are of particular relevance to the planning, design, and implementation of the proposed project.

Table 2-1: Applicable Environmental Legislation and Specific Requirements for the Project

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
National level				
Environmental Protection Act, 1986, and subsequent amendments	<p>The Environmental (Protection) Act, 1986 is the umbrella legislation empowering the MoEFCC to set environmental standards, regulate pollution, and enforce measures for protecting and improving environmental quality. It enables the government to issue notifications such as the EIA Notification (2006) and regulate activities through rules on air, water, waste, and hazardous substances.</p> <p>The various environmental quality standards notified</p>	State Pollution Control Boards (SPCBs)	<ul style="list-style-type: none"> All project activities must comply with the Act's provisions, including adherence to prescribed environmental standards, obtaining statutory clearances (e.g., Consent to Establish/Operate from MSPCB), and implementing mitigation measures under the Environmental Management Plan (EMP). The Act provides the overarching legal basis for ensuring that construction, operation, and maintenance of Project infrastructure do not cause environmental degradation and remain consistent with World Bank ESS-1 requirements. 	Contractor & MPWD

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
	under this act are applicable to MLCIP Sub Project works.			
Environmental Impact Assessment Notification- 2006, and its amendments	Regulates prior Environmental Clearance (EC) for categorized projects.	MoEF&CC and SEIAA	<ul style="list-style-type: none"> The Project Component do not trigger item 7(f) unless part of major new highway expansion or land acquisition. applicable for screening documentation. Ropeway projects proposed under Item 7(g) will mandatorily require EC— Category A (from MoEFCC) for eco-sensitive or protected areas and Category B (from SEIAA) for other locations. All such interventions under MLCIP will include comprehensive ESIA, ESMP, and public consultation prior to approval and implementation. Contractors must obtain prior Environmental Clearance (EC) under the EIA Notification, 2006 (and amendments) for any extraction or sourcing of minerals such as earth, sand, stone, gravel, or aggregates from borrow areas, quarries, or other 	<ol style="list-style-type: none"> 1. MPWD 2. DPR/ESIA Consultant 3. Contractor

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
			material sources, whether new or not previously cleared. The procedure for Environment clearance for sub project is given in the Annexure II	
The Forest (Conservation) Act, 1980 and Amendments and Van (Sanrakshan Evam Samvardhan) Rules, 2023	Provision for obtaining Forest Clearance shall apply if any forestland is proposed to be diverted for the project, including notified community forest that are deemed forest under the provisions of the Forest (Conservation) Act, 1980 and the rules framed thereunder.	MoEFCC, GoM Forest Department	<ul style="list-style-type: none"> Major infrastructure development project like Road & Bridge in forest areas before the Forest (Conservation) Act, 1980, For MLCIP, preliminary environmental screening of all identified project roads and bridges was completed, and only three road sections were found to traverse notified forest areas. In these cases, all construction and improvement activities will remain strictly within the pre-1980 RoW, ensuring compliance and avoiding additional forest diversion requirements. Expansion beyond this RoW needs full FCA compliance through the PARIVESH portal. Stage-I and Stage-II approvals from MoEF&CC are mandatory with CA and NPV conditions. Rights under the 	<ol style="list-style-type: none"> 1. MPWD 2. DPR Consultant 3. ESIA Consultant

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
			<p>Forest Rights Act, 2006 must be settled before work.</p> <ul style="list-style-type: none"> In Meghalaya, over 80% of forests are community-owned, including sacred groves (Law Kyntang) and village forests (Law Shnong). Any diversion of such forest land requires FCA clearance, regardless of legal classification, under MoEF&CC supervision. The Forest Department has formally confirmed that none of the MLCIP project road alignments intersect or pass through any designated or legally demarcated Community Forest areas. 	
Wildlife (Protection) Act, 1972 amended 1993 and Rules 1995; Wildlife (Protection)	<p>The Act provides for the comprehensive protection of wild animals, birds, and plants through a system of six Schedules that confer varying degrees of protection.</p> <p>Schedule I and Part II of Schedule II extend absolute</p>	National / State Board for Wildlife	<p>As a large portion of Meghalaya's land comprises forest areas and wildlife habitats, the MoEF&CC Office Memorandum (OM) No. J.11013/41/2006-IA/II(I), dated 2 December 2009, applies to the project. Accordingly, projects involving forestland or located within 10 km of National Parks, Wildlife Sanctuaries, or Eco-Sensitive Zones</p>	<ol style="list-style-type: none"> 1. MPWD 2. DPR Consultant 3. ESIA Consultant

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
Amendment Act, 2002	<p>protection, with the highest penalties for violations.</p> <p>Species listed under Schedules III and IV are also afforded protection, though with relatively lower penalties.</p> <p>Schedule V specifies species of animals that may be lawfully hunted, while Schedule VI identifies certain endemic plant species that are prohibited from cultivation and planting.</p>		<p>require clearance from the National Board for Wildlife (NBWL) under the Wildlife (Protection) Act, 1972. Under the Project, none of the proposed subproject locations fall within or near any notified Ecologically Sensitive Zones (ESZs), and therefore, clearance from the National Board for Wildlife (NBWL) is not required.</p> <p>Certain MLCIP subprojects are situated in proximity to recognized elephant corridors, thereby requiring enhanced biodiversity safeguards. In accordance with the Wildlife (Protection) Act, 1972, and the Supreme Court's 2020 judgment (Civil Appeal Nos. 3438–3439 of 2020), which affirms the status of elephants as a National Heritage Animal and reinforces protection of their migration routes and right of passage, the project shall adopt species-specific and site-responsive management measures to avoid, minimize, and mitigate impacts on wildlife.</p>	

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
Biological Diversity Act, 2002	The Act emphasizes the Conservation of India's biodiversity and promotes the sustainable use of biological resources. It establishes a comprehensive framework for the protection of biodiversity, the sustainable utilization of its components, and the equitable sharing of benefits arising from the use of biological resources.	<u>National Biodiversity Authority</u> (NBA), State Biodiversity Board	<ul style="list-style-type: none"> In line with the National Biodiversity Act, 2002, the project will consult Biodiversity Management Committees (BMC), follow Meghalaya Biodiversity Board (MBB) directives especially near Biodiversity Heritage Sites and integrate biodiversity safeguards (e.g., wildlife crossings) to ensure compliance with principles of conservation and sustainable use Under the Biological Diversity Act, 2002, Project activities may affect sensitive ecological components such as natural habitats, forest edges, riparian vegetation, and areas supporting rare or endemic species, including sacred groves and community-conserved landscapes. The project proponent must therefore ensure that works are planned to avoid Biodiversity Heritage Sites and eco-sensitive zones, and conduct detailed biodiversity screening prior to construction. Consultation with the 	<ol style="list-style-type: none"> 1. MPWD 2. DPR Consultant 3. ESIA Consultant

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
			State Biodiversity Board and local Biodiversity Management Committees (BMCs) is essential to identify and mitigate potential ecological risks	
Notification of Eco Sensitive Zones (ESZs)	Buffer areas surrounding protected areas, such as National Parks and Wildlife Sanctuaries, are designated as Eco-Sensitive Zones (ESZs) under this notification. Specific restrictions on activities, including construction, tree felling, and other potentially harmful operations, apply within these zones.	Forest Department, GoM and MoEFCC	<ul style="list-style-type: none"> The project avoids all activities prohibited within Eco-Sensitive Zones (ESZs). The assessment confirms that the current set of MLCIP road subprojects does not fall within any notified Ecologically Sensitive Zone (ESZ). All alignments are located outside legally designated ESZ boundaries. Accordingly, no ESZ-related restrictions or regulatory procedures are triggered. The project remains compliant with applicable wildlife and environmental protection provisions. 	<ol style="list-style-type: none"> 1. MPWD 2. DPR Consultant 3. ESIA Consultant 4. Contractor
Water (Prevention and Control of Pollution) Act,	This Act provides for the control and prevention of water pollution by regulating the discharge of pollutants into water bodies in	Meghalaya State Pollution Control Board	Water pollution may arise from the discharge of sediments, oil and grease, and organic-laden runoff generated from construction plants, ancillary facilities, workshops, and labour residential	CSC & Contractor

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
1974, and amendments	accordance with prescribed standards.		quarters. Accordingly, Consent to Establish (CTE) and Operation (CTO) from the Meghalaya State Pollution Control Board (MSPCB) shall be obtained prior to commencement of such activities.	
Air (Prevention and Control of Pollution) Act, 1981, and amendments	This Act provides the standards for prevention and control of Air pollutions.	Meghalaya State Pollution Control Board	Air pollution may result from emissions generated by crushers, hot-mix plants, and concrete batching plants. In addition, project activities such as scarification, aggregate dumping, and handling of bituminous and concrete waste are expected to generate fugitive dust emissions. Therefore, obtaining Consent to Establish (CTE) and operation (CTO) from the State Pollution Control Board (SPCB) is mandatory prior to the installation and operation of such facilities.	CSC & Contractor
Noise Pollution (Regulation and Control Rule) 2000	The Ministry of Environment, Forest and Climate Change (MoEF&CC) has promulgated noise standards for both day and night, applicable to	State Pollution Control Board	Noise Pollution may be generated during construction phase from heavy machinery such as bulldozers, , and excavators, and transportation of materials using trucks and dumpers, piling and foundation work,	CSC & Contractor

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
	various land use categories, to regulate and control ambient noise levels.		demolition, drilling, and cutting also contribute significantly to noise levels. Does not need a specific “noise permission” under the Rules, but the activities must comply with prescribed noise limits for a specific area	
Ancient Monuments & Archaeological Sites and Remains Act, 1958	The Act has been enacted to safeguard and prevent damage to archaeological sites and monuments identified and protected by the Archaeological Survey of India (ASI).	Archaeological Dept. GOI and GoM	The State has several nationally and state-protected heritage sites and ancient caves. Sub-projects near ASI-notified monuments will follow the Act, which defines a 100 m prohibited and 200 m regulated zone around protected sites. Project documents acknowledge these legal requirements and ensure compliance through adherence to the prescribed guidelines. The project will avoid such areas where possible and apply mitigation and a Chance Finds Procedure for any unexpected discoveries.	1. MPWD 2. DPR Consultant 3. ESIA Consultant 4. Contractor
Construction and Demolition Waste	The rules provide a framework for the management of construction and demolition (C&D) waste generated from	Village council, Municipal authority	<ul style="list-style-type: none"> Construction and demolition (C&D) waste generated during project activities shall be managed, handled, and disposed of in accordance with the 	CSC and Contractor

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
Management Rules, 2016	the construction, repair or demolition of any civil structure, ensuring environmentally sound handling, recycling, and disposal practices.		<p>provisions of the Rules.</p> <ul style="list-style-type: none"> Disposal of C& D waste shall be done under the guidelines of local authorities like Village council, and municipal boards 	
Municipal Solid Waste (Management & Handling) Rules, 2000 (MSW Rules)	Segregation, Handling & safe disposal of domestic solid waste	Municipal Boards/ Town Committees, village council	<ul style="list-style-type: none"> All workforce campsites shall provide designated waste collection and storage facilities and maintain controlled access to prevent intrusion by stray animals or wildlife, thereby minimizing environmental and health risks. Disposal is done under the provided guidelines of local authorities like Village council and municipal boards 	MPWD and Contractor
Hazardous and other Wastes (Management and Transboundary Movement)	The Hazardous and Other Wastes (Management and Transboundary Movement) Rules define and classify hazardous wastes, and establish procedures for their handling, storage, treatment,	Central Pollution Control Board (CPCB) and Meghalaya	<ul style="list-style-type: none"> All waste oils generated during construction and operation shall be collected, stored, transported, and disposed of as per CPCB guidelines. Under the new Extended Producer Responsibility (EPR) system, producers, importers, recyclers, and collection 	MPWD and Contractor

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
Rules, 2016 and amendments	and disposal, including the use of Treatment, Storage, and Disposal Facilities (TSDFs).	State Pollution Control Board	<p>agents must register on the CPCB EPR portal and ensure used oil is supplied only to authorized recyclers. Collection agents need SPCB authorization and must follow safe handling, storage, and transport practices. Unauthorized disposal, such as burning or blending, is not allowed, and all activities must be reported through the CPCB EPR system</p> <ul style="list-style-type: none"> • Hazardous wastes generated during construction and operation shall be collected, stored, transported, and disposed of in accordance with CPCB guidelines. • Under the Extended Producer Responsibility (EPR) framework, producers, importers, recyclers, and collection agents must register on the CPCB EPR portal and ensure that hazardous wastes are supplied only to authorized recyclers. • The contractor must obtain 	

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
			<p>authorization from the MSPCB for the storage of hazardous waste. The contractor shall be responsible for obtaining the necessary authorizations for handling hazardous waste, maintaining accurate records, submitting statutory returns, and ensuring environmentally compliant storage, transportation, and final disposal of all hazardous waste generated during project activities.</p> <ul style="list-style-type: none"> • Collection agents also require SPCB authorization and must follow safe handling, storage, and transport practices. • Unauthorized disposal is strictly prohibited, and all related activities must be recorded and reported through the CPCB EPR system. 	
The Explosive Act 1884; Explosives Rules, 2008	Safe transportation, storage and use of explosive material	PESO, District Magistrate /Deputy Commissioner	Blasting (if) required for hill slope cutting, bridge foundation works, and construction of agro-logistic components such as ropeways shall be carried out only by	MPWD and Contractor

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
			<p>trained and licensed personnel using controlled methods. Before any blasting, all necessary licenses and approvals must be obtained, and explosives must be safely stored, handled, and transported as per statutory safety standards. Adequate safety measures, advance warnings, and exclusion zones shall be maintained to ensure the safety of workers, nearby communities, and the environment.</p> <p>Under the Explosives Act and associated rules, suitable contract provisions will be incorporated into each package to ensure that storage, handling, transport, and use of explosives comply fully with all statutory safety and regulatory requirements.</p>	
Batteries (Management and Handling) Rules, 2022	The rules mandate the proper collection, disposal, and recycling of used lead-acid batteries, assigning responsibility to manufacturers, dealers, and	Meghalaya State Pollution Control Board	All used lead-acid batteries generated by the project shall be collected, stored, and returned to the authorized recycling system in accordance with this Rule, ensuring environmentally sound disposal and recycling.	MPWD and Contractor

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
	consumers to ensure that batteries are returned to the system for environmentally sound recycling.			
Notification for use of fly ash, 2003 and MoEF&CC notification dated 25th March 2015	Reuse large quantity of fly ash discharged from thermal power plant to minimize land use for disposal	Meghalaya State Pollution Control Board	Fly ash can be utilized as a structural fill, for soil stabilization, and in the production of fly ash bricks or aggregates ¹	MPWD and Contractor
Central Motor Vehicle Act 1988 and Central Motor Vehicle Rules 1989	To check vehicular air and noise pollution	Regional Transport Authority (RTA), the State Transport Authority (STA),	Contractors' responsibility to obtain Pollution Under Control certificates during construction stage for all vehicles deployed for construction activities and follow emission standards of Bharat Stage (CEV/TREM) -IV & Bharat Stage (CEV/TREM)- V as per MoRTH circular GSR 1114(E)	MPWD and Contractor

¹ The NTPC Bongaigaon Thermal Power Station is located at Salakati in the Kokrajhar district of Assam. The road distance is approximately 246 km to 280 km from the shillong

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
			Under Project, all Construction Equipment Vehicles (CEVs) and Agricultural Tractors deployed at project sites must comply with the stringent Bharat Stage CEV/TREM IV and V emission standards notified under G.S.R. 1114(E). These standards regulate particulate matter, NOx, hydrocarbons, CO, and particle number emissions using NRSC and NRTC test cycles as per AIS-137. Contractors are required to use only certified engines that meet conformity of production, durability norms, and NOx control requirements. Ensuring adherence to these standards supports the use of cleaner, energy-efficient, and environmentally compliant off-road machinery across MLCIP's civil works, thereby reducing pollution and enhancing overall environmental performance.	
Public Liability and Insurance Act 1991	The Act aims to provide immediate relief to those	District Collector	The Contractor shall maintain Public Liability Insurance as mandated under this Act, covering third-party damages or injuries, particularly during hazardous	MPWD and Contractor

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
	affected by accidents involving hazardous substances.		operations, to ensure prompt compensation and minimize financial exposure.	
The Petroleum Rules, 2002	The Rules mandate obtaining licenses for most petroleum-related activities, emphasize safe handling and storage to prevent accidents, and establish reporting procedures for incidents involving petroleum products.	Petroleum and Explosives Safety Organization (PESO) and district authority	Storage up to 2,500 litres in non-bulk containers does not require a license but must follow safety guidelines. For bulk storage above 1,000 litres and up to 25,000 litres, the District Authority issues licenses after checking compliance with safety, fire protection, and facility standards. Storage between 25,000 and 45,000 litres requires prior approval from PESO, while quantities exceeding 45,000 litres need a full license in Form XVI.	MPWD and Contractor
Plastic waste Management Rules, 2016	The Plastic Waste Management Rules provide for the control and management of plastic waste generated from any activity.	Meghalaya State Pollution Control Board	The Contractor shall manage all plastic waste generated from project activities in accordance with the Plastic Waste Management Rules, ensuring proper segregation, collection, and disposal/recycling through authorized facilities.	MPWD and Contractor

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
State Level				
Meghalaya Forest Regulation (Application and Amendment) Act, 1973	<p>Protection of unsettled forests belonging to the Government:</p> <ul style="list-style-type: none"> regulate or prohibit the felling, cutting girdling, marking, lopping, tapping or injuring by fire or otherwise of any trees, the sawing, conversion and removal of timber, and the collection and removal of other forest produce; regulate or prohibit the quarrying of stones, the boiling of catechu or the burning of lime or charcoal; 	Department of Forest, GoM	Rehabilitation of the sub-project roads will necessitate stone quarrying from designated quarry sites. Accordingly, all provisions under the Act shall be applicable.	MPWD and Contractor
The Meghalaya Tree (Preservation) Act, 1976	An Act to provide for the regulation of tree felling with a view to protecting catchment areas, preventing soil erosion, preserving the unique	Department of Forest, GoM	<ul style="list-style-type: none"> Prior Tree cutting permission to be obtained. For the auctioned trees, The Forest Department issues public notices inviting bids for the right to fell & 	MPWD and Contractor

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
	characteristics of hilly regions, safeguarding the vegetal cover and climate, and for matters connected therewith or incidental thereto		<p>remove the trees. Notices specify tree details, earnest money deposit & auction date.</p> <ul style="list-style-type: none"> Compensatory plantation is mandatory for every auctioned tree in the ratio of 1:2 (High value species in the ratio of 1:3) via the order of DFO 	
The Mines and Minerals (Regulation and Development) Act (MMRD Act), 1957 and Concession Rules 2016	Provides the legal framework for the regulation of mines and the development of all minerals, including rules for the granting of mining leases and quarrying permits. It further stipulates that such operations shall not be undertaken in forest land, catchment areas, protected areas, biodiversity heritage sites, or other designated no-mining zones	Department of Mining & Geology, GoM	Project will require quarrying of stones for aggregate preparation. This act will be applicable for such activities.	MPWD and Contractor
Meghalaya Protection of	The act empowers the government to declare and safeguard water catchment	Meghalaya Catchment	The Act applies by requiring strict measures to prevent soil erosion, pollution, and disturbance of water	MPWD and Contractor

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
Catchment Area Act, 1990	areas by restricting activities such as tree felling, jhumming, and quarrying, in order to protect springs, streams, and other vital water sources.	Areas Advisory Board	sources within designated catchment areas. For MLCIP works located within or near notified catchment areas, the Act requires the project to adopt strict safeguards to prevent soil erosion, protect springs and streams, and avoid activities such as unregulated tree felling, , quarrying, or any disturbance that may affect water sources. MLCIP must ensure full compliance with the measures recommended by the Catchment Areas Advisory Board, with responsibilities shared between MPWD and the contractor.	
AWIL Fees Act, 1960	The Act mainly deals with assessing and collecting Awil fees in the Garo Hills District, with the revenue used for purposes such as covering assessment costs and funding local development projects for the benefit of residents.	GHADC	The Act is designed to collect "Awil fees" on timber and other forest produce, and also on jhum land within specific areas of the Garo Hills. For MLCIP activities within the jurisdiction of Garo Hills Autonomous District Council (GHADC), the Act requires payment of Awil fees for timber, forest produce, or jhum land used or affected during project	MPWD and Contractor

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
			implementation. This ensures lawful utilization of forest resources and revenue contribution to local development. MPWD and the contractor must obtain necessary clearances and remit applicable fees in accordance with GHADC requirements.	

Table 2-2: State and Autonomous District Council Policies and Policy Instruments for MLCIP

Legislation (Acts/Rules)	Key provisions and purpose	Regulatory Authority
The Garo Hills District (Forest) Act, 1958	Act provides a framework for the District Council to manage forests within the Garo Hills Autonomous District.	Garo Hills Autonomous District Council (GHADC)
The United Khasi and Jaintia Hills Autonomous District (Management and Control of Forest) Act, 1958	Act is provided for the management and control of forests in the United Khasi – Jaintia Hills Autonomous District	Khasi Hills Autonomous District Council Jaintia Hills Autonomous District Council
United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960	The Rules establishes a multi-tiered management system for various types of forests.	Executive Committee Khasi Hills Autonomous District Council Jaintia Hills Autonomous District Council

Legislation (Acts/Rules)	Key provisions and purpose	Regulatory Authority
Khasi Hills Autonomous District (management and Control of Forests, Revised rate of Royalty) Rules, 1984	The Act establishes royalty rates for forest produce and prescribes detailed procedures for the measurement of logs and the conversion of timber for royalty purposes. The rules apply to all forests within the Khasi Hills Autonomous District except reserved forests.	Khasi Hills Autonomous District Council
The Meghalaya Wild Animal and Birds Protection Act, 1971 (Act 9 of 1971)	Protection of Wild Animals and Birds- Prohibits hunting, capturing, or killing of specified wild animals and birds except under permit or in cases of self-defense	Principal Chief Conservator of Forests (Wildlife) & Chief Wildlife Warden, Meghalaya Forests & Environment Department

Table 2-3: National Policies and Policy Instruments Impacting MLCIP

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority
Supreme Court Orders, 1996-2002	Supreme Court orders issued between 1996 and 2002 addressed a range of legal areas, including procedures for arbitration under the Arbitration Act, 1996, clarification of land acquisition processes, and the definition of rights concerning public interest litigation and legal aid	Supreme Court of India
National Forest Policy, 1988	<ul style="list-style-type: none"> To classify forests and ensure the sustained supply of timber and other forest products. To increase forest cover to 33% of the country's land area to maintain ecological balance. 	Forests and Environment Department of the Government of Meghalaya

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority
	<ul style="list-style-type: none"> To promote afforestation and manage forests for revenue and the needs of industry, communication, and defense. <p>Key provisions are:</p> <p>(1) Ecological Balance, (2) Community Involvement, (3) Rural Needs, (4) Forest Productivity, (5) Conservation, (6) Forest Industry, (7) Land Use</p>	
North East Forest Policy, 2002	The policy proposal emphasized sustainable forest management, biodiversity conservation, and active community participation in the North East Indian states. Its key provisions likely focused on addressing the region's unique ecological and cultural needs by integrating local communities and their traditions into biodiversity conservation, adopting flexible management practices to ensure sustainable multi-product yields from forests, and promoting livelihood opportunities based on forest resource management to enhance self-reliance.	Meghalaya Biodiversity Board
National Biodiversity Strategy and Action Plan, 2002	The National Biodiversity Strategy and Action Plan (NBSAP), 2002, aimed at conservation, sustainable use, equitable sharing of benefits, and the protection of traditional knowledge associated with India's biological resources, in line with the objectives of the Convention on Biological Diversity (CBD).	<p>In National level - National Biodiversity Authority (NBA)</p> <p>In Meghalaya- Meghalaya Biodiversity Board (MBB)</p>

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority
<p>Joint Forest Management (JFM) 1990 and Forest Development Agency (FDA) Guidelines, 2002</p>	<ul style="list-style-type: none"> • The Joint Forest Management (JFM) Resolution, 1990 by the MoEFCC promotes participatory forest protection and regeneration through community involvement. It establishes Village Forest Committees (VFCs) or JFMCs to work with the Forest Department for sustainable forest use. • The Forest Development Agency (FDA) Guidelines, 2002 further strengthen JFM by creating FDAs to coordinate multiple JFMCs and manage integrated forest programs. Under Project these frameworks will guide community participation in forest protection, compensatory plantation, and eco-restoration. • Coordination with the Meghalaya Forest Department and local JFMCs will ensure activities (such as afforestation, compensatory afforestation etc.) align with local forest plans. Participation of JFMCs will promote livelihood co-benefits, Net Timbre Forest Product (NTFP) initiatives, and participatory monitoring. These measures align with ESS-6 on biodiversity conservation and sustainable resource management. • This will be applicable in project areas where tree felling will take places and would need FC from the respective DFO/ State Conservator / Principal Chief Conservator of Forest 	<p>Joint Forest Management (JFM)- The Ministry of Environment and Forests (MOEF), Government of India.</p> <p>Forest Development Agency (FDA) - National Afforestation and Eco-development Board (NAEB), Govt. India</p>

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority
Mines and Mineral Act, 1957	The Act regulates mining activities in India. Its key provisions include the requirement of licenses and leases for mining operations, the use of auctions to grant mineral concessions to ensure transparency, and the creation of the District Mineral Foundation (DMF) and the National Mineral Exploration Trust (NMET) for local area development and mineral exploration.	Department of Mining & Geology, Government of Meghalaya.
Mines and Mineral (Regulation and Development) Amendment act, 1994	This amendment modifies Section 4A of the original MMDR Act, 1957, by clarifying the authority of the Central Government to direct the State Government to prematurely terminate prospecting licenses or mining leases under specified circumstances for developmental and regulatory purposes the MMDR Act and its amendments are the legal foundation that governs how the MLCIP procures the raw materials necessary for its construction, ensuring the process is legal, transparent, and environmentally responsible.	Indian Bureau of Mines (IBM)
Biodiversity Rules, 2004	The rules lay down the procedure for accessing biological resources and associated traditional knowledge, mandating prior approval from the National Biodiversity Authority (NBA) and ensuring fair and equitable benefit-sharing with local communities	Biodiversity Management Committees (BMCs)

2.2 Social Laws and Regulations

Applicable Social Legislations and Specific Requirements for the Project

Legislation	Description	Regulator	Applicability
The Meghalaya Transfer of Land (Regulation) Act, 1971	The Act stipulates that no land (including immovable property of every description and any rights over such property) in Meghalaya can be transferred by a tribal to a non-tribal or by a non-tribal to another non-tribal except with the prior sanction of the competent authority.	Revenue Department; Village Councils- Autonomous District Councils (ADCs)	Relevant to all project interventions involving land acquisition, leasing, or transfer. The project will ensure that all land-related activities including documentation, due diligence, and land management planning comply with this Act. No land transfer or use will be undertaken without approval from the competent tribal authority, ensuring protection of tribal land rights and consistency with ESS5 (Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement).
The Cadastral Survey and Preparation of Records of Rights Act, 1980 (as amended in 1991)	The Act provides for cadastral survey of lands and preparation of land records in the state. The 1991 amendment enables the ADCs to undertake cadastral surveys with financial and technical assistance from the State Government.	Revenue and Disaster Management Department; Autonomous District Councils (ADCs)	Applicable for project activities involving detailed mapping and verification of land ownership or tenure. Under Project, cadastral mapping and systematic land documentation will support preparation of RAP and verification of community and private ownership. Prior clearance from the concerned village councils will be obtained for all project interventions located on or adjacent to community forest land, in line with ESS1 and ESS5.
The Khasi Hills Autonomous	The Khasi Hills Autonomous District (Regulation and Administration of	Autonomous District Council through the Executive	Applicable as it ensures project initiatives like deforestation control, natural resource

Legislation	Description	Regulator	Applicability
District (Regulation and Administration of Land) Act 2021	Land) Act, 2021, codifies and regulates land tenure in Khasi Hills, Meghalaya, under the Sixth Schedule. It governs allotment, occupation, use, and setting apart of land (Ri-Kynti private land and Ri-Raid community land), protects tribal customs, prevents unauthorized transfers, and establishes land records, titles, and certificates for agriculture, residential, and other purposes, excluding government and reserved forest lands	Member – Land Management; Village Council (Dorbar Shnong etc)	management, and community conservation align with Khasi tribal customs, preventing unauthorized transfers or conversions, and requiring approvals from Village Councils – Autonomous District Council.
The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006	Provides for recognition of forest rights to Scheduled Tribes and other traditional forest dwellers in occupation of forest land prior to 13 December 2005, up to a maximum of 4 hectares. Rights are heritable but not transferable or alienable.	In Khasi Hills: Syiem (Chief) and Dorbar; In Jaintia Hills: Doloi and Dorbar; In Garo Hills: Nokma (Clan Head)	Applicable where project corridors or facilities intersect or are located near community forest or traditional forest lands. Project will ensure meaningful consultation, participation and due consent of Indigenous Peoples and traditional forest users during project planning and impact assessment. No project intervention will restrict access to legally recognized forest rights or livelihood resources. Project activities will complement community development by improving access to markets and services,

Legislation	Description	Regulator	Applicability
			consistent with ESS7 and ESS10 (Stakeholder Engagement and Information Disclosure)
The Right to Information Act, 2005	The Act provides for setting out the practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, the constitution of a Central Information Commission and State Information Commissions and for matters connected therewith or incidental thereto.	Public Information Officers (PIOs)	Applicable to the project as a whole
Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement	The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (RFCTLARR) Act, 2013 provides for a transparent process in land acquisition for public purposes, ensuring fair compensation to affected landowners and the rehabilitation and resettlement	District Magistrate/ District Collector/ Executive Member (Revenue) – Autonomous District Council	All sub-projects involving individual land acquisition (whose land is registered with the District Administration – Revenue Department) shall comply with the provisions of the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (RFCTLARR) Act, 2013. This includes ensuring a transparent acquisition process, provision of fair

Legislation	Description	Regulator	Applicability
Act, 2013 (RFCTLARR)	(R&R) of those displaced or whose livelihoods are impacted.		compensation based on market value, multiplier, and solatium, and extending R&R entitlements to landowners and livelihood losers. In addition, facilities at resettlement sites shall be provided to displaced persons, and where applicable, higher compensation and R&R norms prescribed by the State or implementing agencies shall be followed.
The Meghalaya Transfer of Land (Regulation) Act, 1971	The Meghalaya Transfer of Land (Regulation) Act, 1971 stipulates that no land (includes immovable property of every descriptions and any rights in or over such property) in Meghalaya can be transferred by a tribal to non-tribal or by a non-tribal to another non-tribal except with the previous sanction of the competent authority.	Revenue and Disaster Management Department ADCs	Under this project, comprehensive land-related initiatives shall be undertaken, including systematic documentation, preparation of land management plans, and scientific mapping. These activities are of critical importance as they have not yet been fully implemented in the state, and their completion will support effective governance, planning, and sustainable development.

Table 2-4: Social Legislations and Regulatory Requirements

2.2.1 Applicable Labor Laws

The applicable Labor laws for MLCIP are given as follows:

Table 2-5: Labor laws applicable

S. No.	Act / Regulation	Applicability to MLCIP	Key Provisions / Obligations	Implementing / Enforcing Authority
1	Code on Wages, 2019	All workers employed under MLCIP, including direct, contract, and subcontracted labor	<ul style="list-style-type: none"> • Ensure payment of minimum wages as per national/state rates • Timely payment of wages without delay • Payment of overtime at prescribed rates for extended hours • Payment of bonus and other statutory entitlements • Maintain wage registers and records for audits 	Ministry of Labour & Employment; Project Propoent Contractor HR/Payroll Officers
2	Industrial Relations Code, 2020	All MLCIP contractors and labor workforce, including fixed-term and temporary staff	<ul style="list-style-type: none"> • Establish grievance redressal mechanisms at project and contractor levels • Facilitate industrial dispute resolution through conciliation or mediation 	Ministry of Labour & Employment; Project HR; Contractor HR/Industrial Relations Officers

S. No.	Act / Regulation	Applicability to MLCIP	Key Provisions / Obligations	Implementing / Enforcing Authority
			<ul style="list-style-type: none"> • Recognize trade unions where applicable • Comply with fixed-term employment regulations • Maintain employment records and contracts 	
3	Occupational Safety, Health and Working Conditions Code, 2020 (OSH Code)	MLCIP construction sites, labor camps, machinery and equipment operations	<ul style="list-style-type: none"> • Ensure occupational safety and health standards at work sites • Provide personal protective equipment (PPE) and enforce its use • Maintain sanitation, drinking water, and rest areas • Conduct regular health check-ups for workers • Monitor working hours, night shifts, and hazardous operations 	Ministry of Labour & Employment; Project Safety Officer; Contractor Safety Officers; Site Supervisors

S. No.	Act / Regulation	Applicability to MLCIP	Key Provisions / Obligations	Implementing / Enforcing Authority
			<ul style="list-style-type: none"> Ensure emergency preparedness and first-aid facilities 	
4	Social Security Code, 2020	All MLCIP workers, including direct, contract, migrant, and temporary workers	<ul style="list-style-type: none"> Enroll workers in Provident Fund (PF) and Employees State Insurance (ESI) schemes Provide maternity benefits, gratuity, and life/disability coverage Ensure coverage for unorganized and fixed-term workers as per law Maintain records of contributions and claims 	Ministry of Labour & Employment; Project HR; Contractor HR/Social Security Officers
5	Code on Employment and Industrial Relations for Contractors	Contractor-managed workforce on MLCIP	<ul style="list-style-type: none"> Require all contractors to comply with labour codes for wages, safety, and social security Maintain labor registers, attendance, and wage records 	Ministry of Labour & Employment; Project HR; Contractor Compliance Officer; Site Supervisors

Disclaimer: This is a draft version and is being reviewed by the World Bank.

S. No.	Act / Regulation	Applicability to MLCIP	Key Provisions / Obligations	Implementing / Enforcing Authority
			<ul style="list-style-type: none">• Provide welfare facilities such as housing, sanitation, drinking water, and medical care• Ensure occupational safety and health compliance on sites• Conduct periodic monitoring and reporting to Project HR	

2.3 World Bank Environment and Social Framework (ESF)

This section highlights the World Bank ESF and their applicability to the project. These policies guide the Bank and the Borrower in project identification, preparation, and implementation, ensure stakeholder participation, and address environmental and social risks. They also provide mechanisms for consultation and information disclosure. The table below outlines the Bank's safeguard policies and their implications for the project.

Table 2-6: World Bank Safe Guard Polices ESS

ESS No. & Title	Objective / Key Provisions	Applicability to the Project	Implications / Required Actions
ESS1 – Assessment and Management of Environmental and Social Risks and Impacts	Establishes the framework for identifying, assessing, and managing environmental and social risks. Requires preparation of E&S instruments and stakeholder engagement.	Applicable – Project involves construction and road upgradation with potential environmental and social impacts.	Overarching standard that requires the Borrower to identify, assess, mitigate, manage, and monitor E&S risks and impacts throughout the project life cycle using the mitigation hierarchy, adaptive management, and measures proportionate to risk level. Mandates stakeholder engagement (per ESS10), information disclosure, and preparation/implementation of all required E&S instruments (ESIA, ESMP, ESCP, audits, hazard/risk assessments, cumulative impact assessments, etc.).

ESS No. & Title	Objective / Key Provisions	Applicability to the Project	Implications / Required Actions
ESS2 – Labor and Working Conditions	Protects workers’ rights, promotes fair treatment, non-discrimination, and safe working conditions.	Applicable – Project will engage local labor, contractors, and workers.	Prepare Labor Management Procedures (LMP), establish a Grievance Redress Mechanism (GRM) for workers, ensure occupational health and safety (OHS) compliance.
ESS3 – Resource Efficiency and Pollution Prevention and Management	Promotes sustainable resource use and pollution control related to air, water, waste, noise, and hazardous materials.	<p>Applicable – Construction activities will generate waste, dust, and noise.</p> <p>Minimize the use of water, energy, fuel, and construction materials through efficient design and work practices.</p> <p>Contractors must adopt measures that reduce waste generation and promote reuse or recycling wherever feasible.</p> <p>These actions ensure sustainable resource use and compliance with national regulations and World Bank standards.</p>	Implement waste management and pollution control plans; monitor emissions, effluents, and resource use (fuel, water).

ESS No. & Title	Objective / Key Provisions	Applicability to the Project	Implications / Required Actions
ESS4 – Community Health and Safety	Ensures protection of local communities from project-related risks (traffic, construction hazards, communicable diseases, GBV).	<p>Applicable – Project passes through villages and settlements.</p> <p>Road and bridge construction works under the project present significant safety risks for village residents and road users due to heavy vehicle movement, earthworks, excavation, machinery operation, and temporary traffic diversions. Without robust control measures, these activities may lead to accidents, restricted mobility, and heightened exposure to construction-related hazards.</p>	Develop Community Health and Safety Plan; implement traffic management and road safety measures; conduct awareness on communicable disease and GBV risks.
ESS5 – Land Acquisition, Restrictions on Land Use	Prevents forced displacement and ensures fair compensation, livelihood	Applicable – Minor land acquisition and livelihood losses likely.	ESS 5 is fully applicable due to permanent and temporary land take, asset losses, and livelihood impacts due to road construction activities and safety improvements.

ESS No. & Title	Objective / Key Provisions	Applicability to the Project	Implications / Required Actions
and Involuntary Resettlement	restoration, and support to affected persons.		Involuntary resettlement will be avoided or minimized through design optimization. Where unavoidable, a 100% census, asset inventory, and socio-economic baseline with publicly disclosed cut-off date will be conducted. Resettlement Action Plans (RAPs/ARAPs) fully compliant with ESS5, national law, the Sixth Schedule, and KHADC/GHADC/JHADC regulations will be prepared, consulted upon, and disclosed prior to displacement. All displaced persons (with or without formal title) will receive compensation at full replacement cost plus relocation assistance, transitional support, and targeted measures for vulnerable groups before any loss occurs. Affected livelihoods will be restored or improved through training, alternative income opportunities, and project employment priority. Where Indigenous Peoples' collectively owned or customary lands are affected, Free, Prior and Informed Consent (FPIC) will be secured in accordance with

ESS No. & Title	Objective / Key Provisions	Applicability to the Project	Implications / Required Actions
			ESS7. A Grievance Redress Mechanism, independent monitoring, and regular outcome reporting will ensure full compliance throughout implementation.
ESS6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources	Protects biodiversity and natural habitats; promotes sustainable management of renewable natural resources.	Applicable – Road alignment may intersect forest areas and community forests & Protect Endemic Flora & Funa. Details given in Table 3-7	Undertake biodiversity screening; integrate wildlife crossing measures; avoid critical habitats; obtain necessary forest/wildlife clearances.
ESS7 – Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Respects rights, culture, and livelihoods of Indigenous Peoples; promotes inclusive benefits.	Applicable – Project is located in tribal areas of Meghalaya.	Conduct Free, Prior, and Informed Consultation (FPIC) under three circumstances 1. Have adverse impacts on land & natural resources subject to traditional ownership or under customary use or occupation 2. Cause relocation of indigenous peoples from land and natural resources subject to traditional ownership or under

ESS No. & Title	Objective / Key Provisions	Applicability to the Project	Implications / Required Actions
			<p>customary use or occupation; or</p> <p>3. Have significant impacts on indigenous peoples, cultural heritage that is material to the identity and/or cultural, ceremonial, or spiritual aspects of the affected indigenous peoples.</p> <p>Prepare Indigenous Peoples Planning Framework (IPPF) ensuring culturally appropriate benefits.</p>
ESS8 – Cultural Heritage	Protects tangible and intangible cultural heritage from adverse project impacts.	Applicable – Presence of community sacred sites, shrines, or traditional landmarks possible.	Conduct cultural heritage screening; develop Chance Find Procedures; engage with local communities for safeguarding sacred sites.
ESS9 – Financial Intermediaries	Ensures that financial intermediaries adopt appropriate E&S risk management procedures.	Not Applicable – Project is directly financed; no intermediaries involved.	None required.
ESS10 – Stakeholder Engagement and Information Disclosure	Promotes meaningful stakeholder engagement, participation, and transparent	Applicable – Engagement required with affected	Develop and implement Stakeholder Engagement Plan (SEP) with regular

Disclaimer: This is a draft version and is being reviewed by the World Bank.

ESS No. & Title	Objective / Key Provisions	Applicability to the Project	Implications / Required Actions
	information disclosure throughout the project cycle.	communities, local authorities, and institutions.	consultations and functioning GRM for communities.

3 PROJECT BASELINE STUDY

3.1 Preamble

Till 1970, Meghalaya was part of the undivided state of Assam. In 1971, Meghalaya was conferred autonomy through the North-Eastern Areas (Reorganization) Act, 1971. On 21 January 1972, Meghalaya was created by combining the hill regions of Garo, Khasi, and Jaintia to form a separate state.

The state comprises 12 districts, namely South Garo Hills, South West Garo Hills, West Garo Hills, East Garo Hills, North Garo Hills, West Khasi Hills, East Khasi Hills, Eastern West Khasi Hills, South Khasi Hills, Ri-Bhoi, West Jaintia Hills and East Jaintia Hills lying between 25°47" - 26°10" N and 89°45" - 92°45" E and covers 22,429 km² area. It is bounded on the north by Goalpara, Kamrup, Karbi Anglong, and Nagaon districts, on the east by Cachar and North Cachar Hills districts of Assam, and on the west by the Rangpur division and the Mymensingh division of Bangladesh (Figure 2.1). The altitude ranges from 50 to 1950 m. The highest peak is Shillong Peak.

The state of Meghalaya is physiologically a plateau region. The general altitude of this plateau lies between 300 m above mean sea level (msl) and 1900 m msl. This plateau is characterized by gentle slopes in the northern and western regions; however, the southern and eastern slopes are very steep, forming gorges. Meghalaya is divided into three physiographic regions, namely, Western Meghalaya (Garo Hills), Central Meghalaya (Khasi Hills), Eastern Meghalaya (Jaintia Hills).

3.2 Geology and Soil

Geologically, Meghalaya forms part of the Shillong Plateau, which is predominantly composed of Precambrian and Paleozoic sedimentary rocks. The plateau features a sequence of sandstone, shale, and limestone, with the limestone formations concentrated in the southern hill regions. These limestone deposits, often of marine origin, have undergone extensive weathering and dissolution over millions of years, leading to the development of underground drainage systems and speleothems, as observed in caves like Siju. The combination of steep slopes, heavy rainfall (among the highest in the world), and soluble rock formations makes Meghalaya a prime example of karst landscape evolution. The limestone terrains not only support cave formation but also influence surface drainage patterns, soil development, and slope stability in the region.

The soils of Meghalaya, shaped by rugged terrain, high rainfall, and long-term weathering of rocks like granite and gneiss, are mainly lateritic, red loamy, red and yellow, alluvial, and ferralsolic (geric) types, with patches of peaty and colluvial soils. They are generally acidic, low in fertility, and moderately drained. From an engineering view, lateritic and red loamy soils are suitable for embankments after stabilization, while alluvial and organic soils need ground improvement. The region's steep slopes and heavy monsoon make these soils prone to erosion and instability, requiring proper drainage and slope protection in infrastructure projects.

3.3 Climate

Meghalaya's climate is humid subtropical to temperate, with extreme orographic rainfall (world's highest annual rainfall at Sohra/Mawsynram). The State receives ~2,800–12,000 mm of annual rainfall, concentrated in the southwest monsoon (June–September). Mean annual temperatures range between 10–32 °C depending on altitudes. Observed trends show an increase of ~1.0–1.5 °C in mean temperature over recent decades and higher variability in rainfall with an increase in very heavy rainfall (>150 mm/day) events. Flash floods, landslides, slope failures, and soil erosion have become more frequent, damaging roads and bridges.

Table 3-1: Climate Summary of Meghalaya

Parameter	Western Meghalaya	Northern Meghalaya	South-Eastern Meghalaya / Shillong Plateau
Altitude Influence	Low elevation	Moderate to high	High elevation
Temperature (Mean Max/Min°C)	24 / 17 (August as hottest)	Slightly cooler than west	Cooler due to altitude
Annual Rainfall	268.9 mm	250–300 cm	400+ cm
World Record Rainfall Sites	–	–	Mawsynram: 1187–1392 cm; Cherrapunjee: 1177 cm
Monsoon Season	May–August (major rainfall)	May–August (major rainfall)	May–August (major rainfall)
Winter Season	November–February (<80 mm)	November–February (<80 mm)	November–February (<80 mm)
Rainfall Pattern	Decreases northward	Moderate	Highest in plateau, decreasing towards north

**Source: IMD Shillong*

Future Climate Projections Climate models (CMIP6; World Bank CKP; State Climate Action Plan) indicate: Temperature: rise of 1.5–3.0 °C by mid-century (2040–2060) and up to 4 °C by 2100 under high-emission scenarios (SSP3-7.0). Rainfall minor change in annual total but higher intensity and frequency of extreme events and longer dry spells between storms. Secondary effects increased heat stress on labourers, material degradation, floodplain encroachment, and slope instability.

Table 3-2: Key Climate Induced Hazards

Hazard	Primary Triggers
Intense rainfall / flash floods	Concentrated monsoon bursts, catchment runoff
Landslides & slope failures	Prolonged rainfall, saturation of cut slopes, poor drainage
Rising temperatures / heat stress	Warming trend, heatwave days
Windstorms / cyclonic remnants	Bay of Bengal cyclones moving inland
Seismic shocks + compounded rainfall effects	Earthquake + rainfall saturation

High-risk components include hill-road stretches, bridges over dynamic rivers, low-lying logistic hubs, and ropeway terminals near unstable slopes. Floods and landslides pose high likelihood; heat and wind impacts are medium. Consequences include frequent maintenance, reduced asset lifespan, safety hazards, operational downtime, and cost overruns. Culverts and drainage sized for $\geq 1\%$ AEP storms; slope stabilization via walls, rock bolts, geogrids, and vegetation; bridges with higher freeboard, anti-scour protection, corrosion-resistant materials; durable pavements and materials for heat/moisture; elevated flood-resilient hubs; energy-efficient cold-chain and solar backup; ropeway towers designed for gusts with automated cut-offs. Reforestation and bio-engineering on slopes; catchment treatment to reduce sediment; rainwater harvesting and check-dams to moderate runoff.

3.4 Drainage Pattern

Meghalaya's drainage is striking, with rivers following straight courses along joints and faults. In the southern Khasi and Jaintia Hills, deep gorges have been carved by headward erosion along sedimentary rock joints, accentuated by significant uplift, while in the Garo Hills, streams are controlled by geological structures, faults, and monoclines. The northern plateau, lacking sedimentary cover, features long incised valleys formed along joints in gneissic rocks and granites. Limestone terrains across southern Garo, Khasi, and Jaintia Hills display typical karst features, including caves and sinkholes. The plateau's present physiography reflects polycyclic surfaces shaped by multiple geological events from the Mesozoic to the present, illustrating a complex interplay of lithology, tectonics, and erosion. Eight main rivers in the north and five main rivers in the south drain the State. Rivers of north and south are tributaries of Brahmaputra and Meghna respectively. The state of Meghalaya can be divided into 3 parts based on the location of the rivers

Table 3-3: Regional Engineering Implications on Water Bodies

Region	Major Rivers / Water Bodies	Engineering Implications
Garo Hills (Western Meghalaya)	Bandra, Simsang, Dareng, Nitai, Bhupai, Ganol	Generally gentler slopes, but structurally controlled by faults. Requires flood management and erosion mitigation.
Eastern & Central Plateau	Umtrew, Digar, Umami (Barapani), Umngi, Mawpa, Umngot, Myntang, Jadukata	Routes must account for hard-rock cutting, terraces, and ridge-valley systems.
Khasi Hills (Southern Meghalaya)	Umngot, Umiam/Barapani, Myntang (originating in or flowing through gorges)	Steep-gradient alignments, high bridges, and slope stabilization are mandatory due to deep gorges, waterfalls, and antecedent rivers.

Transboundary Impacts and International Waterways - All three regions have rivers that eventually flow into or affect water systems in Bangladesh.

Table 3-4: Affected Bodies

Region	Affected River / Basin
Garo Hills	Simsang River flows into Bangladesh.
Eastern & Central Plateau	Umngot River feeds into Bangladesh's Meghna basin.
Khasi Hills	Downstream portions of Umiam/Barapani contribute to Brahmaputra tributaries, affecting Bangladesh.

**Source: Central Water Commission, Shillong*

Several rivers in Meghalaya's Garo Hills, Eastern & Central Plateau, and Khasi Hills flow into Bangladesh, potentially affecting downstream water flow, sediment transport, aquatic ecosystems, fisheries, and flood patterns. Under World Bank OP 7.50², any project affecting these international waterways such as bridge construction requires notifying Bangladesh, assessing hydrological, sedimentation, and ecological impacts, and obtaining prior World Bank clearance to ensure compliance with transboundary water regulations.

² Projects involving international waterways are subject to specific requirements and notifications to ensure cooperation and minimize potential conflicts between riparian states

3.4.1 Springs and Streams of Meghalaya

The geology of Meghalaya is dominated by Precambrian gneisses, granites, schists, and younger sedimentary formations such as sandstone, shale, and limestone. Due to intense weathering, fracturing, and high rainfall, groundwater percolates through fissures and bedding planes, emerging naturally at the surface to form springs locally known as umïong or umshyiap. The state's rugged topography, marked by steep slopes and deep valleys, supports a dense network of streams such as Umkhräh, Umiew, Umngot, and Umiam, which merge into larger river systems like the Umiam, Myntdu, Umngot, Simsang, and Kynshi. Many originate as small spring-fed rivulets that gain volume as they descend the hills.

Springs in Meghalaya vary in discharge and hydrogeological setting. The main types include:

- Gravity or Fracture Springs – emerging along rock joints or faults, common in the Khasi and Jaintia Hills.
- Depression Springs – found where the water table meets the ground in valleys and hill toes.
- Contact Springs – occurring at interfaces between permeable and impermeable layers, typical of the Shillong Plateau.
- Karst or Limestone Springs – formed through dissolution in limestone-rich Jaintia Hills.
- Seepage Springs – diffuse flows from slope soils, important for vegetation and slope stability

Spatially, springs are abundant in East Khasi Hills (Mawphlang, Sohra, Pynursla), West Khasi Hills (Nongstoin), Jaintia Hills (Amlarem, Shangpung), Ri-Bhoi (Umiam–Umsning), and the Garo Hills (Tura, Williamnagar, Baghmara), serving as vital drinking-water sources for rural communities.

3.5 Natural Hazards

As the State topography is dominated by steep hills, dissected plateaus, and deep valleys, which together with one of the highest rainfall regimes in the world, create a unique set of natural hazards. For the purpose of infrastructure development and corridor improvement projects, understanding these hazards is critical to ensure safety, resilience, and long-term functionality. The primary natural hazards of concern include landslides and slope instability, earthquakes, floods and flash floods, and extreme climatic conditions such as heavy rainfall and storms.

3.5.1 Vulnerability to Earthquakes

The entirety of Meghalaya lies within Seismic Zone V, the highest risk zone in India, owing to its location on the seismically active Shillong Plateau. Historical seismic records include devastating events such as the 1897 Great Assam Earthquake (Magnitude 8.7), which caused widespread destruction across the region. The hilly terrain amplifies earthquake effects through landslide-triggered failures and ground shaking in areas with loose soils. Earthquakes in this zone can lead to surface rupture, soil liquefaction, settlement, slope failures, and cascading impacts on river systems.

Seismic activity poses a significant risk to both the road pavement and associated structures such as bridges, culverts, and embankments. Earthquake-induced landslides and rockfalls can block corridors and compromise safety, requiring immediate restoration and risk mitigation measures. Bridges, elevated roads, storage facilities, and administrative buildings must withstand seismic forces. Failure of critical logistics nodes due to inadequate seismic design could disrupt supply chains and lead to human and material losses.

3.5.2 Vulnerability to Cyclones

Meghalaya's proximity to Bangladesh and the Bay of Bengal basin makes several of its districts highly susceptible to damaging winds and occasional cyclones, particularly during the monsoon season. The state's western districts, including South West Garo Hills, South Garo Hills, South West Khasi Hills, and West Khasi Hills, are categorized as a very high cyclonic zone, where wind speeds can reach up to 50 m/s, posing a threat of large-scale damage. Further east, the districts of West Jaintia Hills and East Jaintia Hills are also prone to severe winds, with speeds potentially reaching an even higher 55 m/s, reflecting a significant environmental risk across a large part of the state due to its geographical location relative to the cyclone-prone region of Bangladesh.

Table 3-5: Meghalaya Logistic Corridor – Cyclone Vulnerability Matrix

Project Component	Hazard Type	Vulnerability Level
Roads & Bridges	Cyclone-associated heavy rainfall	Medium
Slope Cuttings & Embankments	Rainfall-induced landslides	High
Drainage Systems	Flooding / Waterlogging	Medium–High
Logistics Nodes & Warehouses	Heavy rainfall / wind	Low–Medium
Communities & Workforce	Disruption from heavy rainfall	Medium

3.5.3 Vulnerability to Floods

Meghalaya's intense rainfall, particularly during the monsoon, often leads to flash floods in hilly regions and inundation of river valleys. River systems, including tributaries feeding the Brahmaputra, are prone to sudden surges due to cloudbursts or rapid runoff from saturated slopes. Flash floods in the mountainous terrain can be extremely destructive, with high-velocity flows eroding road foundations, destroying bridges, and depositing debris along infrastructure routes. Flood hazards are further exacerbated by deforestation and unplanned urbanization in valley floors.

Bridges, culverts, and embankments are at risk of being washed away or scoured by floodwaters. Low-lying stretches are particularly vulnerable to submergence, disrupting traffic and delaying emergency response and transport operations. Facilities located in flood-prone areas may suffer water logging,

damage to stored goods, and structural weakening. Flood resilience is thus critical for maintaining continuity in supply chains.

The Flood Prone Areas of Meghalaya:

- Western part of Meghalaya like Tikrikilla, Phulbari, Rajabala, Garobadha, Hallidaygunj, Bhaitbari, Fersakandi, Magurmari, Silkata, Pendramaan etc
- Plain areas near Bangladesh like Baghmara, Balat, Shella, Dawki etc
- Urban Flooding in localized areas of Shillong, Williamnagar, Tura etc
- Localised areas of West Khasi Hills, South West Khasi Hills, East Khasi Hills Jaintia Hills and in Ri-Bhoi Districts

3.5.4 Vulnerability to Landslides

Meghalaya being a hilly terrain is prone to landslides. Every year several landslides have been reported from various localities. These cause a lot of miseries to public, resulting in loss of lives and properties, disruption of communication network, besides causing economic burden on the society. Landslide is primarily attributed to high slope, immature geology, neo-tectonic activity, heavy rainfall, unplanned and improper land use practice in the State. Landslides generally occur during heavy rains, that is during the months of June to October in Meghalaya.

Landslide Prone Areas:

Southern part of Meghalaya is more susceptible to Landslides than the Northern Part. National Highways like Bajengdoba-Tura-Dalu, Damra-Siju-Baghmara, Guwahati – Shillong- Tamabil, and Shillong- Jowai- Badarpur are prone to landslides. Landslide occurred frequently at Sonapur on Shillong- Jowai- Badarpur Road, but now the problem has been mitigated by constructing a tunnel for the vehicular traffic. Urban areas of Shillong and Tura, Jowai are also prone to landslides due to the faulty Construction of Houses and rapid Urbanization.

3.6 Biodiversity Profile

Meghalaya is located within the Indo-Myanmar Biodiversity Hotspot and forms part of the North-East India bio-geographic zone, a globally significant transition belt linking the Indo-Malayan, Indo-Chinese and Eastern Himalayan regions. Owing to this strategic ecological position and its complex geological evolution—arising from the detachment of the Indian plate from Gondwana and its subsequent collision with the Eurasian landmass—the state exhibits exceptionally high biological diversity. Its landscape supports a continuum of habitat types ranging from tropical evergreen rainforests in the foothills to montane forests, alpine meadows, and cold-climate ecosystems. This diversity in elevation, climate, and forest types underpins the presence of rich and unique assemblages of flora and fauna, making Meghalaya one of India's most ecologically sensitive and species-rich regions.

3.6.1 Flora

The State forms part of the Indo-Burma biodiversity hotspot, recognized for its unique assemblage of tropical, temperate, and Gondwanan flora. The state's topography, comprising the Khasi, Jaintia, and

Garo Hills, along with its varied climatic conditions, has resulted in a remarkable diversity of plant species. The flora of Meghalaya encompasses approximately 4,243 species of flowering plants, spanning 1,449 genera and 216 families, with a significant proportion being endemic.

The Meghalaya Logistic and Connectivity Improvement Project (MLCIP) is aimed at enhancing transportation and connectivity within the state. However, the project corridor intersects ecologically sensitive landscapes, including forests, sacred groves, riparian zones, and montane grasslands. Therefore, a detailed understanding of Meghalaya's flora is essential for informed environmental assessment, mitigation planning, and biodiversity conservation within the MLCIP framework.

- **Flora Profile of Meghalaya:**

Meghalaya's forests range from tropical and subtropical broadleaf forests to temperate forests at higher altitudes. These diverse habitats support an exceptional array of dicotyledons, monocotyledons, ferns, gymnosperms, and rare plant families. Key aspects include:

- **Orchidaceae:**

The state is renowned for its orchids, with nearly 110 genera and 439 taxa reported. Species of high ornamental and conservation value include *Dendrobium*, *Pleione*, *Paphiopedilum*, and *Vanda*. Habitat loss and overcollection have rendered several species rare. Saprophytic orchids such as *Galeola falconeri*, *Epipogium roseum*, and *Eulophia sanguinea* also contribute to the state's unique floristic profile.

- **Gymnosperms and Ferns:**

Species such as *Podocarpus neriifolia* (Podocarpaceae) and *Cyathea gigantea* (tree ferns) reflect Meghalaya's phylogenetic diversity and indicate the presence of ancient lineages preserved within montane habitats.

- **Carnivorous Plants:**

Meghalaya is home to unique insectivorous plants including the endemic *Nepenthes khasiana* and species of *Drosera* (*D. peltata*, *D. burmanii*). These plants occupy nutrient-poor soils in high-altitude grasslands and serve as indicators of ecosystem integrity.

- **Other Notable Taxa:**

Other significant taxa include *Ilex khasiana*, *Balanophora dioica*, and several species of Podocarpaceae, Lauraceae, and Myricaceae. These species are particularly sensitive to environmental disturbances such as deforestation, mining, and land-use change.

- **Endemism and Rare Plant Species:**

Meghalaya's endemism is concentrated in the Khasi and Jaintia Hills. Notable endemic species include:

Table 3-6: Endemic Species

Species	Family	Conservation Status	Regional Distribution in Meghalaya
Aeschynanthes parasiticus	Gesneriaceae	Rare	Found in Khasi & Garo Hills; humid forests and sacred groves on Shillong Plateau; epiphytic on moist forest trees.
Aeschynanthes superba	Gesneriaceae	Rare	Occurs in Khasi Hills and Shillong Plateau forests; typical of humid hill slopes and canopy habitats.
Callicarpa psilocalyx	Lamiaceae	Rare	Present in Khasi & Jaintia Hills; grows in subtropical forest and riparian areas.
Camellia caduca	Theaceae	Rare	Recorded in Khasi Hills, especially sacred groves and mid-elevation broadleaf forests.
Citrus latipes	Rutaceae	Rare	Found in Garo and Khasi Hills; semi-wild in home gardens and sacred groves, especially Pynursla and Tura regions.
Ilex embeloides	Aquifoliaceae	Rare	Occurs in mid-elevation forest habitats of Khasi & Jaintia Hills; often in sacred groves.
Impatiens khasiana	Balsaminaceae	Endangered	Endemic to Khasi Hills; confined to high-altitude moist forests near Shillong Plateau.
Impatiens laevigatum	Balsaminaceae	Endangered	Distributed in Khasi and Jaintia Hills; moist understory of subtropical forests.
Lindera latifolia	Lauraceae	Rare	Recorded from Shillong Plateau and Khasi Hills; part of montane/subtropical forest community.
Paramignya micrantha	Rutaceae	Rare	Found in Khasi and Garo landscapes; riparian forest patches and low-elevation groves.
Rubus khasianus	Rosaceae	Rare	Occurs in Khasi Hills and Shillong Plateau; shrub layer of mid-elevation forest edges.

Source: Biodiversity Action Plan of Meghalaya

The endemic pitcher plant *Nepenthes khasiana* is protected under CITES Appendix I and Schedule VI of the Wildlife (Protection) Act, 1972.

- Tertiary and Eastern Asiatic Flora

The Khasi and Jaintia Hills harbor a high concentration of eastern Asiatic and tertiary flora. This includes several primitive plant families such as Elaeocarpaceae, Elaeagnaceae, Annonaceae, Ranunculaceae, Piperaceae, Menispermaceae, Caryophyllaceae, Lauraceae, Myricaceae, and Lazarbiaceae. Primitive genera like *Schizandra*, *Corylopis*, *Myrica*, *Magnolia*, and *Michelia* underscore the region's importance as a repository of ancient plant lineages. These taxa are sensitive to habitat fragmentation, making corridor planning in MLCIP crucial.

Table 3-7: Endemic and Threatened Plant Species of Meghalaya (Selected)

Species	Family	Conservation Status	Regional Distribution in Meghalaya
<i>Aeschynanthes parasiticus</i>	Gesneriaceae	Rare	Khasi and Jaintia Hills, epiphytic on moist forest trees
<i>Aeschynanthes superba</i>	Gesneriaceae	Rare	Upper Shillong and Cherrapunji forests
<i>Callicarpa psilocalyx</i>	Lamiaceae	Rare	East Khasi Hills and Mawsynram region
<i>Camellia caduca</i>	Theaceae	Rare	Nongpoh and Mawphlang–Sohra forest tracts
<i>Citrus latipes</i>	Rutaceae	Rare	Widespread in Khasi and Jaintia Hills, near forest margins
<i>Ilex embeloides</i>	Aquifoliaceae	Rare	West Khasi Hills and parts of Ri-Bhoi
<i>Impatiens khasiana</i>	Balsaminaceae	Endangered	Khasi Hills—particularly Mawkyrwat and Myllem regions
<i>Impatiens laevigatum</i>	Balsaminaceae	Endangered	East Khasi Hills, shaded stream banks and rocky slopes
<i>Lindera latifolia</i>	Lauraceae	Rare	Found in Jaintia Hills and Nokrek Biosphere area (Garo Hills)

Species	Family	Conservation Status	Regional Distribution in Meghalaya
Paramignya micrantha	Rutaceae	Rare	South Garo Hills and adjoining border forests
Rubus khasianus	Rosaceae	Rare	Khasi and Jaintia Hills—along forest fringes and clearings
Tectona grandis	Lamiaceae	Endangered	South and West Garo Hills, and in Ri-Bhoi District & Nongkhylllem Wildlife Sanctuary

Source: Biodiversity Action Plan of Meghalaya

3.7 Fauna

Meghalaya, is renowned for its rich biological diversity, which spans a variety of ecosystems including subtropical forests, grasslands, wetlands, and limestone caves. The faunal diversity of Meghalaya constitutes a total of 5,538 species recorded so far, representing approximately 6.2% of the 89,451 species documented in India (ZSI, 1995). Remarkably, the state harbors nearly 35% of Indian mammals and 50% of vertebrate species, including birds. In addition to vertebrates, the invertebrate fauna of Meghalaya is highly diverse, comprising 4,580 species across 2,114 genera, with insects alone accounting for 3,624 species. Porifera is the smallest group, represented by a single species.

The high faunal diversity is coupled with a significant percentage of endemic and threatened species, which underscores the ecological importance of the state. Recent studies have highlighted the discovery of new invertebrate species, reflecting both the richness of the fauna and the under-explored nature of Meghalaya's ecosystems

Faunal Diversity of Meghalaya

- Vertebrate Diversity

Vertebrates in Meghalaya are represented by 451 genera and 1,112 species. The major groups include mammals, birds, reptiles, amphibians, and fishes. Table below summarizes the diversity of vertebrates in the state.

Table 3-8: Faunal Diversity of Meghalaya – Vertebrates

Taxa	Genera	Species
Vertebrates	451	1112
Mammalia	83	139

Taxa	Genera	Species
Aves	232	659
Reptilia	51	107
Amphibia	11	55
Pisces	74	152

Source: Zoological Survey of India

- **Mammals**

Meghalaya harbors 139 species of mammals, 35 of which are classified as endangered, vulnerable, or insufficiently known. The state’s mammalian fauna includes primates, carnivores, ungulates, bats, and small mammals. Notable species include the Hoolock Gibbon (*Hoolock hoolock*), Clouded Leopard (*Neofelis nebulosa*), Indian Elephant (*Elephas maximus indicus*) and the Asiatic Black Bear (*Ursus thibetanus*). Many mammals are forest-dependent and rely on contiguous habitats, making them vulnerable to habitat fragmentation caused by road construction and other infrastructure interventions.

- **Birds**

With 659 species, birds represent the most diverse vertebrate group in Meghalaya. Endangered and vulnerable birds, such as the Great Hornbill (*Buceros bicornis*), Rufous-necked Hornbill (*Aceros nipalensis*), and Blyth’s Tragopan (*Tragopan blythii*), are dependent on forested habitats and hill ecosystems. Migratory birds use wetlands and riverine areas, highlighting the importance of hydrological connectivity.

- **Reptiles**

Reptiles in Meghalaya include 107 species, with 9 classified as endangered or vulnerable. Species such as the King Cobra (*Ophiophagus hannah*) and endemic lizards of the Khasi and Jaintia Hills require forested habitats and rock formations.

- **Amphibians**

The state hosts 55 species of amphibians, many of which are endemic to Meghalaya’s moist forests and wetlands. Frogs and salamanders are sensitive to changes in water quality and hydrological regimes.

- **Fishes**

Fishes number 152 species, inhabiting rivers, streams, and wetlands. The discovery of new caryophylliid species, such as those from *Lytocestus*, highlights the region’s ichthyofaunal diversity.

Table 3-9: Common ornamental species of fish in Meghalaya

Scientific name	Common name / Group	Family	Conservation / Note	Regional distribution in Meghalaya (rivers/areas)
Danio meghalayensis	Meghalaya danio (ornamental)	Cyprinidae	Regional endemic hill-stream danio	Cool mountain streams of Khasi Hills, especially Shillong–Cherrapunji belt
Devario aequipinnatus	Giant danio (ornamental)	Cyprinidae	Widespread hill-stream cyprinid	Fast-flowing upland streams of Khasi–Jaintia Hills
Garra gotyla / Garra spp.	Hillstream goby / doctor fish	Cyprinidae	Important for hill streams; some species endemic	Hill streams including Myntdu basin, Uiam tributaries
Schistura spp. (e.g., Schistura sijuensis)	Stone loaches	Nemacheilidae	Narrow-range species; several endemic	Rocky, upper-reach streams in Khasi, Jaintia and Garo Hills
Aborichthys garoensis	Garo loach (endemic)	Nemacheilidae	State endemic; conservation concern	Garo Hills headwaters; type locality within Meghalaya
Puntius / Systomus spp.	Barbs (ornamental + food)	Cyprinidae	Local food and ornamental value	Valley streams, floodplain channels across the state
Tor putitora / Tor spp.	Mahseer	Cyprinidae	Migratory food/sport fish; several species threatened	Large rivers, deep pools, major sub-basins
Labeo pangusia	Pangusia / carp group	Cyprinidae	Food fish	Lowland to mid-elevation river stretches; recorded in state ichthyofauna
Clarias batrachus / Clarias magur	Walking catfish	Clariidae	Culturally important food fish	Wetlands, ponds, sluggish river stretches
Mystus spp.	Oriental catfishes	Bagridae	Local food-fish group	Valley bottoms and floodplain streams

Scientific name	Common name / Group	Family	Conservation / Note	Regional distribution in Meghalaya (rivers/areas)
Mastacembelus spp.	Spiny eels	Mastacembelidae	High ornamental potential	Slow pools, backwaters of lowland rivers
Aplocheilichthys spp.	Killifish / surface dwellers	Aplocheilichthyidae	Popular ornamental species	Village ponds and slow-moving tributaries
Botia rostrata	Botia / loach	Botiidae	Regionally notable hill-stream loach	Hill streams of Garo and West Khasi Hills
Pilaia indica	Freshwater fish of concern	—	Threatened in some regional surveys	Reported in select Meghalaya river systems
Schizothorax spp.	Snowtrout	Cyprinidae	Cold-water specialists	Uppermost, cool upland streams (limited distribution)
Tor mosal / other Tor species	Mahseer variants	Cyprinidae	Several species EN/VU	Larger river pools; seasonal migrants
Pilaia / Glyptothorax spp.	Sucker catfish / hillstream catfish	Sisoridae	Hill-stream specialists	Fast-flowing, boulder-bed streams; some species threatened
Schizothorax / Nemacheilus spp.	Small loaches	Nemacheilidae	High ornamental potential; many narrow-endemics	Rocky stretches in Khasi–Jaintia and Garo Hills
Eutropiichthys / Sisor spp.	Riverine catfishes	Sisoridae / Bagridae	Local fisheries	Mid- to lower-reach rivers and tributaries
Poropuntius clavatus	Cyprinid (food/ornamental)	Cyprinidae	Listed as Endangered in some assessments	Select river stretches; locality varies by basin

Source: Biodiversity Action Plan of Meghalaya

- **Invertebrate Diversity**

Invertebrates comprise 2,114 genera and 4,580 species, with insects forming the largest group (3,624 species). Other groups include bryozoans, annelids, mollusks, nematodes, rotifers, platyhelminthes, medusae, porifera, and protozoa. Table below summarizes the invertebrate diversity.

Table 3-10: Faunal Diversity of Meghalaya – Invertebrates

Taxa	Genera	Species
Invertebrates	2114	4580
Bryozoan	3	5
Arthropoda	1825	3901
Annelida	25	49
Mollusca	67	223
Nematoda	49	77
Rotifera	30	111
Platyhelminthes	56	83
Medusae	2	2
Porifera	1	1
Protozoa	56	128

Source: Zoological Survey of India

- **Insects and Arthropods**

Arthropods, especially insects, form the largest invertebrate group in Meghalaya. Recent discoveries, including new leafhopper species (*Scaphoideus ramamurthyi*) in Barapani (Meshram, 2014), reflect high endemism. Insects play crucial ecological roles as pollinators, decomposers, and prey for vertebrates.

- **Mollusks, Annelids, and Other Groups**

Mollusks (223 species) and annelids (49 species) contribute to soil health, nutrient cycling, and aquatic ecosystem functioning. Porifera and medusae are less diverse but serve as indicators of aquatic ecosystem health.

- **Endangered, Vulnerable, and Endemic Species**

Meghalaya hosts a significant number of species with high conservation priority. Table.... provides a summary.

Table 3-11: Endangered, Vulnerable, and Endemic Species in Meghalaya

Taxa	Total Species	Endangered	Vulnerable	Endemic
Mammals	139	10	15	8
Birds	659	6	4	12
Reptiles	107	5	4	7
Amphibia	55	3	5	6
Fishes	152	7	5	10

Source: Zoological Survey of India

3.7.1 Protected Area

Meghalaya's Protected Area (PA) network forms the cornerstone of biodiversity conservation in the State, encompassing National Parks, Wildlife Sanctuaries, Biosphere Reserves, and Community Conservation Areas. As of 2024, Meghalaya has seven legally designated Protected Areas covering approximately 1,133.9 km² around 5.06% of the State's geographical area (Meghalaya Biodiversity Board, 2024). The PA system safeguards diverse ecological zones ranging from tropical evergreen and semi-evergreen forests in the Garo Hills to montane subtropical forests in the Khasi and Jaintia Hills.

Meghalaya has two national parks: Balpakram National Park and Nokrek National Park. Balpakram is known for its "land of spirits" folklore and unique forest-covered canyon, while Nokrek, a UNESCO Biosphere Reserve, is a core area for biodiversity in the Garo Hills. There are four wildlife Sanctuaries and two Elephant Reserve are present in this state.

Protected Area	Category	District(s)	Approx. Area (sq. km)	Key Ecological Features
Balpakram National Park	National Park	South Garo Hills	352	High biodiversity, karst features, endemic flora and fauna
Nokrek National Park	National Park	East/West/ South Garo Hills	47.48	Citrus gene sanctuary, rich faunal diversity
Nokrek Biosphere Reserve	Biosphere Reserve	Garo Hills	820	Buffer around Nokrek NP, core area for conservation

Protected Area	Category	District(s)	Approx. Area (sq. km)	Key Ecological Features
Nongkhyllem Wildlife Sanctuary	Wildlife Sanctuary	Ri-Bhoi	29	Subtropical broadleaf forest, elephant corridor
Siju Wildlife Sanctuary	Wildlife Sanctuary	South Garo Hills	5.18	Cave ecosystems, bat colonies, limestone formations
Baghmara Pitcher Plant Sanctuary	Wildlife Sanctuary	South Garo Hills	0.02	Unique <i>Nepenthes khasiana</i> (pitcher plant) habitat
Narpuh Wildlife Sanctuary	Wildlife Sanctuary	East Jaintia Hills	59.9	Moist evergreen forest, critical for elephants and primates

Source: ENVIS Meghalaya

Note: None of the present project roads are passing through the Designated protected area, however to be rechecked for ropeways

3.7.1.1 National Park & Wild Life Sanctuaries

The details of national Parks and Wild Life Sanctuaries are given as per **Annexure III (A)**

- Bird Migration in Meghalaya

Meghalaya, part of the Indo-Burma biodiversity hotspot, hosts diverse habitats ranging from subtropical forests, wetlands, and grasslands to riverine ecosystems. These habitats are crucial not only for resident avifauna but also for migratory birds that traverse long distances across Asia, using Meghalaya as a stopover or wintering ground. Understanding these migratory routes is essential to ensure that infrastructure development, including the Meghalaya Logistic & Connectivity Improvement Project (MLCIP), minimizes ecological impacts while improving transport efficiency.

Meghalaya's migratory birds form a critical ecological link in regional and global biodiversity networks. Integrating migratory route considerations into MLCIP planning ensures sustainable development, balancing logistics improvement with ecological conservation. Strategic alignment with avifaunal corridors, sensitive timing of construction, and habitat management will mitigate adverse impacts while enhancing project sustainability.

Migratory Bird Species

Meghalaya supports over 500 bird species, including more than 150 migratory species

Table 3-12: Key Migratory Species

Common Name	Scientific Name	Migration Type	Habitat Preference
Bar-headed Goose	Anser indicus	Winter visitor	Wetlands, rivers
Eurasian Wigeon	Mareca penelope	Winter visitor	Lakes, marshes
Common Teal	Anas crecca	Winter visitor	Rivers, reservoirs
Oriental Honey Buzzard	Pernis ptilorhynchus	Passage migrant	Forests
Black-headed Ibis	Threskiornis melanocephalus	Winter visitor	Wetlands, agricultural fields
Pacific Swallow	Hirundo tahitica	Passage migrant	Open habitats, near rivers

Source: ENVIS Meghalaya

Migration Routes

Migratory birds use Meghalaya primarily as a stopover and wintering ground along the East Asian–Australasian Flyway and Central Asian Flyway. The major corridors include:

- Southern Meghalaya (Garo Hills): Migratory waterfowl concentrate around Simsang, Ganol, and Bokabil wetlands.
- Central Plateau (Khasi Hills): Forested plateaus and reservoirs like Umiam Lake support passage migrants and raptors.
- Eastern Meghalaya (Jaintia Hills): Smaller wetlands and riverine systems serve as resting and feeding areas.

Habitat Sensitivity

Wetlands and reservoirs are critical for wintering waterfowl. Forested corridors, especially along ridgelines, are essential for raptors and passerines during seasonal movement. Agricultural landscapes adjacent to wetlands also provide feeding grounds for migratory waders.

Key Hot-spots Along Logistic Corridors

- Garo Hills
 - Simsang Reservoir & Nodabari Beel & Singiram bil Wetlands: Wintering site for waterfowl, including geese and ducks.
 - Mitigation: Avoid major road construction along wetland margins; retain buffer vegetation.
- Khasi Hills
 - Umiam & Umsning Reservoirs: Passage migrants, raptors, and shorebirds.

- ii. Mitigation: Bridge designs should maintain open water visibility; limit tree clearing.
- c) Jaintia Hills
 - i. Small riverine wetlands: Stopover sites for small passerines and swallows.
 - ii. Mitigation: Restrict construction in riverine corridors during migration seasons.

3.7.1.2 Elephnat Migration Routes in Meghalaya:

Elephant migration routes in Meghalaya connect forests across Garo, Khasi, and Jaintia Hills, linking habitats shared with Assam and Bangladesh. These corridors enable seasonal movement, maintain ecological connectivity, and support conservation efforts by reducing human–elephant conflict and protecting this Schedule I, National Heritage species.

Table 3-13: Elephant Reserves of Meghalaya

Sl.No	Elephant Reserves	Area (km ²)
1	Garo Hills Elephant Reserve	3500
2	Khasi Hills Elephant Reserve	1331

Source: Biodiversity Action Plan of Meghalaya

Migration Routes

- a) Major Corridors (Garo Hills):
 - i. Siju–Rewak, connecting Balpakram National Park and Rewak Reserve Forest;
 - ii. Nokrek–Imangre–Simsang, linking Nokrek National Park to the Simsang valley; and
 - iii. Baghmara–Khakija–Balpakram, a vital transboundary route toward Bangladesh.
- b) Major Corridors (Khasi Hills):
 - i. Umsning–Nongpoh–Khanapara, linking Meghalaya with Assam’s Kaziranga–Karbi Anglong landscape;
 - ii. Mawphlang–Mawsynram–Shella, extending to Bangladesh; and
 - iii. Nongkhylllem–Jorabat, connecting to the Amchang–Killing forests of Assam.
- c) Major Corridors (Jaintia Hills): the Saipung–Tyrshi–Narpuh and Amlarem–Borhill–Sutnga corridors provide movement between Narpuh Reserve Forests, Barail Hills (Assam), and Patharia Hills (Bangladesh).

3.8 Forest

Meghalaya is a forest-rich state where the lives and livelihoods of the predominantly tribal population are closely intertwined with forests, both socio-economically and culturally. The State’s forest governance system is distinct from most other Indian states, as a majority of forest areas fall under

community reserve and private ownership rather than direct state control. Only about 1,113 sq. km of forests comprising Reserved Forests, Protected Forests, National Parks, and Wildlife Sanctuaries are administered directly by the State Forest Department.

The remaining forest areas are managed by local communities under the administrative jurisdiction of the three Autonomous District Councils (ADCs) Khasi Hills, Jaintia Hills, and Garo Hills under the provisions of the Sixth Schedule of the Constitution. These community-managed forests are of two types (i) Community Reserve Forest which are notified under Meghalaya wild life Act/ Rule 2002 (ii) Vegetative Green Patches which is resume as forest land by local community, both are play a critical role in maintaining ecological balance and supporting the socio-economic base of rural populations.

As per IRS Resourcesat-2 LISS III satellite data (Nov 2017–Jan 2018), Meghalaya's total forest cover stands at 17,118.79 sq. km, accounting for 76.32% of the State's geographical area. The forest canopy density classification includes 488.98 sq. km of Very Dense Forest (VDF), 9,267.29 sq. km of Moderately Dense Forest (MDF), and 7,362.52 sq. km of Open Forest (OF).

In the context of the Meghalaya Logistics and Connectivity Improvement Project (MLCIP), the alignment for the proposed corridors has been finalized. Accordingly, the focus now shifts to implementing site-specific mitigation and management measures to minimize ecological impacts during construction and operation. The project continues to emphasize sustainable infrastructure development, ensuring that all activities are carried out with due regard to existing forest ownership patterns, biodiversity rich habitats, and community-managed landscapes thereby promoting connectivity that supports both economic growth and environmental conservation.

3.8.1 Reserved Forest

There are 23 Reserved Forests (RFs) in the state with area varying from 0.44 km² to 150 km² covering a total of 712.74 km² area. The largest of these is Saipung RF in Jaintia Hills district (150.35 km², Table 3.3.3). Nongkhylllem RF is the second largest RF of the state and it lies adjacent to Nonkhylllem WLS. The Narpuh Block I and II of Jaintia Hills are among the other large RFs. Though Garo Hills has two National Parks and many RFs, the total area under legal protection is still inadequate given the richness of biodiversity and need for long term conservation of mega-herbivores such as Asian elephant.

Source: Forest Survey of India

3.8.2 Community Forest

Community Reserves or Conservation Reserves are special category of protected areas act as crucial ecological buffers and biological corridors linking larger protected areas such as National Parks, Wildlife Sanctuaries, and Reserved Forests, ensuring landscape-level conservation amidst expanding transport infrastructure.

Community and Conservation Reserves, a legal category introduced through the Wildlife (Protection) Amendment Act, 2002, recognize the vital role of local communities in safeguarding biodiversity and managing natural resources. Unlike traditional protected areas that are under exclusive government control, these reserves often involve community or private ownership, where the local people retain

subsistence rights while participating in biodiversity protection and sustainable use. As per data provided by ENVIS Meghalaya there are 182 Community Reserves are notified up to Oct 2025.

In Meghalaya, forest governance is distinct due to the State's protection under the Sixth Schedule of the Constitution. Over 88% of forests are managed by Autonomous District Councils (ADCs) and local communities. Any diversion of community reserve forest land for non-forest purposes, including infrastructure projects, requires compliance with the Forest (Conservation) Act, 1980 (FCA)/ Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980. The FCA applies to all forest lands, including community-Reserve forests which are notified by the forest department Government of Meghalaya following the Supreme Court judgment in T.N. Godavarman Thirumulpad vs. Union of India (1996). If the Community Reserve Forest is "deemed forest" (*A Community Reserve Forest is a legally notified conservation area under Section 36C of the Wildlife (Protection) Act, 1972, owned and managed by local communities but recognized by law as a protected forest area. Under Indian jurisprudence, it qualifies as a "deemed forest," attracting all protections applicable to forest land.*) then FCA applies for forest land transfer to Non-Forest Activities. SOP for Forest Clearance given as **Annexure-III (B)**

3.8.3 Sacred Groves

In Meghalaya, indigenous communities such as the Khasi, Garo, and Jaintia maintain over 1,000 sacred groves (Law Kyntang) dedicated to deities like Ryngkew, Basa, and Labasa. These groves serve as spiritual sanctuaries and traditional conservation systems that preserve biodiversity, regulate microclimates, and protect vital watersheds. Within the MLCIP framework, they function as ecological buffers and landscape connectors along development corridors. Governed by customary laws and the Sixth Schedule through acts like the United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Act these sacred groves exemplify the integration of cultural heritage with ecological sustainability in Meghalaya's development planning.

3.8.3.1 Governance of Sacred Groves

In Meghalaya, sacred groves are legally protected under the United Khasi and Jaintia Hills Autonomous District (Management and Control of Forests) Act, 1958 and the Garo Hills Autonomous District (Management and Control of Forests) Act, 1961. These Acts empower the Lyngdoh (priest) or other designated persons to manage and control sacred groves in accordance with customary practices and the rules framed by the respective Autonomous District Councils. Section 7 of the Act prohibits the felling of trees within sacred groves without written approval from the Chief Forest Officer, while Section 9 restricts tree removal to religious purposes sanctioned by the Lyngdoh or authorized persons. Sacred groves in Meghalaya vary in size from small patches to areas exceeding 1,200 hectares and collectively cover over 10,000 hectares, serving as vital centers of cultural heritage and biodiversity conservation.

3.9 Socio-Demographic Profile

Meghalaya has a geographical area of 22,429 sq Km. The State, like the rest of the North Eastern Region has a predominantly tribal population which contribute about 86% of the total population. The Khasis, the Jaintias and the Garos form the three major ethnic groups of original inhabitants of the State. The remaining 14% includes other tribes who inhabit the state and form the minor tribes,

comprising of the Koch, Rabhas, Hajongs, Karbis, Biates and others and non-tribal communities such as Bengali, Nepali, Assamese, Bihari, and other small ethnic groups, mainly residing in towns, trade centers, and peri-urban areas. The Garos belong to the Bodo family of the Tibeto-Burman race said to have migrated from Tibet. The Garos are also called Achiks. The Khasis and the Jaintias predominantly inhabiting the districts towards eastern parts of Meghalaya, belong to the Proto Austro- Asiatic race who speak the language which belongs to Monkhmer race. The Garo, Khasi and Jaintia follow a matrilineal system of society. Further details on the three main ethnic groups of Meghalaya are provided in Section 2.9.

The population of the State as per census 2011 is 29,66,889 which comprises of 14,91,832 males and 14,75,057 females. The sex ratio is 989 Females/ '000 Males as per Census 2011, which is an increase from 982 Females/ 1'000 males in 2001 census. The population has been growing at an average decadal growth rate of 31 % from 1971 to 2011. Increase birth rate is no doubt the main contributor to any population growth which is also true in the case of Meghalaya, but other factors like decreasing infant and maternal mortality rate, better life expectancy due to improved and better health care and medical facilities, immigration and other factors has also contributed to a large extend. Meghalaya ranks 23rd amongst the States of India according to population size with 0.24% of the total population of the Country as per 2011 census. The population of the state as on 2020, as per population projection by Economic Survey Report of Meghalaya is 36,88,942. Of this 18,46,798 are males and 18,42,144 are females. The decadal growth rate of population of the state is 27.95.

Meghalaya comprises of 12 districts spread across Khasi, Garo and Jaintia hills. Figure below illustrates the profile of the State.

Table 3-14: Demographic Profile of the State

Category	Urban	Rural	Scheduled Tribe (Urban)	Scheduled Tribe (Rural)	Total ST Population	% of ST Population	Literacy ST (%)
Total	2,966,889	595,450	2,371,439	158,358	2,136,891	74%	61.3%
Male	1,491,832	297,572	1,194,260	75,009	1,070,557	76%	63.5%
Female	1,475,832	297,878	1,177,179	83,349	1,066,334	73%	59.2%

3.9.1 Religion

As per the 2011 Census, Christianity is the predominant religion in Meghalaya constituting 74.59 percent of the state's population and the remaining population follows Hinduism (11.53%), Islam (4.40%) and other religions. Demographic characteristics of the districts further reveals that over 90 percent of the population of West Khasi Hills, East Garo Hills and South Garo Hills comprises of Christians. The East Khasi Hills (17.55 %) and West Garo Hills (19.11%) also have a sizeable population of Hindus, whereas, 16.60 percent of the population in West Garo Hills constitute of Muslims.

Table 3-15: Religion-Wise Population of Meghalaya

Religion	Population in 2011
Hindus	342078
Muslims	130399
Christians	2213027
Sikhs	3045
Buddhist	9864
Jains	627
Other Religions.	258271
1. Khasi.	138480
2.Niamtre	85169
3.Songsarek	19886
4.Others	14736
Religion not stated	9578
Total	2966889

Source: Census of India, 2011

3.9.2 Literacy Level

Literacy rate in Meghalaya is 74.43 percent as per 2011 population census. district-wise literacy rate is given in the table below:

Table 3-16: District wise Literacy Rate of the State (in %)

Name	Total (in %)	Male (%)	Female (%)
East Garo Hills	69.83	74.72	64.70
North Garo Hills	77.35	80.24	74.41
South Garo Hills	71.72	76.23	66.90
West Garo Hills	67.04	71.68	62.35
South West Garo Hills	69.00	74.23	63.63
East Khasi Hills	84.15	84.51	83.81
West Jaintia Hills	63.12	58.51	67.61
East Jaintia Hills	58.29	57.31	59.24
South West Khasi Hills	75.08	76.93	73.18
West Khasi Hills	78.85	79.11	78.59
Ri- Bhoi	75.67	76.79	74.49
Meghalaya	74.43	75.95	72.89

However, in the rural areas, the quality of education seems inadequate. Higher education has not reached full penetration in the state, and many areas suffer due to lack of efficient road connectivity and transport. The colleges are mostly found in the urban areas and district headquarters only. Thus, it becomes very important for the project to improve network connectivity and establish reliable, accessible and safer roads connecting the population to the educational institutes.

3.9.3 Health

According to National Family and Health Survey-5 (NFHS) 2019-21 Meghalaya continues to show a very high burden of child undernutrition (stunting 46.5%, wasting 12.1%, underweight 26.6%). Anaemia remains widespread among females: about 53.8% of women (15–49) and ~52.5% of adolescent girls (15–19) are anaemic.

3.9.4 Livelihood

Agriculture: Meghalaya, a predominantly agrarian state, has nearly 80% of its population dependent on agriculture for their livelihood. Despite favorable rainfall and a beneficial climate, the sector continues to face challenges due to rugged topography and relatively low soil productivity, making agriculture less profitable. Agriculture remains the principal occupation of the people, as

reflected in the distribution of cultivated land: 62% – food grains 25% – cash crops 9% – horticultural crops 4% – miscellaneous crops (Source: Directorate of Economics and Statistics, Meghalaya)

The state's diverse terrain and climatic variation support the cultivation of a wide range of crops. Rice is the most important staple, covering 44% of the agricultural land. Maize, occupying about 8% of the cropped area, thrives in the plains of the Garo Hills and parts of the Jaiñtia Hills. Among cash crops, traditional fibers such as jute and mesta hold significance, particularly in the Garo Hills. Meghalaya is also known for its rich horticultural produce, including oranges, pineapples, lemons, guavas, litchis, jackfruits, bananas, plums, pears, and peaches, which not only support local consumption but also contribute to commercial agriculture. The agricultural sector is a major driver of the state's economy, contributing around 22% to the Gross State Domestic Product (GSDP). The Government of Meghalaya has been prioritizing this sector, as reflected in increasing financial allocations for agricultural development. In 2021–2022, the total cropped area was 324639 hectares (15.32% of the total geographical area), while the net cropped area stood at 268559 hectares (12.76%). With a cropping intensity of 12%, the state demonstrates potential for intensification and diversification of agriculture. Through these measures, Meghalaya aims to strengthen its agricultural base and enhance the livelihoods of its people.

Table 3-20: Land Use Statistics (Hectares)

Particular	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
1. Reporting area for Land Utilization Statistics	2195718	2195719	2195719	2195719	2195719	2203402
2. Forest	940164	928815	913972	913824	913428	866351
3. Not available for cultivation	240401	254238	270924	271531	272067	322197
4. Other Uncultivated land excluding Fallow Land	548938	548970	546020	544728	544907	538891
5. Fallow land	213883	210887	210049	210633	212020	207405
6. Net Area Sown	252333	252809	254754	255003	253296	268559
7. Area sown more than once	56247	56396	57412	57911	56128	56080
8. Total cropped area.	308580	309205	312166	312914	309424	324639

Source: Directorate of Economics and Statistics, Meghalaya

Mining and Quarrying: Meghalaya is endowed with large deposits of valuable minerals such as coal, limestone, kaolin, clay and iron. Due to intensive unscientific rat hole mining in major coal reserve areas, vast lands have been degraded, with forest and water bodies equally affected by the mining activity. Thus, mining activities have been intermittently banned in the State in 2014 by the National Green Tribunal.

Tourism: The tourism sector is also an important aspect of the state of Meghalaya. With its natural beauty and undulating hills, streams and flora and fauna Meghalaya are a tourist hot spot. This sector however is still largely untapped due to lack of reliable road connectivity.

Incidence of Poverty: In Rural Meghalaya, 12.53% of the population are BPL while the figure for urban areas of the state is 9.26 %. However, the baseline survey of selected villages across the state

illustrates that the incidence of poverty is high in all three regions. The recent survey indicates that the poverty rate is highest in Jaintia Hills, wherein about 94% of the households surveyed are poor. Whereas, 63% of the households surveyed in Khasi Hills fall under the BPL category, followed by Garo Hills which has about 45.94% of BPL households.³ The high incidence of poverty can be a result of many social and economic factors, such as lack of new economic opportunities, stagnant agricultural production, unsustainable land use practices and the impact on the livelihoods of marginal workers such as in the Jaintia Hills where intermittent ban on mining may have further increased the destitution in the remote villages.

3.9.5 Status of Women

The matrilineal system followed in all three major indigenous communities of Meghalaya has its share of limitations. The women have the privilege of lineage being passed on from their side and also have part ownership in inheritance and control of family property, however when it comes to decision making, women are not allowed to take part in the local governance system. The decision-making power is thus mostly vested in their husbands or their maternal uncles when it comes to Khasis. The Garos whose head is a woman Nokma, leaves all the management to her husband. The Jaintias do not have claim over their husband or his property and are under the protection of their maternal uncles and brothers.

The village administration is mainly headed by men and women can only act as a moral force behind it. They may give their view and suggestions to men on different issues, but it is the prerogative of the men to use it. It is only in the recent years that women have also started to attend and participate in the proceedings of a Dorbar in a few urban localities.

Negotiations and decision making between governments and other departments over the use of land do not fully engage communities especially women, and the decision-making power lies only in the hands of village heads. It was found that most of the land in Meghalaya is owned by women.

Despite having a matrilineal society, Meghalaya lags behind in several social indicators affecting women, such as poverty, illiteracy, unemployment, high drop-out rates, early marriages. It is only in the recent times that the female population have done considerably well in education and have come quite at par with its male counterpart. Besides this, women in Meghalaya by and large are free from many social taboos and constraints of the larger Indian society such as dowry, female feticide, neglect of girl child and other social evils. (Source “Matrilineality in Meghalaya.” (2023). *Civils daily*. <https://www.civildaily.com/news/matrilineality-in-meghalaya-khasis-jaintias-garos>)

3.9.6 Gender work participation rate

Women’s participation in the workforce in Meghalaya is higher than the national average, whereas men’s participation is seen to be lower than the national average. Based on the secondary data, it was observed that a larger percentage of women are engaged in agricultural activities and small-scale trade. The Census of India, 2011 mirrors the findings of the primary data, which indicates that about 35% women in rural Meghalaya are in the labour force. Further, relatively more

³ Source- [North East Slow Food and Agrobiodiversity Society \(NESFAS\) publication 2020](#)

Meghalaya's female labour force participation rate (FLFPR) is ~60.9% (2022–23) — well above the national average. (NITI Aayog). Rural FLFPR rose sharply to ~76.9% in 2023–24, reflecting strong post-COVID recovery. (IWWAGE, 2024). The rise aligns with national post-pandemic gains in women's participation reported by PLFS and related surveys. (Directorate General of Employment). Most women are engaged in self-employment, agriculture, and informal enterprises, mirroring trends across India. (IWWAGE, 2024). Despite high participation, formal job access remains low due to structural and social barriers. (Reuters, 2024)

It is anticipated that in project interventions that require labour from the community itself, approximately half of the labour force would be women. During this time, measures addressing discrimination at workplace, such as equal pay for equal work, should be in place to close the gender gap.

Table 3-24 : Gender Work Participation Rates in Meghalaya

District	Rural			Urban		
	Person	Male	Female	Person	Male	Female
Garo Hills	40.59	46.47	34.56	30.66	42.61	18.60
Khasi Hills	42.16	48.15	36.10	37.01	49.52	24.50
Jaintia Hills	39.13	45.42	32.89	37.58	43.10	32.46
Meghalaya	41.05	47.04	34.97	35.63	47.68	23.59
**Note: The rates have been circulated by taking together main and marginal workers. Source: Census of India, 2011.						

3.9.7 Gender differentiated work

Traditionally, women in Meghalaya engage in small-scale trade wherein they sell their produce in the local market and manage the income/profits accrued from the trade. Additionally, women in Meghalaya also engages in agricultural activities like sowing, weeding, harvesting and threshing while simultaneously looking after their families (cooking, cleaning, tending to the ill, caring for livestock, etc.).

Table 3-25: Gender -wise occupational status from primary data in different regions

Category	Garo hills		Khasi hills		Jaintia hills		Meghalaya	
	Male	Female	Male	Female	Male	Female	Male	Female
Cultivators	58.99	68.90	49.69	58.54	43.90	41.71	52.61	59.74
Agricultural Laborers	10.45	12.44	18.10	16.83	17.67	19.36	14.99	15.67
Household industry	1.58	12.50	1.03	1.45	0.93	1.68	1.24	1.85
Other workers	28.98	16.16	31.19	23.18	37.50	37.26	31.17	22.75
Total	100	100	100	100	100	100	100	100
Source: Census of India, 2011								

3.10 Crimes Against Women

The latest available National Crime Records Bureau (NCRB) report, "Crime in India 2023," was released in September/October 2025. According to this report, Meghalaya recorded a total of 628 cases of crimes against women in 2023. This represents a decrease from 690 cases in 2022 but remains higher than pre-pandemic levels (e.g., 558 in 2019). The national total for crimes against women in 2023 was 448,211 cases, with a crime rate of 66.2 per lakh female population.

Breakdown of Major IPC Crimes Against Women

Crime Type	Cases in 2023	Trend (2022 vs. 2023)	Notes
Rape (total)	66	Decreased (75 in 2022)	All against women; 0 against girls. 5-year trend: Down from 102 in 2019.
Attempt to Commit Rape	12	Decreased (20 in 2022)	11 against women, 1 against girl.
Kidnapping & Abduction of Women (total)	54	Decreased (96 in 2022)	Includes 32 general abductions, 6 to compel marriage (3 women, 3 girls), 4 procurement of minor girls. Trend: Down from 71 in 2019.
Assault on Women with Intent to Outrage Modesty	51	Decreased (63 in 2022)	49 against women, 2 against girls.
Insult to the Modesty of Women	17	Decreased (22 in 2022)	All against women.
Cruelty by Husband or Relatives	14	Decreased (28 in 2022)	A key domestic violence indicator; down from 23 in 2019.
Abetment to Suicide of Women	2	N/A	-
Dowry Deaths	0	Stable	No cases reported.
Acid Attack/Attempt	1 (attack)	N/A	-
Miscarriage (IPC)	1	N/A	-
Human Trafficking/Selling/Buying Minors	0	Stable	No cases.
Murder with Rape/Gang Rape	0	Stable	No cases.
Total IPC Crimes Against Women	218	Decreased (313 in 2022)	-

(Source -Crimes in India 2023 Report – NCRB Data)

An overall decline in IPC cases (30% drop from 2022) suggests improved prevention in traditional violence, but rising Special and Local Laws (SLL) cases (9% increase) indicate emerging issues like cyber exploitation

3.11 Social Infrastructure

Meghalaya is mainly the homeland of three main tribes, the Khasis, the Jaintias and the Garos, who follow a clan system. The Garos inhabit Western Meghalaya, the Khasis in Central Meghalaya and the Jaintias in Eastern Meghalaya. The Khasis, Jaintias known to be one of the earliest ethnic group of settlers in the Indian sub-continent, belonging to the Proto Austroloid Monkhmer race. The Garos belonging to the Bodo family of the Tibeto – Burmese race were said to have migrated from Tibet. A unique feature about the people of Meghalaya is their matrilineal society. The lineage and inheritance follow the mother’s line. (Source:, Chapter- Social profile of Meghalaya in Meghalaya Biodiversity Action Plan)

3.11.1 Khasi Tribe

The Khasis, inhabitants of the Khasi and Jaintia Hills, were historically distinguished from the plains dwellers of the Brahmaputra and Surma valleys. The hills, covered in grass or “ghas,” led the plains people to call their inhabitants “Ghas Land,” later evolving to “Khasia” during Mughal conflicts. The British retained this name, which the Khasis eventually accepted. Anthropologically, the Khasis share racial traits with other Neolithic descendants. Linguistically, their language belongs to the Austric family, closely linked to the Mundas, Mon-Khmer groups of Myanmar, and languages of central India and the Nicobar Islands. In the early 19th century, Welsh Calvinistic missionaries adopted the Roman script for the Khasi language.

Traditional Social Administration:

The Khasis follow a structured traditional governance system. The “Syiem,” or chief, oversees his territory, the “Hima⁴,” with the support of a council called the “Durbar.” The Syiem and his ministers, known as “Myntris,” exercise legislative, executive, judicial, and financial powers. At the grassroots level, village administration is handled by the “Rangbah Shnong,” or headmen, ensuring local governance aligns with the Hima’s administration.

3.11.2 Religion

Historically, Khasis are animists, practicing spirit and ancestor worship without idols. Reverence for nature and the belief in “U Blei Nongthaw,” the Khasi god of creation, is central to their faith. Priests, or “Lyngdohs,” are chosen from a specific clan. Christianity, introduced during British rule, has since become prevalent among many Khasis.

Society and Family Structure

Khasi society is strictly matrilineal. Descent, inheritance, and clan membership are traced through women, with the youngest daughter inheriting ancestral property and overseeing religious duties. Property succession follows the maternal line, extending to sisters and their female descendants if no daughters exist. The society is egalitarian; even Syiems and Lyngdohs are socially equal to other clans. Marriages are exogamous, occurring only outside one’s clan. Three wedding types exist: “Pynhiar

⁴ 54 No of Himas under jurisdiction of the Khasi Hills ADC

Synjat,” “Lamdoh,” and “Iadih Kiad,” with the first two being more prestigious. Divorce is permitted for reasons such as adultery or incompatibility, managed through a compensatory process called “Ka Them.” Pregnant women cannot be divorced, and remarriage is allowed with other families.

Monoliths and Memorial Stones

Khasis are known for erecting monoliths, or “kynmaw,” which mark memorials, spirits, or community landmarks. Stones like “Mawmluh” (salt stones), “Mawsmat” (oath stones), “Mawphlang” (grassy stones), and “Mawlynti” serve ceremonial, spiritual, and social functions, reflecting the cultural and mystical heritage of the Khasi people.

The Jaintias, predominantly inhabiting the Jaintia Hills of Meghalaya, are believed to belong to the Indo-Mongoloid race. They speak a distinct Austric language of the Mon-Khmer group. Indigenous theories suggest that the Jaintias share a common ancestry with peoples who inhabited northern India, Burma, Indo-China, and parts of South China during the Neolithic period. Within the Jaintia Hills, the population is divided into three sub-groups based on geography: the Pnars, residing in the central region; the Wars, from the southern region; and the Bhois, from the northern region. Collectively, they are all known as the Jaintias.

Religion

The Pnars or Jaintias practice a unique indigenous religion called Niamtre. Religious customs are closely tied to nature; for example, before eating, they offer portions of their food to the earth to honor Mother Earth. Their religious beliefs exhibit similarities to Hinduism, with worship centered on a supreme deity called U Blai Trekirod.

Traditional Social Administration

The Jaintia social structure is organized around the Elaka⁵, a group of villages. Each Elaka is headed by a Doloi, elected from the male members of the founding clan. Once elected, the Doloi holds office for life unless removed by collective decision. The Doloi is assisted by a council called the Doloi or Raid Durbar. Historically, the Syiems governed the plains of the Jaintia Hills, whereas the hills remained under Doloi authority. The institution of the Syiem emerged with the formation of a confederation, moving toward state formation.

Society and Inheritance

Jaintia society follows a predominantly matrilineal system. Property traditionally passes from mother to the youngest daughter, called the Khon wasdiah, who bears the primary responsibility for family welfare and religious duties. Other daughters receive smaller shares. Men can only inherit property they acquire themselves. If a man dies leaving property, the mother inherits it, not the wife or children, unless the wife agrees not to remarry, in which case she receives half, ultimately passing it to her youngest daughter.

Despite matrilineal inheritance, the household authority rests with the eldest maternal uncle. True matriarchy does not exist; the husband becomes head of his household after establishing a separate

⁵ The No. of Elakas in Jaintia Hills are 18

home. If no daughters exist, sons may inherit, but this is an exception. Modern practices have shifted, and men increasingly manage households independently of maternal authority.

Marriage among the Jaintias is traditionally arranged, monogamous, and socially approved. Free interaction between unmarried boys and girls is now common, though marriage within the same clan or close relatives is strictly forbidden. Marriages with maternal cousins are considered ideal. Divorce is permissible through a village official called the Wasan, with monetary compensation exchanged between partners, and remarriage between the same couple is not allowed. Funeral practices emphasize the maternal lineage, with cremation rites performed at the mother's house to honor ancestral traditions.

Traditional Costume

Jaintia men traditionally wear turbans or conical caps, shirts, waistcoats, and shawls known as Ryndia Tlem, with a cloth strip tied around the waist. Women wear outer garments across the shoulders called Ka Yusem, with Eri silk or Muga silk used for festivals. Patterns vary from striped Eri cloth (Ki Thoh Khyrwang) to small checks (Ki Thoh Saru), and a cloth tied around the neck (Ki Spain Khlieh) often covers the head and shoulders.

Megalithic Culture

A distinctive feature of the Jaintias is their megalithic culture, involving the creation of monoliths and dolmens. Nartiang village, particularly the lawmulong market area, hosts hundreds of these monuments erected by founders of the village clans. Other villages, like Sakhain near Sutnga, also display stone slabs and ceremonial seats, reflecting ancestral traditions and clan heritage. No Monoliths are intercepted with any of the sub project.

3.11.3 Garo Tribe

The Garo people, inhabitants of the Garo Hills in Meghalaya, are an ethnic group who refer to themselves as "Achik-mande," meaning "Hill People" in their language. The Garos are closely related to the Kacharis and Nagas, descendants of the Bodo race that migrated from Western China through Tibet to Burma. Linguistically, fifty percent of the words in the Garo and Kachari vocabularies are identical, and in appearance, the two groups bear remarkable similarities.

Social Structure

Garo society is organized into exogamous clans called "Katchis," the major ones being Marak, Sangma, and Momin. Marriage within a clan is strictly forbidden and punishable. Over time, some sub-clans, such as Awees, Abeng, and Agongs, have evolved into independent Katchis. Each clan is further divided into sub-clans called "Ma.chongs," often named after animals, rivers, or other natural features. A person belongs to their Ma.chong from birth. The dominant Ma.chong in a village selects a headman, called "Nok-ma," meaning "mother of the house," highlighting the importance of women in Garo society.

Inheritance is matrilineal, with property passing through women. While the Nok-ma manages the land, it is essentially the property of his wife's Ma.chong, and he cannot sell or mortgage it without their consent. A woman's children belong to her Ma.chong, and property remains within the maternal

lineage. Sons move to their wives' homes after marriage, becoming the "Nokron" or representative of their father-in-law.

3.12 Land use Practices

3.12.1 Khasi Society

Each village in the Khasi Hills has its own lands in which rights of private ownership are recognized. There are two main class of land in Khasi Hills, namely (i) Ri Raid Lands and (ii) Ri Kynti Lands. And under these there are sub classes of land by the different names in the various Himas

1. Ri Raid Lands are the land set apart for community over which no persons have proprietary, heritable, or transferable right except the right to use and occupy as long as one occupies and use the land. The Ri Raid lands comprise of Ri Shnong, Ri Shnat, Ri Kuna, Ri Lyngdoh, Ri Ram Syiem, Ri Law Kyntang, Ri Law Lyngdoh, Ri Law Niam, Ri Law adong, Ri Law Sang, Ri Law Sumar, Ri Bam Lang, Ri Lynter, Ri Leh Mokotduma, Ri Aiti Mon Sngewbha, Ri Phlang, Ri Bamduh, Ri Diengshai – Diengjin Ri Samla.

2. Ri Kynti Lands are also known by the different names such as Ri Kur, Ri Nongtymmen, Ri Maw, Ri Seng, Ri Khain, Ri Duwat, Ri Khurid, Ri Bitor, Ri Dakhol, Ri Shyieng, Ri lapduh, Ri Lynter, Ri Spah, Ri Longdung, Ri Pud, Ri Kut and Ri Lyngdoh, Ri Syiem, Ri Khasi Raibuh.

3.12.2 Jaintia Society

The Jaintia (Pnar) people of Meghalaya's Jaintia Hills follow a matrilineal customary land tenure system, distinct from the Khasi and Garo, governed by traditional institutions like the Doloï (chief) and protected under the Sixth Schedule of the Indian Constitution. Land is primarily communally held, with inheritance through the female line, emphasizing clan and community stewardship over individual ownership. Land is managed at three levels—Elaka (chiefdom under Doloï), Raid (group of villages), and Shnong (village under Waheh Shnong headman). The Doloï, assisted by elders (Basan), oversees allocation and disputes.

3.12.3 Garo Society

The lands in Garo Hills consist of revenue areas and non-revenue areas. The revenue areas are the plain areas of Garo Hills and the Non-revenue areas are the A. King (clan) lands of Garo Hills. The revenue areas of plain areas are directly under the management and administration of District Council in matters of settlement of land to any of the individuals for cultivation etc.

The Hill areas of Garo Hills are the A. King lands which belongs to the A. King Nokma (headman) of particular clan. The entire A. King lands are managed by the A. King Nokma who is the guardian and custodian of a particular clan or motherhood. The District Council do not have direct control over the A. King lands. A. King lands belong to the particular motherhood whose head is a female. The ultimate ownership lies with the motherhood which exercise its control through her husband. The A. King Nokma being a mere custodian and guardian of A. King lands cannot take any arbitrary decisions in matter of sale, mortgage, gift, transfer etc. There are different kinds of A. King lands in Garo Hills such as A. milam, A. jikse, A. jama etc. All these different kinds of lands held by particular ma.chongs,

cannot exercise the power over their own acquired lands as the entire property belongs to the wife or female. The “chras” or male elder members of the family play an important role in shaping their future and welfare.

3.12.4 Land Classification

Table 3-25: land classification amongst Khasis, Garos and Jainta tribes decides access, use, ownership, control and management.

KHASIS					
S.No	Type	Definition	Access and Use	Ownership	Control and management
1.	Ri Raid, or communal lands	Community entrusts Durbar Raid to manage on its behalf		Individual members get rights to use, after which land reverts to the raid	Durbar Raid
1.1	Ri Shnong	That land in the village which citizens can use for cultivation (cannot occupy, cannot transfer)	All members of the community have access to this type of land Community	Community land	Village Durbar
1.2	Ri Lyngdoh	Land which has been set aside for the support of Lyngdohs who perform religious rites and ceremonies	Members of the Lyngdoh clan in a village have access to this type of land	Lyngdoh clan, with a female head.	Maternal uncles of the Lyngdoh clan
1.3	Ri Bam Syiem	Land which has been set aside for the ruling chiefs	Used by the Syiems	Syiem clan of an area under a female head	Managed by maternal uncles of the Syiems of an area.
1.4	Ri Bamlang	Community land which has been set aside for the use by the community	Can be used by all	Community land	Managed by the Village Durbar

1.5	Ri Leh Mokutduma	Land acquired through litigation	Can be used by individual/ community	Community land	Managed by the raid
1.6	Ri Aiti Mon or Ri Nongmei Nongpa	Land that has been donated or gifted willingly by the owners for use by the public	Can be used by individual/ community	Community land	Managed by the Village Durbar/Clan
1.7	Ri Raphlang– Ri Bamduh	Barren land which anyone can use	Can be used by all	Community land	Managed by the village durbar
1.8	Ri Diengsai – Diengjin	Forests area that is covered with vegetation between the uplands and low lying areas of the lands	Can be used by all	Community land	Managed by the village durbar
1.9	Ri Samla	Land acquired by an unmarried person who has the right to dispose off as one likes	Used by all	Community	Reverts back to the village
1.10	Ri Umsnam	Land acquired through wars	Used by all	Community owned	Managed by the Village Council
2.	Ri Kynti, or private lands	absolute property of the individual or the kur that owns it.	It can be utilised in any manner that the individual or the kur deems fit		
2.1	Ri Nongtymmen	Land that has been inherited from generations to generations.	Used by the descendants of one mother	By the youngest daughter.	Managed by the maternal uncle or brothers
2.2	Ri Maw	Land that has been acquired through purchase or through	Used by the members or descendants of one mother	Owned by the youngest daughter	Managed by the maternal uncle or brothers

		the right of apportionment.			
2.3	Ri Seng and Ri Khain	Undivided family owned land	Used by members of one family or descendants of one mother	Owned by the youngest daughter	Managed by the maternal uncle or brothers
2.4	Ri Khurid	Land that has been purchased or bought over which the purchaser has the propriety, heritable and transferable rights over land.	Used by members of the one family	Owned by the female	Managed by the family
2.5	Ri Bitor	Land that has been acquired on receipt of a ceremonial bottle of liquor	Used by members of one family or descendants of one mother	Owned by the youngest daughter	Managed by the maternal uncle or brothers
2.6	Ri Dakhol	Land that has been obtained by the right of occupation	Used by members of one family or decedents	Owned by the youngest daughter	Managed by the maternal uncle or brothers

JAINTIAS					
S.No	Type	Definition	Use	Ownership	Control and management
1.	Hali land	Comprised of permanently cultivated terraced wet rice land-irrigated by streams or rainfall	Used by the family	Private property owned by the youngest daughter and Community property owned by the Village Dorbar	For private, it is managed by the maternal uncle and for community, it is managed by the Dorbar.
2.	High Land	Lands found in hill region, these could be private Hali land	Used by the family	Private property under the	Managed by the family, that is the

		or government wasteland. Private ones can be bought, sold or mortgaged at the will of the inheritors		name of a female	maternal uncle
3.	Raj Lands	property of the erstwhile syiems/rajas which became the property of the government which leased it to private individuals in accordance with customary laws	Used by individual households	Government Land	By private individuals in terms of lease of 3 years.
4.	Service Lands or Rek Lands	Land that was given rent free to Dolois, Pators Chiefs and other officials as remuneration for the services provided by them.	Used by Dollois, Pators and Chief	Government Land	Managed by Dollois, Pators, and Chiefs.
5.	Village Puja Land	Consists of the lands held by the Lyngdohs or the Dolois who performs the pujas of the doloiships	Held by and cultivated by the headmen and the yield is utilized for meeting expenses connected with religious ceremony.	Owned by the Lyngdoh and Dallois	Managed by the Lyngdoh Dallois for worship.
6.	Private Land	Lands held by private individuals and can be transferred, mortgaged and sold or otherwise at the will of the owners.	Used by the individuals	Owned by female	Managed by the maternal uncle

7.	Patta Land	Encompasses lands that were allotted or transferred to individuals or institutions by the British during their administration, whose power has now been substituted by the Autonomous District Councils.	Used by the individuals	Owned by ADC	Managed by Institutions or Individuals only with respect to paddy fields.
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GARO					
S.No	Type	Definition	Use	Ownership	Control and management
1.	A-king Land	Clan owned land is the fundamental system of land ownership and management.	Can be used by all upon paying a nominal tribute.	Community land	Managed by the Nokma
2.	A-mate land	(a) Acquired by an individual by purchase or through gift and comes within an A'king Land. (b) Acquired by an individual through gift by the Nokma and can be independent of A'king land	Can be used by the members belonging to the same clan.	Private Property	(a) Managed by the nokma (b) Managed by the Mahari
3.	A-jinma or A-joma land	Land owned by the community. It is the common land of one motherhood.	Only for people belonging to the same clan.	Community Land	Managed by the Mahari

GARO					
S.No	Type	Definition	Use	Ownership	Control and management
4.	A-jikse land	This is common for both the husband and the wife. This land comes into existence through the system of common inheritance and through unity by a bond of inter clan relationship.	Used by members of the two motherhoods of the husband and wife.	Private land	Through joint deliberation of the two motherhoods of the husband and wife.
5.	A-milam land	"no-man's land", used by the community but cannot be claimed by the Nokma	May be used by all members of the community	Community land	Referred to as 'cursed' land cannot be claimed by any Nokma

3.13 Administration in Sixth Schedule Area(KHADC, JHADC & GHADC)

The Sixth Schedule of the Constitution provides for the administration of tribal areas in Assam, Meghalaya, Tripura and Mizoram to safeguard the rights of the tribal population in these states. This special provision is provided under Article 244(2) and Article 275(1) of the Constitution. Passed by the Constituent Assembly in 1949, the Sixth Schedule was formulated to provide the limited autonomy to the tribal regions of North-East. It was based on the reports of Bardoloi Committee formed by the Constituent Assembly. The committee report stated that there was a need for a system of administration that would allow tribal areas to become developed. The report also called for the protection of these tribal areas from exploitation by the people in the plains and preserving their distinct social customs. It gives the tribals freedom to exercise legislative and executive powers through an autonomous regional council and autonomous district councils (ADCs) The ADCs are the districts within the state to which the central government has given varying degree of autonomy within the State Legislature. The various features of administration contained in the Sixth Schedule are as follows:

- ✓ The tribal areas in the four states of Assam, Meghalaya, Tripura and Mizoram have been constituted as autonomous districts. But they do not fall outside the executive authority of the state concerned.
- ✓ The governor is empowered to organize and re-organize the autonomous districts. Thus, he can increase or decrease their areas or change their names or define their boundaries and so on.
- ✓ If there are different tribes in an autonomous district, the governor can divide the district into several autonomous regions

- ✓ The Sixth Schedule applies extensively across Meghalaya, ensuring self-governance for its predominantly tribal population. The state has three Autonomous District Councils (ADCs) Khasi Hills, Jaintia Hills, and Garo Hills each representing major tribal groups and their respective territories. These Councils exercise legislative, executive, and limited judicial powers over land, forests, and local governance. They uphold customary laws and traditional institutions, ensuring cultural preservation and community led administration. Thus, the Sixth Schedule remains central to tribal autonomy and sustainable governance in Meghalaya.
- ✓ The District Councils under the Sixth Schedule hold legislative, executive, and judicial powers over key local matters. They can make laws on land, forests, water use, and customary practices, subject to the Governor's assent. Executively, they manage education, health, sanitation, and local development. Judicially, they administer customary courts handling civil and criminal cases among tribes. The Governor oversees these Councils, approving their laws and ensuring constitutional compliance, with powers to amend, suspend, or dissolve a Council when necessary.
- ✓ The Sixth Schedule is vital for environmental governance in Meghalaya, as the Autonomous District Councils (ADCs) oversee land, forest, and water management. They play a key role in implementing Biodiversity Management Plans (BMPs), Environmental and Social Management Frameworks (ESMFs), and community-based conservation initiatives like sacred groves and forest reserves. By upholding customary laws and traditional ecological knowledge (TEK), the framework integrates indigenous conservation practices with modern sustainability strategies.
- ✓ The district and regional councils within their territorial jurisdictions can constitute village councils or courts for trial of suits and cases between the tribes. They hear appeals from them. The jurisdiction of the high court over these suits and cases is specified by the governor.
- ✓ The district council can establish, construct, or manage primary schools, dispensaries, markets, ferries, fisheries, roads and so on in the district. It can also make regulations for the control of money lending and trading by non-tribals. But such regulations require the assent of the governor. The district and regional councils are empowered to assess and collect land revenue and to impose certain specified taxes.
- ✓ The acts of Parliament or the state legislature does not apply to autonomous districts and autonomous regions or apply with specified modifications and exceptions.
- ✓ The governor can appoint a commission to examine and report on any matter relating to the administration of the autonomous districts or regions. He may dissolve a district or regional council on the recommendation of the commission.

3.14 Protected Archaeological and Historic Sites

The sites detailed herein Monolithic Garden (Moo long Syiem) in Shangpung near Jowai, Scott's Memorial, Cherrapunji (Sohra) and Monolithic Garden, Jowai are officially designated as Monuments of National Importance by the Archaeological Survey of India (ASI) under the provisions of the Ancient Monuments and Archaeological Sites and Remains Act, 1958 (and its 2010 amendment). These protected antiquities fall within the project area. As such, they are subject to strict conservation protocols, including a prohibited area (100 m radius) and regulated area (additional 200 m buffer)

where construction, mining, and defacement are legally barred, ensuring the preservation of their archaeological integrity and cultural significance for future generations

Table 3-26: Protected Archaeological and Historic Sites

Sl. No	Name of monuments/ sites	Location	District	Relevance to the project
6	Stone memorial of U-Mawthohdur, Bhoi Country	Bhoi Country	East Khasi Hills	Umsning Jagi Road
7	Scott's Memorial, Cherrapunji	Cherrapunji	East Khasi Hills	Umtynagar – Sohra Road
9.	Monolithic Garden	Jowai	Jaintia Hills	Lakadong - Mooriap -Sem masi Road

4 Impact Assessment

4.1 Introduction and Objectives

The Meghalaya Logistic connectivity and Improvement Project (MLCIP) aim to improve connectivity, trade efficiency, and logistics performance through integrated infrastructure development in Meghalaya. Implemented by MIDFC with PWD and World Bank support, the project promotes sustainable and climate-resilient growth. This Impact Assessment, a key part of the ESMF, evaluates environmental and social impacts and identifies measures to ensure compliance, equity, and environmental sustainability.

4.2 Purpose of the Impact Assessment

The main purpose of the impact assessment is as follows

- Identify, predict, and evaluate potential environmental and social impacts resulting from MLCIP interventions.
- Provide a structured basis for decision-making on project design, site selection, and implementation sequencing.- Ensure that adverse impacts are identified for the each type of intervention, so that processes can be developed to minimize or mitigate them so that the positive benefits are maximized.
- Establish a foundation for Generic Environmental and Social Management Plans (ESMPs) which in help in develop the framework of the monitoring and review of the E&S Performance.
- Integrate environmental and social considerations into the overall project design to promote sustainability and inclusiveness.

4.2.1 Scope of the Assessment

The Impact Assessment covers all major project components, namely:

- ❖ Road Upgradation and Rehabilitation: improvement of approximately 600 km of strategic corridors connecting economic centers and border points.
- ❖ Bridge Construction and Strengthening: new bridges and rehabilitation of existing structures to ensure year-round connectivity.

This chapter outlines the primary impacts across project phases and the corresponding mitigation strategies aligned with the project's Environmental and Social Management Framework (ESMF), Resettlement Policy Framework (RPF), Indigenous People Planning Framework (IPPF), and state/national and World Bank ESF requirements.

4.3 E&S Risk and Application of the ESMF

The basic contours of the interventions are described in the earlier section. Considering the typical activities which are envisaged to be undertaken at the diffent project stages E&S issues have been identified keeping in mind the environmental and social sensitivities in Meghalaya (which have been

described in the preceding chapter. The broad contours of the different stages of the project activities are presented below and these have been detailed in **Error! Reference source not found.**

4.4 Planning and Design Phase

This phase focuses on avoiding impacts by using GIS screening followed by on-ground verification and consultations to identify sensitive areas (forests, water bodies, habitations) and secure Free Prior Informed Consent (FPIC) from community. Finalizing Right-of-Way with documented agreements and considering alternative routes for risk-prone zones helps prevent major issues early.

4.5 Pre-Construction Phase

This phase ensures full safeguards and regulatory compliance, site readiness, and stakeholder acceptance before any physical works or contractor mobilization. Key actions to be completed include:

- Finalization, consultation, disclosure, and World Bank clearance of all required site-specific instruments: ESIA/ESMPs, RAPs (with census, cut-off dates, replacement-cost valuation, livelihood restoration plans), IPDPs, and documented FPIC outcomes (per RPF, IPPF, and ESS7);
- Full implementation of the Stakeholder Engagement Plan (SEP): ongoing consultations, local-language disclosures, and operational multi-tier GRM;
- Securing all statutory permits/clearances: environmental/forest, tree-felling, pollution control, quarry/borrow area licenses, and NOCs from KHADC/GHADC/JHADC (if applicable) and other local bodies;
- Obtaining labour-related licenses and insurance: contractor registration, ESI/Workmen's Compensation coverage, bonded labour abolition undertakings, and child/forced labour declarations;
- Selection and community-consented establishment of labour camps, stockyards, and batching plants;
- Recruitment and deployment of qualified PIU and contractor E&S staff (EHS officers, social/gender/labour/tribal/environmental/ biodiversity specialists);
- Submission, review, and approval of Contractor's ESMP (C-ESMP) integrating traffic management, labour influx, OHS, chance finds, code of conduct, and GBV/SEA action plans.

Only upon completion and verification of the above will Notice to Proceed be issued, thereby preventing delays, speculation, grievances, or non-compliance during construction.

4.6 Construction Phase

This phase marks peak environmental and social risks, including air/water/noise/soil pollution, biodiversity disruption, traffic congestion, worker/community health & safety hazards, and social tensions from labor influx (e.g., GBV/SEAH, resource competition). Mitigation will be enforced via the approved Contractor's ESMP (C-ESMP), which integrates site-specific plans for labor management (per ESS2: worker contracts, OHS, child/forced labor prevention, fair wages, insurance), community health & safety (per ESS4: traffic/road safety, emergency response, hazard controls), and GBV/SEAH. Additional C-ESMP provisions include: stakeholder consultation platforms (per SEP/ESS10: regular community forums, feedback loops, vulnerable group inclusion); dedicated GRM for workers/communities (anonymous, multi-tier, tracked resolution within 15days); pollution controls (dust suppression, effluent treatment, noise barriers); waste/spill management; biodiversity measures (time-bound works near habitats, compensatory afforestation); camp hygiene/facilities; and chance

finds procedures. Real-time geotagged monitoring, third-party audits (bi-annual), adaptive corrective actions, and PMU/PIU oversight will ensure compliance, with non-conformance penalties and suspension triggers to keep impacts within limits.

4.7 Operation Phase

Ongoing maintenance tackles erosion, pollution, noise, accidents, and waste. Solutions include proactive upkeep, regular environmental checks, enforcing safety rules, efficient waste handling, sustainable operations, and ongoing community involvement to ensure long-term benefits.

The typical activities in the broad intervention type ie. Road/ bridge construction and the agro-logistics have been considered to identify the key environmental and social issues and also illustrate how the ESMF would be applied

Given below are the table of Potential social and environmental issues and the mitigation measures under each phase:

Table 4-1: Potential Environmental Issues and Mitigation Measures under each Phase

Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
Planning and design						
P1	Identification of the Project Component (Roads/ Bridges)	Sensitivity along the road and bridges needs to be identified.	Preliminary screening of the sensitivity needs to be completed.	Preliminary Checklist and GIS information.	MPWD/MBMA/DOA	Completed Preliminary Screening, Checklist submitted
P2	Environmental and Social Impact Assessment and Management including Identification of sensitive environmental habitats	Environmental and Social risks and impacts identified, including assessment of critical habitat, flora, and fauna species	Applicable for all civil works programs. The Assessment process described in the ESMF including specialised studies on biodiversity, indigenous people	Baseline and project information and Environmental and Social experts	MPWD/MBMA/DOA	ESIA completed with ESMP and submitted along with Biodiversity Management Plan if applicable.
Pre-construction						
PC1	Consents/ Permits/ Approvals/ Compliances	Non-compliance to statutory and regulatory requirements	Applicable before construction begins	CTE, CTO, Labour License, Fire NOC, Tree Cutting Permission	Contractor / MSPCB/concerned authorities	Clearances obtained and maintained

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Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
PC2	Contractor's ESMP (CESMP) Preparation and Implementation	Inadequate preparation and implementation leaves environmental and social issues unaddressed	CESMP must align with project ESMP and the work plan and methodology being proposed. It has to be submitted with the Work Methodology and the same should not be approved unless this is approved.	CESMP, TMP, LMP, OHS Plan	Contractor/MPWD	Approved CESMP including TMP, LMP.
PC3	Supply of Construction Material	Use of unauthorized or unlicensed sources	Material sourcing must be legal and approved. Process are detailed in ESMP.	EC, quarry approvals, challans/receipts	Contractor/SEIAA/Mining Dept	Material source approval and records maintained
PC4	Water Sourcing	Over-extraction	Processes and mitigation measures in ESMP	Water permits, consumption records	Contractor/Water resources Dept./Ground water authority	Permission for water use; Wastewater management measures

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Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
PC5	Appointment of Environment, Social and Safety Officers	Inefficient supervision may lead to non-compliance	Required for the implementation of CESMP and OHS. Qualification, roles and responsibilities are detailed in the ESMF	CVs, OHS Plan	Contractor	Mobilization completed; Approved OHS Plan
PC6	Identification of OHS Hazard and Risk Categorization	Risk of injury, illness, death	Applicable to all construction sites. A Hazard Identification and Risk Assessment needs to be completed for all activities. The OHS Plan has to be submitted along with the Work Methodology	Inspection checklist, hazard register	Contractor	OHS hazard register, checklist , and templates, inspection reports
PC7	Other Construction Vehicles, Equipment and Machinery	Pollution from non-compliant vehicles	Vehicles and equipment must comply with PUC/fitness norms. Appropriate clauses are included in ESMP	PUC certificates, inspection log	Contractor/Transport Dept	Valid records maintained

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Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
			along with tools to enforce them			
PC8	Tree Cutting	Loss of biodiversity and green cover	Minimize tree cutting and follow Forest Dept. guidelines	Coordination with the Division office and Forest Department.	Contractor/Forest Dept/MPWD	Tree felling record, Forest Dept. NOC. Records of trees cut and saved
Construction						
C1	Crushers, Hot Mix Plants & Batching Plants	Dust, air pollution, noise, health hazards	Measures suggested in Template ESMP needs to be applied and reported back	Layout plans, NOCs, monitoring reports	Contractor/MSPCB/MPWD	Approved layout plan, Valid NOCs, Dust suppression records
C2	Operation of Borrow Areas	Soil erosion, vegetation loss, safety hazards	Borrow areas require EC and management plan. The process is defined in the ESMP	EC, lease agreement, closure plan	Contractor/SEIAA/PMU	EC copy, Approved restoration and closure plan
C3	Procurement of material from Quarries (Operation of Quarries follows	Dust, noise, traffic, safety risks	Material from legally approved quarries. Processes have been defined in the ESMP	Quarry permits, haul road plans	Contractor/SEIAA/Mining Dept/PMU	Quarry permit, EC, Safety inspection reports, Dust control records

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Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
	regulatory processes)					
C4	Dismantling of Bridges/ Culverts/ Structures	Improper disposal, flooding, environmental damage	Material must be reused or disposed safely as defined in the ESMP.	Debris management plan, approved disposal site	Contractor/MPWD/Municipal authority/VC	Debris disposal/reuse records, Approved site restoration plan
C5	Bituminous Waste Disposal	Soil and water contamination	Waste to be collected, stored, and disposed safely as mentioned in the ESMP/ Regulations	Waste storage plan, disposal approvals register and records.	Contractor/MSPCB/PMU	Records of waste reused/disposed; Approval for disposal site
C6	Storage of Oil , Fuel and Other substances	Oil/fuel spills, hazardous substances	Construction and storage areas must have containment	Spill kits, bunded areas, maintenance logs	Contractor/ MSPCB	Spill log, Waste oil disposal records, Inspection record
C7	Construction activities and operation of Machinery - Dust Generation	Dust from construction vehicles, sites	Dust suppression measures required	Water, PPE, sprinkling equipment	Contractor/MPWD/ PMU	Air quality monitoring reports, Dust suppression log

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Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
C8	Operation of Plant and machinery : Emissions	Vehicle and machinery emissions	Vehicles maintained; fuel efficiency, emission controls	PUC, LPG for camps, dust extraction systems	Contractor/MPWD/ PMU	Valid PUC certificates, Equipment maintenance log
C9	Wastewater, camp effluents form plants and machinery	Contamination of Surface/Ground Water	Wastewater treatment, sanitation facilities	Wastewater management, monitoring plan	Contractor/MPWD/ PMU	Water quality monitoring report, Camp inspection records
C10	Water Requirement for Project	Over-extraction causing scarcity	Optimize water use, rainwater harvesting	Renewal of Water permits as required, consumption records, and reports Maintenance of Permit requirements	Contractor/Water resources Dept./Ground water authority	Water consumption log, Rainwater harvesting installation
C11	Coffer Dam for Bridge Work	Changes to water flow, habitat disturbance	Scheduling of construction activity, environmentally friendly materials, restore site before monsoon and after construction is over	Inspection checklist Guidance/ EMP for waterside activity / coffer dam in CESMP	Contractor/MPWD/PMC/PWD	Worksite inspection record; Restoration completion record

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Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
C12	Noise from Vehicles, Plants, Equipment	Health and safety impacts	Monitor and control noise, restrict to daytime	Noise monitoring equipment, PPE	Contractor/ PMU	Noise level report; PPE usage record; Complaint register
C13	Blasting	Accidents, health hazards	Blasting plan, permissions required	Approved blasting plan, permits and experienced personnel.	Contractor/District authority/ PMU	Blasting management plan; Incident log
C14	Loss of Trees and Plantation Works	Permeant damage if trees do not survive , regulatory non-compliance	Compensatory plantation, limit clearing. PMC to keep an oversight and report.	Tree felling register, plantation record	Contractor/Forest Dept/ PMC/ PMU	Plantation records; Forest NOC
C15	Landside activities in forest / vegetated areas	Habitat disturbance, wildlife harm Terrestrial Flora and Fauna and wildlifw	Awareness, no hunting/fuelwood collection. Biodiversity Management Plan to be perepared separately	Training records, wildlife log	Contractor/MPWD/ PMC/ PMU	Worker awareness log; Wildlife sighting log
C16	Water side activities / in water activities	Disturbance to Aquatic flora and Fauna	Schedule work during Low-flow work, avoid	Work timing records, inspection checklist	Contractor/MPWD/ PMC/PMU	Work timing records; Site

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Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
			monsoon/breeding season. The specific guidance in ESMP			inspection checklist
C17	Occupational Health and Safety at Worksites	Injuries, accidents, health risks due to works and other hazards e.g. operating traffic in case of highways	Implementation of OHS plan to eliminate, reduce risk provision of appropriate, PPE, first aid, development and implementation of, emergency response, training and awareness of the workforce	OHS Plan, PPE, training log	Contractor	Approved OHS plan; Training records; Health inspection reports
C21	Risk of Natural Hazards	Flood, earthquake	SDMA mitigation measures	Site assessment report	Contractor	Compliance with SDMA norms
C22	Hygiene	Unhygienic surroundings	Sanitation, drainage, potable water, preventive care	Sanitation inspection, hygiene log	Contractor	Sanitation inspection record; Hygiene logbook
C28	Monitoring and Reporting	Non-compliance, environmental degradation	Monthly/quarterly monitoring	Monitoring plan, CESMP report	Contractor	ESMP compliance report;

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Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
						Monitoring data records
Operation						
O1	Debris and Waste from Clearing/Closure	Land/soil contamination, aesthetic degradation	Site restoration plan, debris clearance	Site restoration plan, geotagged photos	Maintenance Contractor	Site clearance restoration records; Closure NOC
O2	Soil Erosion due to Runoff	Loss of fertile soil, slope instability	Drainage, bioengineering, retaining walls	Slope inspection, erosion control measures	Contractor (during defect liability period/ long-term maintenance contract)/ MPWD	Erosion inspection reports; Drain maintenance log
O3	Water Pollution from Road Runoff	Surface/groundwater contamination	Silt traps, desilting, awareness campaigns	Water monitoring plan	Contractor (during defect liability period/ long-term maintenance contract)/ MPWD	Water quality monitoring results; Drain cleaning records
O4	Dust Generation from Vehicular Movement	Air pollution, visibility reduction	Roadside plantation, smooth surfaces, speed control	Planting materials, signage	Contractor (during defect liability period/ long-term maintenance contract)/ MPWD	Air quality results; Plantation survival record
O5	Air Pollution from Vehicular Emissions	NOx, SO ₂ , CO, PM increase	Green buffers, driver awareness, monitoring	Air monitoring equipment	Contractor (during defect liability period/ long-term	Air quality results; Awareness records;

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Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
					maintenance contract)/ MPWD	Plantation survival record
O6	Noise Pollution from Traffic	Noise nuisance	Noise barriers, monitoring, “No Horn” zones	Noise monitoring equipment	Contractor (during defect liability period/ long-term maintenance contract)/ MPWD	Noise monitoring results; Maintenance records
O7	Road Safety and Accident Risks	Accidents, congestion	Signage, pedestrian crossings, awareness	Traffic signage, safety equipment	Contractor (during defect liability period/ long-term maintenance contract)/ MPWD	Accident records; Safety audit report; Awareness records
O8	Maintenance Waste from Roadside Activities	Soil/water contamination, visual pollution	Proper collection, authorized disposal, recycling	Waste disposal plan, logs	Contractor (during defect liability period/ long-term maintenance contract)/ MPWD	Waste disposal records; Waste logbook
O10	Building & Station Operations	Waste, fire hazards, sanitation issues	STP/septic maintenance, fire systems, daily cleaning	Sanitation logs, fire inspection	Contractor (during defect liability period/ long-term maintenance contract)/ MPWD	Waste logs; Fire inspection report; Sanitation log

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Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
O11	Storage House Operation	Occupational hazards, fire/spills	Containment, firefighting, inspections, training	Inspection checklists, training logs	Concerned Agency	Inspection checklist; Emergency drill records
O12	Solid Waste Management	Environmental degradation	Segregation, authorized disposal, record keeping	Waste segregation records	Ropeway Operator/Agency	Waste disposal receipts; Segregation records
O13	Sewage & Wastewater Management	Water pollution, health hazards	Sanitary tanks, soak pits, treated water reuse	Water quality monitoring plan	Concerned Agency	Water quality reports; Disposal records
O14	Energy Use & Efficiency (Street lighting)	High energy demand, carbon emissions	LED/solar systems, monitoring, audits	Energy audit reports, billing records	Concerned Agency	Energy bills; Audit reports
O15	Air & Noise Pollution from Vehicles	Localized pollution	Monitoring, maintenance, green belts	Air/noise monitoring equipment	Concerned Agency	Monitoring data; Maintenance logs
O16	Fire & Emergency Preparedness	Accidents, injuries, property damage	Fire systems, drills, emergency contacts	Fire safety equipment, training	Concerned Agency	Fire drill log; Equipment inspection report

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Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
O18	Maintenance Waste (Oils, Lubricants, Scrap)	Contamination	Collection, disposal through authorized aggregators	Waste disposal records, containers	Concerned Agency	Waste inventory; Disposal certificates

Table 4-2: Potential Social Issues and Mitigation Measures under each Phase

Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
PLANNING AND DESIGN PHASE						
P1	Identification of the Project Component (Roads/ Bridges)	Potential displacement of communities/vulnerable groups (e.g., low-income, migrants, women-headed households); conflicts over resource access; disproportionate impacts on women/elderly/disabled from route alignment; child/forced labor risks in early supply chains; exclusion of Indigenous Peoples (IP) from scoping; traffic/accident hazards to nearby communities; disease spread from anticipated labor influx; cultural heritage screening gaps leading to sacred site risks.	Preliminary screening of sensitivity completed; ESMF scoping for integrated social risks (ESS1), including baseline socio-economic surveys.	Preliminary Checklist, GIS information, social baseline data (e.g., census of affected households, vulnerability mapping), conflict analysis, IP presence survey.	MPWD	Completed Preliminary Screening Checklist submitted; social risk register initiated; no-go options for high-risk social areas identified.

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Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
P2	Identification of RoW, Land requirement and FPIC	Involuntary resettlement (physical/economic displacement, loss of homes/farms/livelihoods); lack of FPIC leading to conflicts with IP or vulnerable groups; exclusion of women from land decisions; forced eviction risks ⁶ ; restricted access to common resources (e.g., grazing lands); gender disparities in compensation planning; early GBV risks from route-related influx.	ESMF assessment includes land acquisition risks; scoping per RPF/IPPF integrated into early ESMP.	Land records ⁷ , GIS maps, public consultation records, FPIC documentation, vulnerability assessment, socio-economic baseline.	MPWD/ Consultants	RoW fixed; ESMF with standalone documents submitted; FPIC documentation submitted; displacement avoidance measures documented.
P3	Environmental and Social Impact Assessment and Management	Social risks/impacts on communities (e.g., health from habitat loss affecting traditional livelihoods, cultural ties to land); identification of vulnerable groups (e.g., migrants, disabled); potential GBV hotspots/influx from workers; occupational hazards for local hires; disease transmission risks; exclusion in	Applicable for all civil works; ESIA/ESMP per ESMF, including social baselines and vulnerability studies. Step 1 and 2 of the FPIC processes as part of ESS 7.	Baseline/ project data, , socio-economic surveys, IP mapping, gender analysis. FPIC documentation and evidence pack.	MPWD/ Consultants	ESIA completed with ESMP submitted; social impact register and management plan included; RAP/IPDP scoping reports if applicable. FPIC documentation submitted with the FPIC evidences included in the document.

⁶ Land would be Community owned (Ri Raid – Khasi and Jaintia Hills, Aking Nokma – Garo Hills) or Individual Land (Ri Kynti – Khasi and Jaintia Hills).

⁷ Individual land records—primarily for Ri-Kynti (private/individual land)—are managed under a unique customary framework, where land ownership is rooted in tribal traditions rather than a centralized state-owned system. Verification involves a combination of customary proofs (clan/village endorsements) and any available government documentation. The process is decentralized, involving traditional institutions like the Doloi/Syiem/Nokma (tribal heads).

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Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
		ESIA consultations; cultural heritage chance finds; economic marginalization of IP.				
PRE-CONSTRUCTION PHASE						
PC1	Land Procurement	Loss of land/assets/livelihoods (e.g., farming income for poor households); economic displacement/restricted land use; forced evictions; impacts on vulnerable groups (e.g., women-headed households, IP losing sacred lands); inadequate compensation gaps; transaction costs not covered)	Land acquisition and compensation/ subsistence allowance as per ESMF/RPF; ESMP for site preparation risks, integrated with RAP.	RPF/RAP records, FPIC evidence-based documentation, grievance documentation, livelihood restoration baseline, asset valuation reports.	MPWD	FPIC Documentation with evidences to be submitted and disclosed. Compensation records maintained; grievances resolved; RAP approved and disclosed; RP Agency reports to document R&R assistance and payments to all the affected parties. All documents pertaining to Land Procurement to be disclosed by the PMU.
PC2	Contractor's ESMP (CESMP) Preparation and Implementation	Unaddressed social risks (e.g., labor exploitation/discrimination, community conflicts over camps); non-compliance with worker/community rights; supply-chain child/forced labor; gender disparities in CESMP planning; exclusion of vulnerable groups in consultations.	CESMP aligns with project ESMP; includes TMP/LMP/OHS; and the work plan and methodology being proposed. It has to be submitted with the work methodology and the same should not be approved	CESMP, TMP, LMP, OHS Plan, social risk assessment,.	Contractor/ MPWD	Approved CESMP including TMP/LMP; social compliance checklist signed off; RAP/IPDP elements incorporated.

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Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
			unless this is approved.			
PC3	Identification of land construction camp/ labour camp	Social tensions/disruption to communities (e.g., resource strain on water/camp to close to the settlements etc); GBV/SEAH risks from camps; strain on local services for vulnerable (e.g., women, migrants); exclusion of IP in site selection; security risks from untrained guards.	Site selection as per environmental and social guidelines; ESMP for camp management, Camp location and setup will be decided by the community through FPIC consultations which must include women and the youth.	Lease/NOC, site inspection, approval of the community through FPIC consultations, security training plan.	MPWD/ Consultants	Approved site location; Lease/NOC copies; community/IP consent records;
PC4	Appointment of Environment, Social and Safety Officers	Inefficient social supervision leading to non-compliance (e.g., discrimination/grievances unaddressed for migrants/women); lack of gender/IP expertise; oversight gaps in RAP/IPDP implementation.	Required for CESMP/OHS implementation per ESMF.	CVs, OHS Plan, social expertise qualifications (e.g., gender/tribal, labour specialists).	MPWD/ Consultants/ Contractors	Mobilization completed; Approved OHS Plan with social safeguard specialists appointments; training logs for RAP/IPDP.
PC5	Preparation of RAP and IPDP	Involuntary displacement without adequate planning; loss of cultural/traditional livelihoods for IP; inequitable benefit-sharing; exclusion of vulnerable groups in plan development;	RAP/IPDP stand-alone documents /ESIA per ESMF. FPIC consultations for the RAP/IPDP documents	Socio-economic census, IP consultations, valuation studies, grievance logs.	MPWD/ Consultants	RAP/IPDP approved, disclosed, and consulted; livelihood restoration baselines established.

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Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
		long-term economic hardship from unaddressed restrictions.		FPIC consultations		
Implementation - Pre-construction						
PC6	Mobilization and Grievance Mechanism Setup	Community conflicts from early mobilization; exclusion of vulnerable voices (e.g., disabled, women) in GRM;	GRM per ESMF, aligned with ESMP. Setting up of GRM focal persons at the Community level through Consultations.	Consultations with the IP community, GRM register, accessibility audits, training materials.	Contractor/ MPWD	MoMs of consultations with attendance sheets, GRM operational; awareness sessions conducted; 100% coverage for affected groups.
CONSTRUCTION						
C1	Dismantling of Bridges/ Culverts/ Structures	Community safety risks during dismantling (e.g., accidents to children/elderly); loss of access to resources/services; cultural heritage chance finds (e.g., sacred artifacts); displacement from temporary safety zones.	Debris management per ESMP; safe disposal.	Debris management plan, approved disposal site, chance finds protocol.	Contractor/ MPWD/ Municipal authority/ Village Council	Debris disposal/reuse records; Approved site restoration plan; community access logs; chance find notifications.
C2	Camp Operation: Health Management – Communicable Diseases	Health impacts on workers/communities (e.g., STIs/water-borne illnesses, vector-borne outbreaks); disproportionate effects on vulnerable (e.g., migrants, women, IP); disease transmission from influx.	Health screening per ESMP/OHS.	Medical agreements, awareness sessions, health baselines, vector control plans.	Contractor/ CSC/ PMC/ MPWD	Health screening records; Awareness session logs; Medical reports; zero community outbreaks; influx monitoring.

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Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
C3	Community Health and Safety for construction and traffic operation	Road accidents/hazards; community displacement from traffic/safety zones; risks to vulnerable (e.g., children, disabled, IP near routes); noise/dust affecting health; security force excessive use.	TMP/barricades per ESMP.	TMP, barricades, signage, accident logs, security protocols.		Safety signage installed; Community complaint register; Traffic control records; incident reports; vulnerable group protections.
C4	Emergency Response System in case of unplanned events and untoward incidents	Delayed response exacerbating social harm (e.g., injuries/fatalities in communities/IP areas); exclusion of vulnerable in drills; inadequate coordination for GBV/emergency health.	ERP as part of work plan/ESMP; drills required.	Emergency plan, drill reports, communication protocols, IP consultations.	Contractor/PM U/PMC	Approved ERP; Emergency Response Boards set up at cam sites, Emergency drill reports; Incident response records; community/IP feedback integrated.
C5	Risk of Natural Hazards	Community vulnerability to hazards (e.g., displacement/loss of shelter for poor/IP groups from floods/earthquakes); inequitable evacuation access for disabled/women.	SDMA mitigation per ESMF.	Site assessment reports, hazard mapping, vulnerability assessments.	Contractor	Compliance with SDMA norms; social vulnerability assessment completed; RAP addendum for hazards.
C6	GBV-SEAH Risks	Gender-based violence/sexual exploitation/abuse/harassment; risks to women/children/IP from labor influx; reprisal-free reporting gaps; cultural norms exacerbating exclusion.	Awareness/GRM per ESMP.	CoC, training logs, GBV mechanism, gender audits.	Contractor	Signed CoC register; GBV training logs; GBV complaint records; zero tolerance reporting; external monitoring.
C7	Chance Finds during the excavation	Discovery of cultural heritage tied to community/IP identity (e.g., sacred sites, artifacts); work stoppage delays causing	Chance find protocol per ESMP.	Chance find protocol, notification logs, heritage experts.	Contractor	Chance find report; Notification records; work stoppage if applicable; community/IP involvement.

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Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
		livelihood losses; theft/exclusion in management.				
C8	Compliance to Labour Welfare Laws	Unsafe conditions/legal non-compliance leading to worker exploitation/discrimination (e.g., migrants, women); child/forced labour in chains; unequal pay/hours.	Labor compliance per ESMP.	Training records, compliance checklists, wage audits.	Contractor	Labour law compliance records; Training attendance; audit reports; remediation for violations.
C9	Labour Influx	Strain on local services (e.g., healthcare, water for vulnerable locals); social tensions/GBV; competition for jobs affecting women/youth/IP; disease/crime spread.	Local hiring per ESMP.	Labour license, local hire records, influx assessment, conflict logs.	Contractor	Labour registration; Local labour hiring records; conflict monitoring logs; GBV prevention measures.
C10	GRM	Community conflicts/lack of trust; exclusion of vulnerable voices (e.g., IP, disabled); inaccessible/reprisal-prone mechanisms; unaddressed displacement grievances.	GRM per ESMP.	GRM register, resolution protocols, accessibility audits.	Contractor	GRM register; Grievance resolution records; 90% resolution rate; vulnerable group access metrics.
C11	Monitoring and Reporting	Non-compliance with social standards (e.g., unaddressed grievances, labor violations, RAP/IPDP gaps); exclusion in monitoring; cumulative risks overlooked.	Monthly/quarterly per ESMP.	Monitoring plan, CESMP reports, social indicators, third-party audits.	Contractor	ESMP compliance report; Monitoring data records; social audit findings; RAP/IPDP progress reports.
OPERATION AND MANAGEMENT						

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Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
O1	Employment & Socio-Economic Benefits	Local economic impacts; unequal access to jobs/training for vulnerable (e.g., women, youth, IP); persistent displacement effects; limited benefit-sharing.	Local hiring/skill programs per ESMP.	Training records, employment documentation, IPDP monitoring.	Concerned Agency	Employment records; Training attendance; livelihood restoration verified.
O2	Long-term Monitoring and Residual Impacts	Ongoing restrictions on land use (e.g., inaccessible areas around roads/warehouses); residual economic/cultural losses for IP/vulnerable groups; deterioration of GRM access; security risks from operational guards.	Continuous ESMP monitoring per ESMF.	Annual audits, stakeholder feedback, residual impact assessments.	PMU/Concerned Agency	Annual social audit reports; GRM functionality confirmed; residual RAP/IPDP mitigations implemented.

4.8 Conclusion

Through phased impact avoidance, minimization, and management as detailed above, the MLCIP integrates environmental sustainability and social inclusion into core project delivery. Coordinated implementation by MPWD, MBMA, contractors, and regulatory authorities—supported by continuous monitoring, grievance redressal, and stakeholder participation—will ensure that enhanced logistics and connectivity contribute positively to Meghalaya's economic growth without compromising its unique ecological and cultural fabric.

4.9 Environmental and Social Management Plans (ESMP)

The Environmental and Social Management Plan (ESMP) under the Meghalaya Logistics and Connectivity Improvement Project (MLCIP) serves as a critical tool to manage and mitigate environmental and social risks associated with corridor development and associated infrastructure works which have been identified in the above table. These were also corroborated with the impacts and mitigation which are being designed for the priority roads. It aligns with the findings of the Environmental and Social Impact Assessment (ESIA). The Environmental and Social Management Framework (ESMF), national and state regulations, and the World Bank's Environmental and Social Standards (ESS) will guide the development of Site-specific ESMPs for the project investment in the subsequent stages of MLCIP when sub-project location are known to ensure context-sensitive risk management and to integrate locally appropriate mitigation measures.

The generic ESMP include a detailed description of typical project components, likely issues and impacts, and provides corresponding mitigation strategies. It will also define the institutional responsibilities, monitoring mechanisms to ensure accountability.

For project components with minimal risks, identified during the screening exercise and detailed assessment (ESIA) may not be required. The generic/ template ESMP in the ESMF in that case will guide implementation. The implementation of these safeguard measures would ensure uniform environmental and social performance across all sites and at the same time simplify the project preparation process and focus on the implementation. The ESMP will also reference relevant plans such as LMP, ERP, Indigenous Peoples Plans etc., as applicable. Overall, the ESMP framework for MLCIP ensures that all mitigation, monitoring, and reporting activities are systematically implemented, thereby promoting environmentally sustainable and socially inclusive corridor development in Meghalaya.

It aligns with the findings of the Environmental and Social Impact Assessment (ESIA), the Environmental and Social Management Framework (ESMF), national and state regulations, and the World Bank's Environmental and Social Standards (ESS). Site-specific ESMPs will be developed for each sub-project location to ensure context-sensitive risk management and to integrate locally appropriate mitigation measures.

Each ESMP will include a detailed description of project components, environmental and social baselines, applicable legal frameworks, potential adverse impacts, and corresponding mitigation strategies. It will also define the institutional responsibilities, monitoring mechanisms, and

grievance redressal procedures to ensure community participation and accountability. Cost estimates for mitigation, capacity-building provisions, and timelines will be included in the ESMP budget to ensure practical implementation.

For project activities with minimal risks, a generic ESMP will guide standard safeguard measures to ensure uniform environmental and social performance across all sites. The ESMP will also reference relevant plans such as LMP, Emergency Response Plan, GBV/SEAH, GRM SEP FPIC processes etc as applicable. Overall, the ESMP framework for MLCIP ensures that all mitigation, monitoring, and reporting activities are systematically implemented, thereby promoting environmentally sustainable and socially inclusive corridor development in Meghalaya.

- ✓ Environmental and Social Monitoring Indicators
- ✓ Air quality (PM10, PM2.5, NO₂, SO₂)
- ✓ Water quality (pH, TSS, oil & grease)
- ✓ Noise levels at sensitive receptors
- ✓ Vegetation cover restored (ha)
- ✓ Waste disposal compliance
- ✓ Number of environmental violations/non-conformities
- ✓ Number of consultations held (disaggregated by gender)
- ✓ Percentage of local labour employed
- ✓
- ✓ Total Workforce Composition: Total number of employees (direct, contracted, community, and primary supply workers), disaggregated by gender, domicile status, age (e.g., under 18, over 18), and worker category; maintained in records
- ✓ Licenses and Permits Compliance: Verification of all required labor licenses, work permits, and documentation.
- ✓ Insurance Coverage: Provision and tracking of health insurance, accident coverage, and social protections for all workers
- ✓ Wages and Benefits: Compliance with minimum wages per national/State law, regular payment schedules (e.g., via bank accounts to reduce risks), overtime rules, deductions, and benefits (e.g., rest periods, leave entitlements)
- ✓ Non-Discrimination and Equal Opportunity:
- ✓ Occupational Health and Safety (OHS) Performance
- ✓ Code of Conduct Adherence

- ✓ Number of grievances received/resolved (time-bound)

Table 4-3: Environmental and Social Management Plan (Roads and Bridges)

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
PRE-CONSTRUCTION						
1	Consents/ Permits/ Approvals/ Compliances	Non-compliance to various Environmental/ social/ regulatory requirements pertaining to the proposed project could lead to legal Implications	<ul style="list-style-type: none"> ➤ Obtain all necessary statutory clearances (CTE, CTO, Labour License, Fire NOC, Tree Cutting Permission, etc.) ➤ Renew permits before expiry. 	Contractor/ MPWD	CTE, CTO, Labour License, Fire NOC, Tree Cutting Permission to be submitted and tracked	MPWD/PMC/CSC
2	Land Procurement	Loss of Land/ Livelihoods	<ul style="list-style-type: none"> ➤ RPF and RAP shall be followed. 	MPWD division, contractor and concerned authorities	Compensation records maintained; Grievances resolved	MPWD/CSC/NGO
3	Contractor's ESMP (CESMP) Preparation and Implementation	Inadequate preparation and implementation of CESMP by Contractor can leave environmental and social issues unattended	<ul style="list-style-type: none"> ➤ The contractor needs to follow the project ESMP to formulate the CESMP and get it approved by MPWD. 	Contractor	Approved CESMP including TMP, LMP and other relevant plans, and implemented;	MPWD/PMC/CSC
4	Identification of land for material storage yard/ construction camp/ labour camp	Discharges from Yards/ Camps to pollute the surroundings and	<ul style="list-style-type: none"> ➤ Contractor needs to identify suitable land for storage yard/ construction camp/ labour camp 	Contractor	Approved site location; Lease/NOC copies;	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
		lead to social tension.	<ul style="list-style-type: none"> ➤ The land shall not be closer to the water bodies, waterlogged areas or wetlands. ➤ The land will be handed back to the owner in the same condition as it was prior to the commencement of project activities, once the project is completed. ➤ Contractor to produce the lease agreements, NOC etc. for these lands. 			
5	Supply of Construction Material	Sourcing materials from unauthorized sources.	<ul style="list-style-type: none"> ➤ Procurement of construction material only from approved quarries and sites and licensed/ authorized vendors/ manufacturers. Contractor to produce approvals and receipts. 	Contractor	EC, Permits, challans, Material source approval copies;	MPWD/CSC
6	Source of Water	Pollution of surface and groundwater sources.	<ul style="list-style-type: none"> ➤ The Contractor will be responsible for arranging adequate supply of water for the entire construction period. ➤ The contractor will minimize the pollution and wastage of water during construction 	Contractor	Permission for Water source; Usage records; Wastewater management measures	MPWD/PMC/CSC
7	Discharge of wastewater form labour camps, Plant and machinery	Pollution of surface and groundwater sources.	<ul style="list-style-type: none"> ➤ The contractor will minimize the pollution and wastage of water during construction 	Contractor	Wastewater management measures	MPWD/CSC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
8	Appointment of Environment, Social and Safety Officers	Inefficient and incompetent supervision by contractors may lead to poor environment, Social, health and safety performance and heightened risk .	<ul style="list-style-type: none"> ➤ The Contractor would make available optimal resources to ensure that the CESMP, OHS Plan , TMP are prepared and implemented , as per the WB guidelines. ➤ The contractor will appoint qualified and experienced Environment. Social and Safety personnel to ensure implementation of CESMP and occupational health and safety issues at the camps and construction work sites. 	Contractor	To be mobilized before construction; approved OHS plan	MPWD/CSC
9	Identification of OHS Hazard and Risk Categorization	May cause physical harm, injury, illness, or death to workers.	<ul style="list-style-type: none"> ➤ Preparation of the HIRA (Hazard Identification and Risk Assessment) including mitigation measures based on the work methodology proposed. Conducting workplace inspections to identify hazards and document. ➤ Consulting with workers to identify hazards that may not be obvious to employers or safety professionals. ➤ Reviewing safety data sheets (SDSs) to collect information about the hazards of chemicals and other 	Contractor	OHS hazard register; Inspection reports;	MPWD/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<p>substances used in the workplace.</p> <p>➤ Consulting with industry standards and regulations to identify specific hazards that must be addressed in the workplace.</p>			
10	Other Construction Vehicles, Equipment and Machinery	Vehicles and equipment not complying with regulations may lead to pollution of environment.	<p>➤ The contractor will maintain records of fitness and Pollution Under Control (PUC) certificates for all vehicles and generators used during the contract period</p> <p>➤ The construction plant and machinery deployed in the project should conform to the emission standards mention in MORTH guidance for emission on off road machinery⁸(GSR 1114E). Only machinery which meets these requirement shall be approved to be deloped on site</p>	Contractor	Records of valid PUC / fitness; Inspection log	MPWD/PMC/CSC
11	Tree Cutting	Loss of green cover and biodiversity	<p>➤ Maximum efforts shall be made to minimize the number of trees to be felled.</p> <p>➤ Tree cutting and disposal shall be done as per the Forest Dept.</p>	Contractor	Records of trees cut and saved.	MPWD/CSC

⁸ G.S.R. 1114(E) regarding Emission standards for Construction Equipment vehicles, and Agricultural Tractors ([G.S.R. 1114\(E\) regarding Emission standards for Construction Equipment vehicles, and Agricultural Tractors | Ministry of Road Transport & Highways, Government of India](#))

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
12	Joint field verification	The impacts may not have been identified in time.	➤ The MPWD and the Contractor shall carry out joint field verification to ascertain the local complaints/suggestions and to confirm the need for additional protection measures or changes in design/scale/nature of protection measures including the efficacy of enhancement measures suggested in the ESMP. The MPWD shall maintain proper documentation and justifications/reasons in all such cases.	Contractor	Verification reports;	MPWD
13	Damage to existing eco-system due to borrowing activities	Indiscriminate borrowing activities may damage the eco-system and lead to unproductive environment	<ul style="list-style-type: none"> ➤ The Contractor will have to obtain the Environmental Clearance for borrow areas. ➤ The borrow area will be operated as per the MoEF&CC guidelines issued by the concerned SEAC and SEIAA. 	Contractor	Borrow area EC copy; Approved management and closure plan	MPWD /CSC
14	Identification of construction material transportation route	Inconveniences and safety issues to the public due to the material transport vehicles.	<ul style="list-style-type: none"> ➤ The material transport route through existing network of roads should be planned and approved by the local transport authorities. ➤ The local communities need to be consulted with prior information on any likely inconveniences. 	Contractor	Approved route plan; Community consultation record	MPWD/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
15	Setting up of Construction Camp	<p>Temporary air and noise pollution from machine operation, water pollution from storage and use of fuels, oils, solvents, and lubricants</p> <p>Unsanitary and poor living conditions for workers</p>	<ul style="list-style-type: none"> ➤ Establish camps only after site approval. The camp design should conform to the IFC/EBRD guidance on Labour camps. (Workers' accommodation: processes and standards)⁹ ➤ Avoid cutting of trees/ clearing bushes ➤ Provide adequate drinking water, water for other uses, and sanitation facilities ➤ Ensure conditions of livability at work camps are always maintained at the highest standards possible ; ➤ Prohibit employees from poaching wildlife and cutting of trees for firewood; ➤ Train employees in the storage and handling of materials which can potentially cause soil contamination; ➤ Recover used oil and lubricants and reuse or remove from the site; ➤ Manage solid waste according to the preference hierarchy: reuse, recycling and disposal to designated areas; 	Contractor	Approved Contractor's Camp	MPWD/CSC/PMU

⁹ <https://www.ifc.org/content/dam/ifc/doc/mgrt/workers-accomodation.pdf>

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			➤ Ensure unauthorized persons specially children are not allowed in any worksite			
16	Identification of sites for debris disposal or wastes generated from construction camps and site offices	Pollution due to indiscriminate dumping of wastes. Wastes entering water bodies and groundwater causing pollution	<ul style="list-style-type: none"> ➤ MPWD Division and the Contractor are responsible for identifying a suitable area in consultation with local administration to dispose of the wastes from labour camps, construction sites and site offices. ➤ For Debris disposal the Contractor shall prepare Debris Disposal Plan. 	Contractor	Approved disposal site and its management plan; NOC, Agreement with landowner; Waste disposal records;	MPWD/CSC
17	Relocation of Utility and Common Property Resources (CPR)	Loss of services from utilities and common property resources for the public	<ul style="list-style-type: none"> ➤ When the utilities/ Common Property Resources need to be shifted, they will be shifted in consultation with the communities and with least inconvenience to the public. ➤ If any displacement of Utility/CPRs is required, they will be relocated with prior approval of the concerned agencies. The relocation site identification will be in accordance with the choice of the community. 	Contractor/ MPWD Division	Records of Relocation completion.	MPWD/ PMU/CSC
	Community Health and Safety at Works Zones	Loss of lives, injury and other safety issues	➤ All worksites near the settlement areas should be provided with hard barricades preferably (2.0 m) MS Steel	Contractor/ MPWD Division	Inspection Reports	MPWD/ PMU/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			barricades which shall be firmly ficed on the the ground during the constrction period ➤ The constractor shall provide specific access point to the community ➤ In case of any excavation more than 0.5 m the contractor shall provide access with wood/ steel plank with handrails (if required). ➤ All open /vertical rebars should be provided with rebar caps			
	Noise at sensitive receptors		➤ A noise modelling will be carried out at sensitive receptors ➤ If there are significant impacts then mitigation measues would be proposed	ESIA consultants /design consultants	MPWD/PMU	Noise Modelling results in ESIA
CONSTRUCTION						
1	Crushers, Hot mix Plants & Batching Plants	Impacts due to establishment and operation of plants and equipment	➤ Crushers, hot-mix and batching plants shall be located at least 1000m (1km) away from residential/ settlements, forests, wildlife movement areas, and commercial establishments, preferably in the downwind direction. ➤ The Contractor shall submit a detailed layout plan for all such sites and seek prior approval before entering into a formal	Contractor	Approved layout plan; Valid Consents to Establish and Consent to Operate Dust suppression records; Air quality monitoring reports	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<p>agreement with a landowner for setting-up such sites.</p> <ul style="list-style-type: none"> ➤ Specifications of crushers, hot mix plants, and batching plants shall comply with the technical requirements of the contract and prior Consent to Establish and Consent to Operate for all such plants shall be obtained from MSPCB ➤ No such installation by the Contractor shall be allowed till all the required legal clearances are obtained from the competent authority. 			
2	Borrow Areas	Impacts due to improper operation and closing of borrow areas	<ul style="list-style-type: none"> ➤ Borrow area should be located at a minimum distance of 300m from the residential/ settlement area. Proper barricading should be provided and access to the borrow areas should be restricted to the unauthorized persons. ➤ The Contractor should submit the EC, a copy of agreement with the landowner, borrow area management and closure plan before initiating any kind of borrowing activities. ➤ The Borrow are should comply with the conditions set in the EC/ SoP from MoEF&CC. 	Contractor	EC and lease copies; Approved Borrow area restoration and Closure plan	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
3	Quarries	Impacts due to improper management, operation and closing of quarries	<ul style="list-style-type: none"> ➤ The Contractor shall identify materials from legally valid quarries with existing EC & CTE, CTO ➤ A copy of the CTE and CTO and need to be submitted to the PMU before the same is approve by the Environmental specialist . ➤ No quarry or associated plants can be set-up within 1000m from the residential/ settlement locations ➤ Contractor shall prepare a haul road network for quarry transport and ensure the suitability of such haul roads from the safety of residents, biodiversity and other environment points of views. 	Contractor	Quarry permit, EC; Safety inspection report; Haul road maintenance record, dust suppression measure, geotagged photos	MPWD/PMC/CSC
4	Dismantling of Bridges/ Culverts/ Structures	Impacts due to improper dismantling and disposal	<ul style="list-style-type: none"> ➤ All necessary precautions shall be taken while working near cross-drainage channels, to prevent earthwork, stonework, construction materials from obstructing cross-drainage at rivers, streams, and drainage systems, or from causing flooding. ➤ Reusable materials (e.g., steel, stones, bricks) shall be 	Contractor	Debris disposal/reuse records; Approved Site restoration plan; Photographic documentation.	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<p>segregated and stored properly for reuse or recycling.</p> <ul style="list-style-type: none"> ➤ Non-recyclable debris and waste materials shall be transported to approved disposal sites identified and approved by the concerned authority. ➤ Disposal sites shall be located away from water bodies, agricultural lands, and other environmentally sensitive areas. ➤ Temporary barriers or silt fences shall be provided to prevent debris from entering watercourses. ➤ Upon completion, the associated disposal sites shall be restored to their original condition or as directed by the Engineer ➤ The work site should be barricaded preferably with 3m high MS barricaded firmly fixed on the ground. The same shall be maintained at all times till the end of the project. 			
5	Bituminous waste disposal	Impacts due to hazardous wastes	<ul style="list-style-type: none"> ➤ The bituminous waste shall be recycled to the extent possible 	Contractor	Records of Waste reused/disposed; Details of approved disposal	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<p>in DBM&BC layers or in the earthwork.</p> <ul style="list-style-type: none"> ➤ The contractor shall maintain records of quantities generated, transported, and disposed of, along with details of the disposal site and approvals obtained. ➤ Bituminous waste shall be collected and stored temporarily in impermeable, lined containers or areas to prevent leaching or contamination of soil and groundwater. ➤ The disposal of bituminous wastes shall be carried out by the Contractor at secure landfill sites approved by the concerned government authorities. ➤ No bituminous waste shall be disposed of in water bodies, open lands, agricultural fields, or along the roadside ➤ Periodic inspections shall be carried out to ensure compliance with waste management guidelines. ➤ Where feasible, recycling or reuse of scarified bituminous material in road base or other 		site; Photographic documentation.	

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			construction activities shall be promoted, subject to environmental and quality standards.			
6	Contamination of Soil	Soil pollution due to Oil and fuel spills from construction equipment and plants.	<ul style="list-style-type: none"> ➤ Construction plants, workshops, and fuel storage areas shall be located at least 500 m away from any surface water body and environmentally sensitive locations. ➤ Oil interceptors shall be installed at construction camps, vehicle parking, and washing areas to trap oil and grease before wastewater is discharged. ➤ All fuel and lubricant storage tanks shall be placed on impermeable platforms or within bunded (contained) areas. ➤ Regular maintenance and inspection of construction equipment and vehicles shall be carried out to prevent leakage of oil, fuel, or hydraulic fluids. ➤ Spill control kits (absorbent pads, sand, and containment booms) shall be available at all 	Contractor	Spill log; Waste oil disposal records; Fuel storage inspection record. Photographic documentation.	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<p>fuel storage and handling locations.</p> <ul style="list-style-type: none"> ➤ Used oil and lubricants shall be collected, stored in labelled, leak-proof containers, and handed over only to authorized aggregators/recyclers for disposal in compliance with applicable hazardous waste regulations. ➤ Records of fuel usage, storage, and waste oil disposal shall be maintained and made available for inspection. ➤ Stormwater runoff from fuel and equipment storage areas shall be directed through oil-water separators before discharge. 			
7	Air Pollution - Dust Generation	Dust generation will cause air pollution and will have impacts on health and safety.	<ul style="list-style-type: none"> ➤ Vehicles delivering materials should be covered to reduce spills and dust blowing off the load. ➤ Water should be sprinkled regularly on the work sites. ➤ Road slopes to be covered immediately after completion. ➤ Speed limits shall be enforced for construction vehicles within and near project sites to reduce dust generation. ☐ 	Contractor	Air quality monitoring reports; Dust suppression log; PPE compliance records	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<ul style="list-style-type: none"> ➤ Personal protective equipment (PPE) such as masks shall be provided to all workers exposed to dusty environments. ➤ Air quality monitoring shall be conducted periodically to ensure compliance with prescribed air quality standards. ➤ Community complaints related to dust shall be recorded, and addressed promptly. 			
8	Emissions	The emissions from vehicles and construction equipment will pollute the air causing health and safety issues as well.	<ul style="list-style-type: none"> ➤ Fitness and PUC of the vehicles and equipment's need to be ensured. The PUC shall be submitted to the PMU at the beginning and shall be constantly renewed and submitted to the PMU with the IUFR/ Bill of the contractor ➤ LPG shall be used as fuel for cooking of food at construction labour camp instead of fuel wood. ➤ Dust extraction, collection and control systems shall be installed at batching plants, crushers, and material handling areas to minimize particulate emissions. 	Contractor	Valid PUC certificates; Equipment maintenance log; Emission test results	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
9	Contamination of Surface / Ground Water	Discharges from construction activities and construction camps/ labour will lead to surface/groundwater pollution.	<ul style="list-style-type: none"> ➤ All the debris resulting from construction activities and labour camp shall be removed from the site and disposed at approved sites away from water bodies, on a regular basis to prevent them from getting into surface runoff. ➤ Adequate sanitation and waste management facility to be provided in construction camp. ➤ Construction labours should be restricted from polluting the water sources or misusing the sources. ➤ Use bio-degradable mud as drilling fluid. Use least amount biodegradable bentonite slurry during piling work. ➤ Contain the Bentonite slurry properly, to not enter waterways or soil and dispose of the slurry appropriately after use. 	Contractor	Water quality monitoring report; Waste disposal records; Camp inspection records. Photographic documentation.	MPWD/PMC/CSC
10	Water requirement for project	Over extraction or exploitation of ground/surface water will lead to water scarcity.	<ul style="list-style-type: none"> ➤ Contractor to ensure optimum and judicious use of water; ➤ Discourage labour from wastage of water and applicable prior approvals shall be obtained from concerned authorities. 	Contractor	Water consumption log; Permission for water source; Installation of Rainwater	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<ul style="list-style-type: none"> ➤ Rainwater harvesting structures shall be installed at construction camps and plant sites to promote sustainable use of water. ➤ Awareness programs shall be conducted for laborers and staff on responsible water use and conservation practices. ➤ Records of daily water consumption shall be maintained as part of regular reporting. 		harvesting structure	
11	Coffer dam to make dry working space for bridge work	Change in the flow pattern and quality of water, effect on local habitat	<ul style="list-style-type: none"> ➤ Selecting the right location for the cofferdam to minimize its impact on the environment. ➤ Using environmentally friendly materials to construct the cofferdam eg. Biodegradable/ reusable materials can be used instead of concrete. ➤ Restoring the environment after construction. This may involve replanting vegetation and removing any debris. ➤ The discharge from the coffer dam would not be directly put into the water body but should be sent to a sedimentation tanks with adequate sedimentation time 	Contractor	Worksite inspection record; Restoration completion record	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
12	Noise from vehicles, plants and equipment	Noise from construction vehicles, plant and equipment will lead to noise pollution and cause health and safety issues	<ul style="list-style-type: none"> ➤ Construction operations should be undertaken primarily during day time to minimize noise impacts. ➤ Fitness and PUC of the vehicles and equipment's need to be ensured. ➤ No noisy construction activities will be permitted around educational institutions/ health centers (silence zones) and up to 100 m from other sensitive receptors during the school hours ➤ Scheduling of the construction works would be carried out during the non-school hours. ➤ Noise level monitoring shall be carried out as per the monitoring schedule. In case there is increase in noise level, preventive measures should be taken to reduce the noise level. ➤ Noise barriers and Hearing Protection devices (earplugs or earmuffs) should be provided 	Contractor	Noise level test report; PPE usage record; Complaint register; vehicles, plants and equipment maintenance records.	MPWD/PMC/CSC
13	Blasting	Unmanaged blasting result in health and safety issues and accidents.	<ul style="list-style-type: none"> ➤ The Contractor will inform well in advance the requirement of the Blasting ➤ The Contractor shall obtain permission as is required from all Government Authorities, 	Contractor	Approved Blasting management Plan; Blasting permission; Incident Blasting	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<p>public bodies and private parties;</p> <p>➤ Blasting will be carried out only with permission of Engineer-in-charge. All the statutory laws and regulations, rules etc., pertaining to acquisition, transport, storage, handling, and use of explosives will be strictly followed.</p> <p>➤ Blasting management plan shall be developed and should be approved by the concerned authority and also the CSC & PMU . The same shall be strictly followed by the contractor.</p>		log. Geotagged photos.	
14	Loss of trees and Plantation works	Cutting of trees can lead to loss of biodiversity.	<p>➤ Clearing and uprooting should be avoided beyond that which is directly required for construction activities.</p> <p>➤ Kerosene / LPG should be preferably used to avoid felling of the trees or provide community kitchen for the labour camps for cooking.</p> <p>➤ Camps and storage yards shall be located in the areas already devoid of vegetation or having little vegetation</p>	Contractor	Tree felling register; Plantation record;	MPWD/PMC/CSC
15	Terrestrial Flora and Fauna	Construction activities and	<p>➤ All the workers will need to be oriented and monitored by the</p>	Contractor	Worker awareness	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
		workers may cause harm to flora and fauna.	contractor so as not to cause any harm to the flora and fauna. ➤ Hunting and fuel wood collection will be strictly prohibited		attendance; Wildlife sighting log	
16	Aquatic Fauna	Construction activities and workers may cause harm to fauna.	<ul style="list-style-type: none"> ➤ Any works affecting aquatic habitat will be done during low flow (when water depth is less than 5 m) and when banks would be dry. ➤ Where any GI wire mesh gabions are used; all GI wire ends need to be folded inside. ➤ Ensure that no construction activities will be carried out during monsoon and the fish breeding season. 	Contractor	Work timing records; Site inspection checklist	MPWD/PMC/CSC
17	Occupational Health and Safety	When Occupational Health and Safety are compromised the associated risks from accidents and incidents could affect health and safety of the workers and others on construction/ project sites. Improper first aid facilities on the sites could affect	<ul style="list-style-type: none"> ➤ The Contractor would prepare OHS plan and other required plans as per the WBs guidelines. ➤ All the laborers to be engaged for construction works shall be screened for health and adequately treated before issue of work permits. ➤ Periodic health check-up of construction workers. ➤ Prevention of mosquito breeding need to be ensured at 	Contractor	Approved OHS plan; OHS training log; PPE checklist; Awareness programme and Health inspection reports	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
		health and safety of workers and others.	<p>the project site and other ancillary areas</p> <ul style="list-style-type: none"> ➤ The contractor's Environment and Safety personnels, shall ensure implementation of CESMP including Occupational health and safety issues at the camp, construction work sites ➤ Avoiding collection of stagnant water. Adequate drainage, sanitation and waste disposal will be provided at workplaces. ➤ All workers and staff should be provided with Personal Protective Equipment (PPE) appropriate to their job on-site and their use shall be ensured. ➤ All construction sites should be barricaded properly. ➤ Smoking should be prohibited near areas of fire or explosion risk. ➤ Sufficient supply of potable water should be ensured for all workers and employees on-site. ➤ Ensure a FA room at the camp and first aid kits are available in all work areas. ➤ Safe working techniques will be followed up and all the workers will be trained. 			

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<ul style="list-style-type: none"> ➤ An Emergency Response system in case of any incidence will be developed and implemented. ➤ The Contractor will conduct awareness programmes on EHS, HIV/AIDS and other sexually transmitted diseases for workers at least once in a quarter and the record of such training programme must be recorded. ➤ Conduct regular safety audits on safety measures adopted during construction. 			
18	Community Health and Safety	The safety aspects like (i) safety of road users including pedestrians and cyclists (ii) safety of cattle; (iii) safety of local community (iv) unsafe/ hazardous traffic conditions due to construction vehicle movement need to be considered during the construction stage. Children are most vulnerable to	<ul style="list-style-type: none"> ➤ Plants and equipment will be installed sufficiently away from the settlements. ➤ Proper caution signage, barricading, delineators, lightings etc. will be installed at construction zone and temporary diversions. ➤ Hard barricading (3.0 m MS Steel Baricade fixed on the ground) will be provided at construction zone near habitation area and public roads, and the same will be maintained throughout the construction period. 	Contractor	Safety signage installed; Community complaint register; Traffic control records	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
		injury due to vehicular accidents.	<ul style="list-style-type: none"> ➤ In areas where there is a difference in level more than 30 cm hard barricades needs to be mandatorily provided. ➤ Proper traffic management will be ensured near roads of the Construction zone. All the measures specified in IRC SP 55 and MoRTH circular : RW/ NH – 36098 /25/ 2022 – S&R(P&B)/pt. dated 16th March 2023 shall be mandatory implemented. ➤ Road safety education will be imparted to drivers running construction vehicles. In case of negligent driving, suitable action will be taken. ➤ Speed restrictions shall be imposed on project vehicles to control speeding. ➤ Installation of temporary speed bumps to control speed near designated pedestrian crossing areas/school areas/ market places/ religious places/ human habitations. ➤ The general public/ residents shall not be allowed to any of the risk areas of the project, e.g., excavation sites, construction sites and areas 			

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<p>where heavy equipment is in operation.</p> <ul style="list-style-type: none"> ➤ In the consideration of risk at civil works, each labour should be covered under ECA 1923 insurance until completion of work. 			
19	Emergency Response system	Absence may result to increased incidents, injury, economic loss etc.	<ul style="list-style-type: none"> ➤ Develop and implement ERS ➤ Train personnel and Establish communication channels ➤ Systematic planning and training for emergencies. 	Contractor	Approved ERP; Emergency drill and training report; Incident response record	MPWD/PMC/CSC
20	Health Management – Communicable Diseases	The water fringe areas provides suitable habitats for the growth of vectors of various diseases, which is likely to increase the incidence of water-borne diseases.	<ul style="list-style-type: none"> ➤ There would be possibility of the transmission of communicable diseases due to migration of labour population from other areas at the construction site. ➤ Agreement shall be made with nearby health centre or hospital for emergency treatment. ➤ Special Measures for COVID 19 should be strictly followed at the camp and construction site. 	Contractor	Health screening record; Awareness session log; Medical report; Agreement with nearby hospital	MPWD/PMC/CSC
21	Risk of Natural Hazards	The project area is at risk from floods and Earthquakes.	<ul style="list-style-type: none"> ➤ Protection of Agriculture Land near roads/ bridges. ➤ The mitigation measures should be adopted as per norms of State Disaster 	Contractor	Site assessment report; Record of Compliance with SDMA norms	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			Management Authority, Government of Meghalaya.			
22	Risk of Force Majeure Combine with previous	These unforeseen risks can have both adverse environmental and social impacts	<ul style="list-style-type: none"> ➤ All reasonable precaution will be taken to prevent danger of the workers and the public from fire, flood, drowning, etc. ➤ All necessary steps will be taken for prompt first aid treatment of all injuries likely to be sustained during the course of work. ➤ Contractor has to prepare a response plan before start of construction works 	Contractor	Force majeure preparedness plan; Emergency contact list	MPWD/PMC/CSC
23	Hygiene	Impacts related to unhygienic surroundings	<ul style="list-style-type: none"> ➤ At every workplace, good and sufficient water supply shall be maintained to avoid waterborne diseases to ensure the health and hygiene of workers. ➤ Adequate drainage, mobile toilets shall be provided at workplace. ➤ Preventive Medical care shall be provided to workers. ➤ Proper Hygiene shall be maintained 	Contractor	Sanitation inspection record; Hygiene logbook	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
24	Traffic Management	Unplanned and unmanaged traffic diversion and detours can result in public nuisance.	<ul style="list-style-type: none"> ➤ Before start of the construction, proper traffic management plan will be prepared and submitted to MPWD for approval. Secure assistance from local police for traffic control during the construction. ➤ The Traffic Management Plan for each section of the Road and the Safety measures to be put in place shall be submitted with RFI . No section shall be opened with the Traffic Management Plan approved by the CSC and PMU. ➤ Necessary signage and barricading will be provided for safety of road users as per IRC SP 55 ➤ Contractor will ensure that no construction materials and debris are lying on the road. It will be collected and disposed of properly. ➤ Unnecessary parking and sound pollution to be strictly avoided near settlements and sensitive receptor such as schools, hospital and cultural centers. 	Contractor	Approved TMP; Signage/barricade checklist; Traffic incident register; geotagged photos	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<ul style="list-style-type: none"> ➤ The contractor will ensure that the diversion/ detour is always maintained in running conditions, particularly during the monsoon to avoid disruption to traffic flow. 			
25	GBV-SEAH Risks	GBV-SEAH risks may arise due to labor influx	<ul style="list-style-type: none"> ➤ Ensure labor camps are away from settlement areas ➤ Ensure that every worker working in the project has been given an orientation on the Worker's Code of Conduct, especially on GBV and SEAH, and has signed the Code of Conduct. ➤ Conduct periodic awareness programs targeted at women laborers and women and children of communities residing close to the work sites for reporting incidents of GBV-SEAH ➤ Ensure complaints of GBV-SEAH are recorded and addressed with urgency. Ensure that name(s) of complainant(s) are kept in confidence and enable 	Contractor	Signed CoC register; GBV training log; GBV complaint record	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<p>anonymous reporting of complaints.</p> <ul style="list-style-type: none"> ➤ Activate GBV Grievance Redressal Committee immediately on receipt of any GBV- SEAH complaint. Take action on recommendation of the GBV Grievance Redressal Committee within 24 hours of submission of the report. 			
26	Chance Finds	There is a possibility of Cultural relics, Chance finds at the construction sites. Without proper plan these artefacts may be misused by contractor/ workers.	<ul style="list-style-type: none"> ➤ If any cultural remains of geologic or archaeological interest are found, CSC and MPWD shall be immediately informed of such discovery and carry out the instructions for dealing with the same. ➤ The Chance Find Procedures included in the ESMF shall be applied 	Contractor	Chance find report; Notification records	MPWD/PMC/CSC
27	Compliance to Labour Welfare Laws and reporting	Workplace accidents and injuries, unsafe working condition, loss of productivity etc.	<ul style="list-style-type: none"> ➤ Establish a policy and ensure the compliance within the organization, from the top to the lowest-level employee, understands the importance of complying with labour laws and reporting. ➤ Employees should be trained on their rights and responsibilities under labour laws. 	Contractor	Labour law compliance record; Training attendance record	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<ul style="list-style-type: none"> ➤ Employees should have a way to report violations of labour laws without fear of retaliation. This could be a hotline, an email address, or a suggestion box. ➤ Investigating and taking action on violations. This could include disciplinary action against the violator, or even legal action. ➤ Employees should be kept updated on the organization's compliance with labour laws. This could be done through regular training sessions, newsletters, or other communication channels. 			
28	Labour Influx	Strain on infrastructure, such as housing, healthcare, and education; social tension, as new arrivals compete with locals for jobs and resources.	<ul style="list-style-type: none"> ➤ Proper plan for labour influx by investing in infrastructure and social services. ➤ Governments can regulate the flow of labour to ensure that it is orderly and sustainable. ➤ Local communities can engage with new arrivals to help them understand the local culture and customs. ➤ Maximum use of local labours 	Contractor	Labour License and registration records; Local labour hiring records.	MPWD/PMC/CSC
29	GRM	Increased impunity, conflict and violence;	<ul style="list-style-type: none"> ➤ Establish a grievance redressal mechanism 	Contractor	GRM register; Grievance resolution records	MPWD/PMC/CSC

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
		Loss of trust and confidence	<ul style="list-style-type: none"> ➤ Ensure that the mechanism is impartial and independent ➤ Provide adequate support to people who use the mechanism ➤ Communicate effectively with people about the mechanism 			
30	Monitoring and Reporting (Monthly/ Quarterly)	Monitoring environmental attributes like (Air, Water, Noise & soil microbiology) and proper reporting are important for the successful ESMP implementation	<ul style="list-style-type: none"> ➤ The parameters to be monitored, frequency and duration of monitoring as well as the locations to be monitored will be as per Monitoring Plan prepared. ➤ Regular submission of CESMP implementation monitoring report 	Contractor	Monthly/quarterly ESMP compliance report; Monitoring data records	MPWD/PMC/CSC
Operation Phase						
1	Debris and Waste from Clearing/ Closure of Construction Site, Labor Camps, Disposal Sites, and Borrow Areas	Land and soil contamination due to improper waste disposal; Aesthetic degradation; Health risks to nearby communities	<ul style="list-style-type: none"> ➤ Contractor shall prepare and implement a Site Restoration Plan approved by the Engineer. ➤ On completion of works, all temporary structures, debris, and wastes shall be cleared. ➤ Disposal pits and sanitation trenches shall be filled, compacted, and sealed. ➤ Topsoil removed during construction shall be re-spread to aid vegetation regrowth. 	Contractor	Site clearance records and closure NOC; Geotagged photos	MPWD

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			➤ Native grass or trees shall be planted to stabilize restored areas and improve aesthetics.			
2	Soil Erosion due to Runoff over Steep Slopes and Embankments	Loss of fertile topsoil; Siltation of nearby water bodies; Slope instability or road damage	<ul style="list-style-type: none"> ➤ Regularly inspect slopes and embankments for erosion signs. ➤ Implement bioengineering measures like turfing, hydroseeding, and vegetation planting. ➤ Provide stone pitching, retaining walls, or gabions where needed. ➤ Maintain effective drainage systems to reduce concentrated runoff. 	Contractor	Reports on Erosion inspection; implementation of mitigation measures; Drain maintenance log	MPWD
3	Water Pollution from Road Runoff and Drainage into Water Bodies	Deterioration of surface and groundwater quality; Sediment and oil contamination in nearby streams or waterbodies	<ul style="list-style-type: none"> ➤ Conduct regular water quality monitoring during operation phase. ➤ If pollutants exceed prescribed limits, install silt traps, or sedimentation chambers. ➤ Ensure roadside drains are cleaned and desilted regularly. ➤ Conduct public awareness to discourage waste disposal into water bodies. 	Contractor	Water quality monitoring results; Drain cleaning records	MPWD
4	Dust Generation from Vehicular Movement	Deterioration of ambient air quality; Nuisance to roadside residents and	<ul style="list-style-type: none"> ➤ Establish and maintain roadside plantation to serve as dust barriers. ➤ Maintain smooth road 	Contractor	Air quality results; Plantation survival record	MPWD

Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
		vegetation; Reduced visibility	<p>surfaces to minimize dust generation.</p> <ul style="list-style-type: none"> ➤ Install signage discouraging over-speeding, which increases dust levels. 			
5	Air Pollution from Vehicular Emissions	Increased levels of NOx, SO ₂ , CO, and PM; Health impacts on local population; Deterioration of roadside vegetation	<ul style="list-style-type: none"> ➤ Conduct ambient air quality monitoring at sensitive locations. ➤ Maintain green buffers along the corridor. ➤ Organize awareness campaigns for drivers on emission reduction and vehicle maintenance. 	Contractor	Air quality results; Plantation survival record ; Awareness records	MPWD
6	Noise Pollution from Increased Traffic Movement	Noise nuisance to residents; Disturbance to schools, hospitals, and wildlife	<ul style="list-style-type: none"> ➤ Conduct periodic noise level monitoring. ➤ Provide noise barriers, dense plantation near sensitive receptors. ➤ Enforce “No Horn” zones near schools and hospitals. ➤ Maintain road surface to minimize noise due to uneven pavement. 	Contractor	Noise monitoring results; Maintenance records	MPWD
7	Road Safety and Accident Risks	Traffic congestion; Increased likelihood of road accidents; Risk to pedestrians and local communities	<ul style="list-style-type: none"> ➤ Install and maintain proper signage, reflectors, and road markings. ➤ Ensure adequate lighting at intersections and pedestrian zones. ➤ Provide speed control measures and pedestrian 	Contractor	Accident record; Safety audit report; Awareness records	MPWD

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Sl. No.	Environmental/ Social Aspects	Impacts	Mitigation/ Management Measures	Implementation	Indicator	Supervision/ Monitoring
			<p>crossings in settlement areas.</p> <p>➤ Conduct community road safety awareness programs.</p>			
8	Maintenance Waste from Roadside Maintenance, Drain Cleaning, or Repairs	Soil and water contamination from indiscriminate disposal; Visual pollution and clogging of drains	<p>➤ Collect and dispose of maintenance waste at designated locations.</p> <p>➤ Prohibit dumping into drainage channels or low-lying areas.</p> <p>➤ Reuse or recycle suitable materials (e.g., asphalt, concrete, metal).</p>	Contractor	Waste logbook; Disposal records	MPWD

5 PROCESS FOR APPLICATION OF ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)

ESMF

5.1 Introduction

The Environmental and Social Management Framework (ESMF) provides a systematic and structured approach to ensure that infrastructure projects implemented by the Meghalaya Infrastructure Development and Finance Corporation (MIDFC) and executed in a sustainable manner.

A comprehensive analysis of the business processes within MPWD, DOA and MBMA was undertaken to identify key stages where Environmental and Social (E&S) aspects can be most effectively integrated. This approach ensures that E&S considerations are internalized throughout the planning, design, and implementation phases of all project interventions.

Business Process of the MLCIP are as follows:

i. Project Identification and Conceptualization Stage (Proposal Stage)

This stage involves the initial identification of the project concept, based on the State's strategic transport and development priorities, aligned with the World Bank's Country Partnership Framework (CPF). The Meghalaya Logistics and Connectivity Improvement Project (MLCIP) was conceptualized by the Meghalaya Public Works Department, PWD(Roads) to address critical network gaps, improve logistical efficiency, and promote inclusive economic growth.

Key Activities

- Initiation of Proposal by PWD (Roads) focusing on critical missing links, logistical bottlenecks, and key economic corridors.
- Alignment with Meghalaya's Vision 2030 to become a High-Income State through improved infrastructure and connectivity.
- Defining project objectives to enhance transport network integration, support key economic sectors, and improve access to markets and services.
- Scrutiny and endorsement of the proposal by the Government of Meghalaya to confirm strategic relevance and priority corridors.
- Finalization of selected roads under MLCIP for investment.

ii. Project Preparation Stage (Technical Feasibility and Pre-Appraisal)

This stage establishes the technical, environmental, and socio-economic soundness of the identified road projects. It serves as the foundation for detailed engineering and investment appraisal.

Key Activities

- Pre-feasibility assessment by PWD (Roads) Executive Engineers considering connectivity and socio-economic benefits.
- Field reconnaissance and baseline survey to collect primary data on alignment, topography, and existing conditions.
- Appointment of DPR consultants to conduct detailed technical feasibility studies and ensure engineering soundness.
- Appointment of ESIA Consultant to evaluate of environmental and social risks, climate vulnerability, and economic justification.
- Submission of preliminary findings for In-Principle Approval by the State Government and World Bank.

iii. Project Appraisal and Approval Stage

At this stage, the project undergoes comprehensive technical, financial, and environmental appraisal. It ensures compliance with both State and World Bank guidelines before formal approval and financing.

Key Activities

- Preparation of Detailed Project Reports (DPRs) covering design, cost estimates, climate resilience, and safeguard frameworks.
- Internal and external technical review by the Chief Engineer's Office, independent experts, and the World Bank.
- Post DPR scrutiny for revision and validation of all technical, environmental, and social aspects.
- Departmental approval of DPRs by PWD and State Planning and Finance Department.
- Finalization of financial outlay, budget allocation, and submission for World Bank appraisal and negotiation.

iv. Project Implementation and Supervision Stage

This phase involves the actual execution of civil works and consultancies following World Bank procurement guidelines. Continuous supervision ensures adherence to quality, safety, and environmental standards.

Key Activities

- Preparation of tender documents and procurement of works and consultancy services as per World Bank Procurement Regulations and World Bank standard documents.

- Bid evaluation, contract award, and issuance of 'No Objection' from the World Bank.
- Execution of works under supervision of the Project Implementation Unit (PIU) and appointed Supervision Consultants.
- Quality assurance, EHS compliance, financial management, and regular progress reporting to the World Bank.
- Resolution of implementation challenges through joint review missions and stakeholder coordination.

v. Project Operation and Maintenance Stage

Post-construction, the focus shifts to ensuring sustainability and longevity of the created assets. Maintenance activities safeguard the infrastructure and continue delivering economic and social benefits.

Key Activities

- Handover of completed roads to PWD Divisions for operation and routine maintenance.
- Periodic and routine maintenance to preserve road quality and ensure safety.
- Monitoring of performance indicators like traffic growth, travel time reduction, and user satisfaction.
- Independent evaluation by Monitoring and Evaluation (M&E) consultants to assess outcomes and resilience impact.

vi. Project Completion and Evaluation Stage

The final phase assesses project effectiveness, efficiency, and sustainability. It captures lessons learned and provides recommendations for future projects.

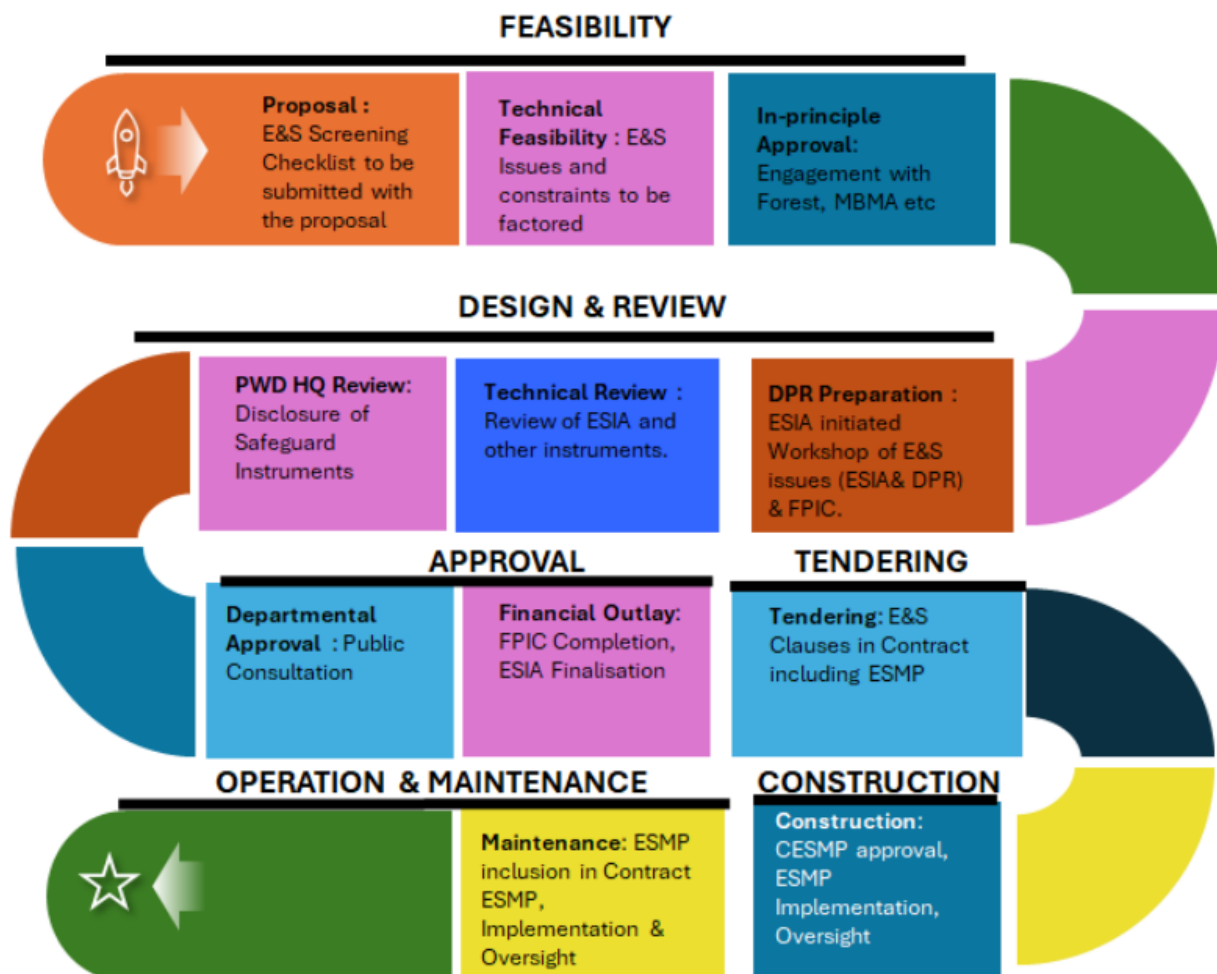
Key Activities

- Preparation of Implementation Completion Report (ICR) documenting project outcomes and disbursements.
- Joint Implementation Completion and Results Review by the World Bank and Government of Meghalaya.
- Assessment of achievement of Project Development Objectives (PDOs) and institutional capacity strengthening.
- Knowledge sharing and replication of best practices for future World Bank-aided infrastructure projects in the State.

To operationalize this integration, E&S activities are embedded as an essential part of the business process, with clearly defined tasks, required areas of expertise, and specific responsibilities assigned to individuals at each project stage. The accompanying schematic diagram provides an overview of the main stages within a typical project cycle, illustrating where E&S measures are to be incorporated. Furthermore,

the subsequent table elaborates on the activities and instruments to be employed at different stages of project development and implementation.

Figure 5-1: The E&S Process integrated into the Project Cycle



5.2 E&S Process Table for the MPWD

Table 5-1: E&S Process Table for the MPWD

Project Stage	Activity	E&S Action	E&S Instruments	Responsibility
Feasibility: Proposal	The proposal from different organizations, department and entities are collated and sent to the MPWD HQ for Consideration.	The preliminary E&S Checklist should be filled for each of these road segments, Agrologistics components and bridges and submitted along with the proposal.	Preliminary E&S Screening Checklist The compendium of sensitivities may be referred.	<ol style="list-style-type: none"> 1. Assistant Engineers (AE) to fill checklist for roads and bridges. 2. The designated E&S Officer of MBMA/Agriculture Departments to fill checklist for Agrologistics component. 3. Executive Engineers (EE)/Nodal Officer to sign off on the E&S Checklist before sending the proposal
Technical Feasibility:	The feasibility of the road/ project components is assessed along with development of the cost.	The E&S consideration especially notified forest, presence of Critical Endangered Species, land requirements, customary cultural heritage sites need to be taken cognizance of. Such sub projects will require additional attention and time.	No separate instruments are prepared but these are documented in the Feasibility note.	The Executive Engineer/Nodal Officer will provide them with his proposal. The Chief Engineer will take care of this while prioritizing the proposal and additional resources and time. The E&S cell will assist the Chief Engineer with estimating additional resources and time. They will also decide if

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Project Stage	Activity	E&S Action	E&S Instruments	Responsibility
				additional studies e.g. Biodiversity Study (ToR attached as Annexure V (A)), Indigenous people Study, Cultural Heritage study etc are required or not.
Feasibility: In-Principle approval	The proposals are sent to the Government of Meghalaya for in-principal approval	The HQ would start liaison with the Forest Department for identification of the forest, animal corridor adjoining the corridor or the areas identified for the Agrologistics infrastructure. Similarly, the MBMA will be engaged for other sensitivities e.g. spring, sacred groves etc.	Communication needs to be sent to these departments with the details and information sought. This information will be used in the planning of the projects later.	The Executive Engineer/ District Agriculture Officer will provide the information required e.g. kml files to the Chief Engineer / Nodal Officer for the onward submission to the PCCF / Chief Wildlife warden. The E&S Cell would provide necessary inputs
DPR Preparation	The DPR would be prepared along with the other instruments e.g. ESIA etc. These instruments need to be developed in close coordination. Thus, both these consultants should be hired simultaneously.	The ESIA consultants should carry out a detailed screening. A workshop of the ESIA and the DPR consultants should be carried out when the preliminary designs are ready and the field surveys identifying the Environmental (trees, erosion, flooding, cultural properties are identified) etc.and the social impacts (CPR, sacred	Detailed E&S Screening Report prepared and Shared with DPR consultant ESIA report along with the ESMP	The E&S cell will help with the appointment of the ESIA consultant (ToR attached as Annexure V (B)) The E&S Cell will review and approved the Detailed E&S Screening, ESIA. The Additional Chief Engineer with support of the E&S Cell will carry out the workshop.

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Project Stage	Activity	E&S Action	E&S Instruments	Responsibility
	The preliminary design to be shared with the ESIA consultant and the finding of the E&S baseline should be shared with the DPR consultant.	groves, Land Acquisition etc.). The outcomes should be documented and be part of the ESIA.	Mitigation measures along with the ESMP	The mitigation measures proposed in the ESIA and design modification in DPR shall be disused with EE, DPR Consultants and vetted by the Chief Engineer.
Technical Review	The DPR and other instruments are reviewed and accepted by the MPWD	ESIA consultants present the ESIA finding, mitigation measures and the ESMP to the Additional Chief Engineer and E&S Cell. The ESIA is finalized after incorporating the comments of the EE and E&S Cell.	Draft ESIA	The Executive Engineer forwards the ESIA to E&S Cell for review and clearance.
HQ Review	The DPR and cost is reviewed at the HQ	The ESIA along with the ESMP is reviewed and approved by E&S Cell. A summary of the critical E&S issues will be highlighted to the MPWD management to be considered along with the approval.	Draft ESIA is readied for disclosure A summary of the Critical E&S issues will be submitted to the Management for approval	The E&S cell will review and approve the ESIA, ESMP before it is sent for approval

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Project Stage	Activity	E&S Action	E&S Instruments	Responsibility
Departmental Approval:	Approval of the Department on the DPR along with the ESIA and ESMP.	<p>As the Departmental approval is obtained, the ESIA will be disclosed on the departmental website for 30 days to solicit comments from the public.</p> <p>The E&S Cell will organize a public consultation in the project area after the expiry of the disclosure period.</p>	<p>Draft ESIA disclosed on the Website</p> <p>Notice for public consultation displayed on Department website, Notice Boards of Traditional institutions etc.</p> <p>Minutes of meeting of the Public Consultation with attendance and photographs.</p>	The E&S Cell will review the MoMs and integrate any comments that needs to be integrated into the ESIA.
Financial Outlay	The financial outlay for the execution of the project	<p>FPIC process should also be completed and documented in the ESIA.</p> <p>The ESIA should incorporate the findings of the public consultation and final ESIA prepared.</p>	<p>Documentation of FPIC process.</p> <p>Final ESIA disclosed on Website</p>	<p>The ESIA consultant should finalize the ESIA.</p> <p>The E&S Cell should ensure that the FPIC documentation is complete and filed for future reference.</p>
Tendering	The Tender document is prepared and issued.	The E&S Criteria for the selection of Contractor, Code of Conduct,	E&S Criteria, Code of Conduct,	The E&S Cell will prepare these based on the ESIA and provide the

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Project Stage	Activity	E&S Action	E&S Instruments	Responsibility
	The bids are evaluated and the successful bidder selected	ESMP should be provided and included in the bid.	ESMP and Clauses for the Bid	required information to the Procurement Cell.
Construction	The Construction activity commences with the contractor providing the Method Statement along with the CESMP and the Safety Management Plan (Traffic, OHS). The oversight on the ESMP implementation has to be carried out on real-time with technological interventions. The performance of the ESMP implementation would be reviewed by the MPWD.	<p>The CESMP will be reviewed by the E&S Officer of CSC before it is submitted for approval.</p> <p>The E&S Cell (with support from PMC) will review and approve the CESMP, Safety Management Plans. The Method statement would only be approved if the CESMP and safety management plans are approved.</p> <p>The E&S Officers of the CSC and the Contractor will provide daily information on the Online reporting system.</p> <p>Any non-compliance/ non-performance shall have a time-bound action which will be reviewed by the E&S Officers of CSC and acted upon by the Contractor. The E&S Officers of the CSC will review and certify the</p>	<p>CESMP</p> <p>Daily E&S Report on the Portal</p> <p>Contract wise consolidate report of the E&S non-conformance/ non-compliance.</p>	<p>The E&S Officer of the Contractor is the nodal person to coordinate the implementation of the CESMP></p> <p>The E&S Officers of the CSC will review and authenticate the CESMP. They will also be the nodal persons of E&S Cell for the oversight of the implementation of CESMP.</p> <p>The E&S Officers of PMC will support the E&S cell officers to have the Oversight, assess the pending non-conformance and bring it to the knowledge of the Additional Chief Engineer (EAP). They should report to the MPWD management on the key E&S Performance indicators.</p>

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Project Stage	Activity	E&S Action	E&S Instruments	Responsibility
		completion. The E&S Cell with help of the PMC will compile the report of pending E&S non-compliance/ non-conformance and provide it to the Additional Chief Engineer (EAP) before the bill of the Contractor is approved.		
Maintenance:	Routine/ Intensive	<p>The relevant section of the ESMP will be integrated into the Bid Document</p> <p>The AE (Designated) E&S Officer will be responsible for oversight.</p> <p>E&S Cell will be responsible for the overall E&S performance of all activities of the Department. They will be responsible for taking decision on the type of studies to be carried out. The ESMP will be included into the contract, and the implementation needs to be monitored. The Contractor will help the AE for the online monitoring.</p>	<p>Preliminary Screening;</p> <p>Detailed E&S Screening;</p> <p>E&S Assessment (As necessary);</p> <p>E&S Monitoring and Reporting</p>	The E&S Cell will coordinate with the respective AEs of the various divisions to get information, carry out assessment as necessary, embed the ESMP into the Contracts and have oversight.

6 Gender Action Plan

6.1 Introduction

The Public Works Department (PWD) of Meghalaya is central to improving road connectivity, a key driver of the state’s social and economic development. Roads in Meghalaya not only link remote and urban areas but also provide communities with access to education, healthcare, markets, and employment. Considering the state’s hilly terrain, scattered settlements, and socio-cultural context, road infrastructure plays a crucial role in shaping the daily lives of women, men, children, the elderly, and marginalized groups.

Although Meghalaya has a matrilineal social system, gender inequalities persist across various sectors. Women still face barriers in decision-making, technical employment, and access to resources. In rural and remote areas, inadequate connectivity limits women’s mobility, restricts access to essential services, and increases exposure to health and safety risks. Additionally, women’s perspectives are often underrepresented in infrastructure planning and project design. Recognizing these challenges, it is crucial to integrate gender considerations into the operations of Meghalaya PWD.

At the project sites, livelihood restoration activities will specifically address the needs of women. A Gender Action Plan (GAP) is developed for these projects as part of the Environmental and Social Management Framework (ESMF) to guide the analysis of gender issues during the preparation phase of sub-projects and inform the design of interventions.

At the sub-project level, gender analysis will be integrated into the social assessment, drawing on findings from gender-specific questions during primary data collection and available secondary sources. Both quantitative and qualitative analyses

Gender Analysis Scope:

Component	Scope / Objective	Methods / Approach	Expected Outcomes
Gendered Impacts Assessment	Identify how project activities affect women, men, and gender-diverse groups differently, including risks of GBV/SEA/SH.	Desk review of demographic and social data Stakeholder consultations Focus group discussions with women, men, and vulnerable groups	Clear understanding of potential differential impacts and gender-specific risks; basis for mitigation measures.

Disclaimer: The is a draft version and is being reviewed by the World Bank.

Component	Scope / Objective	Methods / Approach	Expected Outcomes
Labor and Workforce Analysis	Examine gender composition, participation, and access to employment opportunities under MLCIP.	Workforce survey Contractor records review Interviews with female and male workers	Identification of barriers to women's employment; plan for equitable recruitment, wage parity, and occupational safety.
Access to Services and Livelihoods	Assess how project infrastructure affects mobility, market access, and livelihoods for different genders.	Household surveys Mobility and livelihood mapping Community consultations	Recommendations for ensuring improved access for women and men, and enhanced economic opportunities.
Community Vulnerability and Social Norms	Understand gender norms, decision-making power, unpaid care responsibilities, and vulnerability to project-related risks.	Participatory rural appraisal Key informant interviews Gender-focused FGDs	Integration of culturally sensitive mitigation measures; inclusive engagement and consultation plans.
Policy and Safeguard Alignment	Ensure compliance with ESS2 (Labor) and ESS4 (Community Health & Safety), and national labor and social laws.	Review of ESS requirements and labor codes Alignment with ESMF/ESMP frameworks	Gender-responsive safeguards incorporated into project policies, codes of conduct, and grievance mechanisms.
Monitoring and Indicators	Track gender outcomes, participation, and risk mitigation effectiveness.	Develop gender-disaggregated indicators Periodic monitoring and reporting	Continuous assessment of gender impacts; evidence-based adjustments to project interventions.

will generate sex-disaggregated data, highlighting gender disparities, needs, constraints, and priorities, as well as identifying potential inequities in risks, benefits, and opportunities. Based on this analysis, targeted interventions will be designed, integrated in the DPR, ESIA and ESMP. The Project monitoring framework shall incorporate sex-disaggregated and gender-sensitive indicators to monitor progress across all project components, encompassing construction, road upgrades, and related civil works. The project shall proactively address barriers impeding women's participation in project design, labor involvement, and monitoring and evaluation processes, thereby promoting equitable access to both skilled and unskilled employment opportunities. Special emphasis shall be placed on the interplay between gender and poverty, with targeted identification of female-headed households and other vulnerable populations to foster inclusive project benefits, service access, and livelihood enhancements. In order to mitigate risks of gender-based violence (GBV), sexual exploitation and abuse (SEA), and sexual harassment (SH) arising from labor influx and construction activities, the project shall enact a comprehensive Gender-Based Violence Action Plan, incorporating codes of conduct, awareness-raising campaigns, grievance redress mechanisms, and survivor-centered referral pathways. All training, consultations, and community engagements shall be executed with gender sensitivity, ensuring the inclusion of women's perspectives in decision-making, monitoring, and feedback throughout the project lifecycle.

To ensure inclusivity and equity, development projects must actively engage women in meaningful ways. A gender-sensitive approach enhances project outcomes and ensures equal access to benefits for women.

As part of the social assessment, consultations will be conducted with various stakeholders to identify gender-related issues and potential measures to enhance women's participation throughout the project process. The assessment has helped highlight key concerns regarding women's involvement in livelihood activities and other initiatives that directly or indirectly affect their lives.

The Government of Meghalaya, through the Public Works Department (PWD), is dedicated to incorporating gender equality and social inclusion into the planning, execution, and monitoring of road sector projects. Acknowledging that enhanced road connectivity can significantly benefit women, youth, and marginalized communities, the Gender Action Plan (GAP) has been formulated to ensure that infrastructure investments are inclusive, equitable, and tailored to meet the diverse needs of all stakeholders.

6.2 Policy Provision:

Table 6-1 Policy Provision for Preparing GAP

Directions in Constitution

The constitution of India provides provisions to secure equality in general and gender equality in particular. Various articles in the Constitution safeguard women's rights by putting them at par with men socially, politically and economically. The Preamble, the Fundamental Rights, Directive Principles of State Policies (DPSPs) and other constitutional provisions provide several general and special safeguards to secure women's human rights. The Preamble to the Constitution of India assures justice, social, economic and political; equality of status and opportunity and dignity to the individual. Thus, it treats both men and women equal.

The policy of women empowerment is well entrenched in the Fundamental Rights enshrined in our Constitution. For instance:

1. Article 14 ensures to women the right to equality;
2. Article 15(1) specifically prohibits discrimination on the basis of sex;
3. Article 15(3) empowers the State to take affirmative actions in favour of women;
4. Article 16 provides for equality of opportunity for all citizens in matters relating to employment or appointment to any office. These rights being fundamental rights are justifiable in court and the Government is obliged to follow the same.

Directive principles of State Policy also contains important provisions regarding women empowerment, and it is the duty of the government to apply these principles while making laws or formulating any policy. Though these are not justifiable in the Court but these are essential for governance nonetheless. Some of them are:

1. Article 39 (a) provides that the State to direct its policy towards securing for men and women equally the right to an adequate means of livelihood.
2. Article 39 (d) mandates equal pay for equal work for both men and women.
3. 3Article 42 provides that the State to make provision for securing just and humane conditions of work and for maternity relief.

Fundamental Duties

Fundamental duties are enshrined in Part IV-A of the Constitution and are positive duties for the people of India to follow. It also contains a duty related to women's rights. Article 51 (A) (e) expects from the citizen of the country to promote harmony and the spirit of common brotherhood amongst all the people of India and to renounce practices derogatory to the dignity of women.

Other Constitutional Provisions

Through the 73rd and 74th Constitutional Amendment of 1993, a very important political right has been given to women which is a landmark in the direction of women empowerment in India. With this amendment, women were given 33.33 percent reservation in seats at different levels of elections in local governance i.e. at Panchayat, Block and Municipality elections. Thus, it can be seen that these Constitutional provisions are very empowering for women and the State is duty bound to apply these principles in taking policy decisions as well as in enacting laws.

Specific Laws for Women

Some specific laws, which were enacted by the Parliament in order to fulfil the Constitutional obligation of women empowerment are;

1. The Equal Remuneration Act, 1976.
2. The Dowry Prohibition Act, 1961.
3. The Immoral Traffic (Prevention) Act, 1956.
4. The Maternity Benefit Act, 1961.
5. The Medical termination of Pregnancy Act, 1971.
6. The Commission of Sati (Prevention) Act, 1987.
7. The Protection of Women from Domestic Violence Act, 2005
8. The Prohibition of Child Marriage Act, 2006.
9. The Pre-Conception & Pre-Natal Diagnostic Techniques (Regulation and Prevention of Misuse) Act, 1994.

10. The Sexual Harassment of Women at Work Place (Prevention, Protection and) Act, 2013.

11. Above mentioned and several other laws are there which not only provide specific legal rights to women but also give them a sense of security and empowerment.

International Commitments

India is a part of various International conventions and treaties which are committed to secure equal rights of women. One of the most important among them is the Convention on Elimination of All Forms of Discrimination against Women (CEDAW), ratified by India in 1993. Other important International instruments for women empowerment are: The Mexico Plan of Action (1975), the Nairobi Forward Looking Strategies (1985), the Beijing Declaration as well as the Platform for Action (1995) and the Outcome Document adopted by the UNGA Session on Gender Equality and Development & Peace for the 21st century, titled "Further actions and initiatives to implement the Beijing Declaration and the Platform for Action". All these have been whole-heartedly endorsed by India for appropriate follow up.

National Policy for Woman

In the year 2001, the Government of India launched a National Policy for Empowerment of Women which was revised in the year 2016. The National Policy for Women, 2016 (draft) having the vision of "A society in which, women attain their full potential and are able to participate as equal partners in all spheres of life and influence the process of social change". The objectives of the policy are

1. Creating a conducive socio-cultural, economic and political environment to enable women enjoy de jure and de facto fundamental rights and realize their full potential;
2. Mainstreaming gender in all-round development processes/programs/projects/actions;
3. A holistic and life-cycle approach to women's health for appropriate, affordable and quality health care;
4. Improving and incentivizing access of women/ girls to universal and quality education;
5. Increasing and incentivizing work force participation of women in the economy;

6. Equal participation in the social, political and economic spheres including the institutions of governance and decision making;
7. Transforming discriminatory societal attitudes, mindsets with community involvement and engagement of men and boys;
8. Developing a gender sensitive legal-judicial system;
9. Elimination of all forms of violence against women through strengthening of policies, legislations, programs, institutions and community engagement;
10. Development and empowerment of women belonging to the vulnerable and marginalized groups;
11. Building and strengthening stakeholder participation and partnerships for women empowerment;
12. Strengthen monitoring, evaluation, audit, and data systems to identify and address gender gaps, ensuring compliance with relevant legal provisions, including laws related to dowry prohibition, gender equality, sexual harassment, and protection against gender-based violence. These systems will support evidence-based decision-making, enhance accountability, and promote equitable participation of women and other vulnerable groups in all project activities..

World Bank's Approach

The World Bank's approach to promoting gender equality makes all staff responsible for ensuring that the Bank's work is responsive to the differing needs, constraints, and interests of males and females in client countries. Gender equality is now a core element of the Bank's strategy to reduce poverty. There is a clear understanding that until women and men have equal capacities, opportunities and voice, the ambitious poverty-reduction agenda set out in the Sustainable Development Goals will be difficult to achieve.

6.3 Rational

Meghalaya is a largely rural and hilly state where women play a central role in household management, agriculture, and economic activities. Despite its matrilineal social structure, women still face challenges, including limited representation in decision-making bodies, under-representation in technical and

leadership roles, restricted access to transportation, and vulnerability to gender-based violence in both mobility and workplace settings. Integrating gender considerations into PWD operations is crucial to promote social equity, enhance service delivery, and align with the World Bank Environmental and Social Framework (ESF), existing laws and policies, and India's gender equality objectives.

Gender work participation rate: Women's participation in the workforce in Meghalaya is higher than the national average, whereas men's participation is seen to be lower than the national average. Based on the primary data, it was observed that a larger percentage of women are engaged in agricultural activities and small-scale trade. The Census of India, 2011 mirrors the findings of the primary data, which indicates that about 35% women in rural Meghalaya are in the labour force. Further, relatively more women in rural Meghalaya are marginal workers compared to their counterparts in the rest of the country. The all-India figures of labour force participation are 53% and 30% respectively for men and women, which is lesser than the state figures. Interestingly, Working Participation Rates (WPR) of women has declined in rural Meghalaya from 39% in 1991 to 35% in 2011. The information is comprehensively covered in the Chapter 2 of the Baseline data under the ESMF document.

Gender differentiated work: Traditionally, women in Meghalaya engage in small-scale trade wherein they sell their produce in the local market and manage the income/profits accrued from the trade. Such practices are not prevalent in other areas of the Indian subcontinent, where visiting the market and especially selling produce in the market is the preserve of men. However, in most parts, women in Meghalaya like their counterparts engage in agricultural activities like sowing, weeding, harvesting and threshing while simultaneously looking after their families (cooking, cleaning, tending to the ill, caring for livestock, etc.).

6.4 Objective of the Gender Action Plan

- To integrate gender considerations across all phases of activities proposed under this project, including planning, design and implementation.
- To promote women's participation in employment during the implementation phase.
- To promote women's participation and involvement in Grievance Redressal Committees and stakeholder engagement consultations.
- To build and strengthen the institutional capacity of Meghalaya PWD for gender-sensitive planning, monitoring, and reporting.

6.5 Key Strategies

i. Gender-Responsive Planning and Design

- Integrate safety and accessibility features such as street lighting, footpaths, bus stops, and signage, considering the mobility needs of women.
- Conduct gender-sensitive consultations and social assessments prior to project finalization.

ii. Inclusive Employment and Capacity Building

- Encourage women's participation in construction, maintenance and other activities in the project.
- Develop targeted training and skill development programs for, contractors, and workers.

iii. Community Engagement and Empowerment

- Engage women's groups, Self-Help Groups (SHGs), and women's wing in local institutions in road monitoring, maintenance, and related activities.

iv. Institutional Strengthening

- Building MPWD's internal capacity for gender mainstreaming through training and gender focal points.
- Establishing monitoring systems with gender-disaggregated indicators and regular reporting.

6.6 Expected Outcomes

- Greater involvement of women in consultations and employment opportunities.
- Development of safer, more accessible, and gender-responsive road infrastructure.
- Strengthened institutional accountability of PWD in advancing gender equity and workers safety.
- Support for inclusive economic growth by improving mobility, reducing travel time, and enhancing women's and vulnerable groups' access to markets, education, and health services.

The Gender Action Plan establishes Meghalaya PWD as a frontrunner in promoting gender equality within the infrastructure sector. By integrating gender considerations into road development projects, PWD ensures that investments are not only technically and economically robust but also socially inclusive and equitable, supporting the state's goal of sustainable and inclusive development.

6.6.1 6.7 Gender Action Plan (GAP)

The Gender Action Plan (GAP) establishes a comprehensive framework for integrating gender equality and social inclusion (GESI) throughout all stages of road sector projects. This plan is aligned with national gender policies, the Sustainable Development Goals (SDGs), and the social safeguard standards of international development partners, including the World Bank's Environmental and Social Framework (ESF).

The GAP promotes gender-responsive, inclusive, and equitable project interventions—from employment and internship opportunities to stakeholder consultations. It prioritizes proactive strategies to bolster women's participation, fortify institutional capacities, and foster safe, inclusive work environments.

A. General Checklist for Gender Integration

- Identify principal gender-related barriers to participation in project activities
- Develop Terms of Reference (TOR) for gender or social development specialists to inform project implementation and monitoring.
- Undertake a thorough gender analysis during the social assessment phase, incorporating stakeholder mapping and socio-economic profiling disaggregated by gender, caste, ethnicity, age, and location.
- Assess potential gender-differentiated impacts of project activities and propose measures to optimize benefits while mitigating adverse effects.
- Engage relevant government agencies, NGOs, community-based organizations (CBOs), and women's groups to facilitate implementation, capacity building, and monitoring.
- Review applicable gender-related policies and legislation pertaining to labor, workplace safety, and community participation.
- Involve both men and women in project design through participatory consultations and Free, Prior, and Informed Consent (FPIC) processes for community-based activities.
- Incorporate gender insights into all project documentation, including objectives, scope, employment strategies, cost estimates, institutional arrangements, and TORs for implementation and monitoring.
- Formulate gender-disaggregated indicators and a monitoring framework to track participation, benefits, and adherence to workplace safety standards.

B. Core Requirements for Gender Mainstreaming

- Gather and analyze all project-related data disaggregated by gender, caste, ethnicity, location, and age.
- Examine divisions in labor, decision-making authority, and resource access to discern gender-differentiated impacts on participants.
- Evaluate policies, programs, institutional arrangements, human resource systems, and monitoring and evaluation (M&E) mechanisms through a gender lens.
- Guarantee that project-supported employment and stakeholder consultations are inclusive, safe, and accessible to women, vulnerable groups, and persons with disabilities.

6.8 Key Activities in the Project Cycle (Gender-Sensitive)

The GAP seeks to:

- Identify and address barriers that restrict women's access to jobs, skill development, and leadership roles in project-related endeavors.
- Amplify opportunities for women's involvement in decision-making, project planning, and monitoring processes.
- Ensure that road infrastructure, workplaces, and ancillary facilities (e.g., labor camps and project offices) are safe, inclusive, and accessible across all genders.

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- Facilitate participatory stakeholder consultations and FPIC processes to meaningfully incorporate women's perspectives in planning and impact assessments.
- Reinforce institutional frameworks, policies, and accountability measures for workplace safety, prevention of sexual harassment, grievance redressal, and gender-responsive governance.
- Implement gender-disaggregated indicators for monitoring, including:
 - The number of women engaged in internships and employment.
 - Women's participation in consultations, FPIC processes, and decision-making forums.
- Adherence to workplace safety standards, such as provision of separate sanitation facilities, safe transportation, and grievance mechanisms.
- The incidence and resolution of gender-related grievances, including cases of harassment or discrimination.

Through the deliberate integration of these measures into project planning, design, and execution, the GAP upholds equitable benefits for women and other vulnerable groups while cultivating safe and inclusive work environments.

Gender Action Plan Implementation Details

Action	Responsible Entity	Timeline	Monitoring Indicators
Conduct gender analysis and socio-economic profiling of stakeholders	Social/Gender Specialist, PWD, Consultants	Project preparation phase	Completed gender analysis report; data disaggregated by gender, caste, ethnicity, age, location
Integrate gender considerations into project design, TORs, and ESIA	PWD Project Team, Consultants	Feasibility & design phase	Gender-sensitive project design approved; TORs include gender requirements
Develop employment plan targeting women and vulnerable groups	PWD, Contractors, Consultants	Pre-construction & ongoing during project	Number of women recruited for internships/jobs; % of total workforce represented by women
Conduct participatory stakeholder consultations and FPIC sessions	Social/Gender Specialist, NGOs, CBOs	Planning & pre-construction phase	Number of consultations held; % of participants who are women; documented FPIC outcomes

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Action	Responsible Entity	Timeline	Monitoring Indicators
Provide gender-sensitive training, mentorship, and capacity-building programs	Training & Capacity Building Team, PWD	Throughout project cycle	Number of participants trained (disaggregated by gender); training satisfaction feedback
Ensure workplace safety, including harassment prevention, safe transport, sanitation, and grievance mechanisms	PWD, Contractors, Labor Camp Managers	Ongoing during construction and operations	Workplace safety audits conducted; incidents reported/resolved; presence of safe facilities and grievance system
Monitor gender-disaggregated participation and benefits from project activities	M&E Team, PWD	Quarterly/annual reporting	Quarterly/annual M&E reports; % of women benefiting from programs; trends in participation over time
Address gender-related grievances and barriers promptly	PWD, Contractors, Social/Gender Specialist	Ongoing	Number of grievances received and resolved; time taken for resolution; feedback from affected parties
Periodically review and update GAP actions based on findings	PWD, Social/Gender Specialist, Consultants	Annual or mid-project review	Updated GAP action plan; documented adjustments; incorporation of stakeholder feedback

Table 6..2 Opportunities for Women's Involvement Across Project Stages

Procedure / Steps	Process	Expected Outcome / Indicator
Identification of Gender-Specific Needs	Conduct targeted consultations and focus group discussions (FGDs) with women's groups, local communities, and stakeholders.	Clear understanding of barriers and priorities for women's participation; documented needs report.

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Procedure / Steps	Process	Expected Outcome / Indicator
Assessment of Participation Opportunities	Map areas where women can engage, including internships, employment, skill training, advisory roles, and decision-making.	Opportunities for women's involvement identified and prioritized.
Integration into Project Plans	Incorporate consultation findings into project activities, internship programs, recruitment, FPIC exercises, and technical designs.	Gender-responsive plans implemented; number of women-targeted positions and internships included.
Implementation Support	Collaborate with self-help groups (SHGs), community-based organizations (CBOs), women's wings, local institutions, and contractors to mobilize women, provide training, and ensure safe workplaces.	Increased women's participation; workplace safety protocols in place; training sessions conducted; grievance mechanisms functional.
Monitoring and Evaluation	Track gender-disaggregated data on internships, employment, consultation participation, FPIC outcomes, and workplace safety compliance.	Regular reporting on indicators: % women in internships/jobs, number of women attending FPIC/consultations, workplace incidents recorded/resolved; mid-course adjustments made.

By incorporating gender-responsive measures, the Gender Action Plan ensures that road projects in Meghalaya are not only technically robust and economically feasible but also socially inclusive and equitable. It establishes the PWD as a key driver in promoting gender equality and empowering communities throughout the state.

Table 6-2 Institutional Action Framework for Gender Integration in Meghalaya PWD Projects

Project Stage	Key Activities	Responsibility
Planning Stage	<ul style="list-style-type: none"> Conduct consultations and focus group discussions (FGDs) with women's groups and local communities to identify barriers to participation and key priorities. Disseminate information on project activities, internship and job opportunities, anticipated benefits, and the roles of women stakeholders. Organize Free, Prior, and Informed Consent (FPIC) sessions with affected communities, as applicable. Develop component-specific plans that incorporate women's involvement in internships, employment, skill development, and consultations. 	Gender Specialist; Social and Gender Specialists (ESIA & ESMF); MPWD Gender Specialist
Implementation Stage	<ul style="list-style-type: none"> Promote women's participation in internships, employment, and training programs. Ensure safe and inclusive workplaces through occupational safety measures, reliable transportation, separate sanitation facilities, and accessible grievance mechanisms. Partner with self-help groups (SHGs), community-based organizations (CBOs), and local institutions to support mobilization, training, and awareness initiatives. Incorporate women's perspectives into ongoing project monitoring and decision-making processes. 	Contractors; Social Experts of CSC & PMC; MPWD Gender Specialist; SHGs/Traditional Institutions

Project Stage	Key Activities	Responsibility
	<ul style="list-style-type: none"> Implement gender-responsive infrastructure enhancements where feasible (e.g., secure access routes, footpaths, and adequate lighting). 	
Monitoring & Evaluation Stage	<ul style="list-style-type: none"> Gather and analyze gender-disaggregated data on internships, employment, consultations, FPIC participation, and adherence to workplace safety standards. Monitor gender-specific indicators within the project monitoring and evaluation (M&E) framework. Document lessons learned and apply mid-course adjustments to enhance women's participation and safety. 	Contractors; Social Experts of CSC & PMC; MPWD Gender Specialist

6.7 Implementation Arrangements

The responsibility for implementing, and monitoring the Gender Action Plan (GAP) rests with the MPWD. At the Project Implementation Unit (PIU) level, the Social Development Specialist and the Gender Expert will lead, facilitate, and oversee the preparation and execution of the Action Plan. Strong coordination will be ensured with relevant line departments—particularly the Social Welfare Department, the State Livelihood Mission, Autonomous Council Institutions, and the Rural Development Department—to align and integrate project activities with ongoing government programs aimed at advancing the socio-economic development of women.

Table 6-3. Summary of the Gender Action Plan for MLCIP Projects

Component / Activity	Design Features, Measures & Monitoring Indicators	Responsible Agency
Component A: Policy, Planning, Institutional & Knowledge Base		
Sex-disaggregated baseline survey and monitoring	<ul style="list-style-type: none"> Collect quantitative and qualitative sex-disaggregated data in both intervention and control sites. 	ESIA/ESMF Social and Gender Experts/ MPWD

Component / Activity	Design Features, Measures & Monitoring Indicators	Responsible Agency
	<ul style="list-style-type: none"> Use agreed indicators to track attitude and behavior changes, as well as socio-economic impacts. 	
Component B: Institutionalization of Comprehensive MLCIP Programs		
Public awareness campaign and social mobilization	<ul style="list-style-type: none"> Conduct project information dissemination meetings in all project sites. Target: (i) at least 30% participation of women community members; and (ii) at least 30% participation of women-focused/women-led organizations, including SHGs, CBOs, NGOs. 	PMC/CSC, MPWD
Socially inclusive & gender-responsive community-based decision-making and training	<ul style="list-style-type: none"> Ensure at least 30% women's representation in all community-based decision-making processes for small works implementation. 	PMC/CSC, MPWD, NGO
Inclusion of community perspectives in structural measures	<ul style="list-style-type: none"> Conduct joint walk-throughs with PWD representatives and community organizations before finalizing structural designs. Target: (i) at least 30% participation of women community members; and (ii) at least 30% participation of women-focused/women-led organizations. 	EMSF/ ESIA, MPWD
Community-based implementation, operation & maintenance (O&M) of project structures	<ul style="list-style-type: none"> Communities living near structural interventions will participate in manual labor and routine O&M of project-supported structures (e.g., embankment system renovation, strengthening, and related infrastructure). 	PMC/CSC, MPWD

Component / Activity	Design Features, Measures & Monitoring Indicators	Responsible Agency
	<ul style="list-style-type: none">Target: At least 20% participation of women in O&M activities.	

6.8 Monitoring Gender Action plan

Monitoring the Gender Action Plan is essential to ensure that gender commitments made during project design are effectively implemented on the ground. It requires systematic collection, analysis, and reporting of sex-disaggregated data and gender-sensitive indicators throughout the project cycle.

Key Elements of GAP Monitoring:

- **Integration of Indicators:** Track economic, social, and institutional indicators, including women's participation in consultations, employment, training, leadership roles, and access to services.
- **Community Engagement & Women's Participation:** To enhance women's participation in project consultations, monitoring, and feedback mechanisms, Field officers, SHG representatives, local community members to be identified. Trainings and capacity building programmes to be imparted to integrated them with the projects.
- **Baseline, Mid-Term, and End-Line Assessments:** Use baseline data to set benchmarks, mid-term reviews to gauge progress, and final assessments to measure outcomes and impacts.
- **Process & Outcome Monitoring:** Measure both participation levels (process) and tangible results (outcomes) such as improved livelihoods, mobility, and decision-making power for women.
- **Shared Responsibility:** The PMU, supported by the Social Development Specialist, contractors, and third-party evaluators, leads the process, with active involvement from line departments, SHGs, NGOs, and community institutions.
- **Feedback & Adaptation:** Ongoing consultations with women beneficiaries ensure challenges are addressed early, corrective actions are taken, and women's voices remain central to the project.
- **Transparency & Learning:** Findings are documented, shared with stakeholders, and used to refine future interventions, ensuring accountability and institutional learning.

Table 6-4 Indicators, frequency, and agency recommended for monitoring

Aspects	Monitoring Indicators (Process and Outcome)	Frequency	Monitoring Responsibility
Economic	<ul style="list-style-type: none"> • Number and proportion of women engaged in different project-related activities. • Number of days women are engaged compared to men in similar roles. • Growth in women's income due to project participation. • Reduction in women's migration days (if they previously migrated for work). • Number of women gaining new market-oriented and employable skills. • Number of women accessing government schemes, agricultural interventions, or entitlements. • Improvement in women's asset ownership (productive and household assets). 	Planning Stage: Baseline data collection Half-Yearly Monitoring Mid-Term Review (MTR) Final Impact Assessment	Contractors; CSC; PMC; MPWD
Social	<ul style="list-style-type: none"> • Increase in women's participation and leadership in local institutions and decision-making processes (membership, management roles, committees, etc.). • Improvement in women's representation in consultations and project-related decision forums. 	Planning Stage: Baseline data collection Half-Yearly Monitoring Mid-Term Review (MTR) Final Impact Assessment	Contractors; CSC; PMC; MPWD

Effective monitoring of the GAP ensures that the MLCIP is not only technically sound and economically viable but also inclusive, equitable, and transformative empowering women and marginalized groups across the state.

7 Institutional Arrangement

7.1 Institutional Arrangement for Implementation

The Meghalaya Infrastructure Development and Finance Corporation (MIDFC) will implement the MLCIP, leveraging World Bank experience from projects such as the *Meghalaya Integrated Transport Project (MITP)*, where a PMU coordinates activities across implementing agencies. E&S project staff under the PIU which is the PWD, Government of Meghalaya (MPWD) will manage safeguards as per the World Bank's Environmental and Social Framework (ESF). This will build considerable experience for MIDFC and the MPWD on WB procedures, especially in managing complex issues on resettlement, tribal land rights, biodiversity in hilly terrains, and engagement with Sixth Schedule institutions. Therefore, existing capacities must be leveraged such that experienced personnel are on-boarded during the preparation stage and lessons from past projects are duly integrated.

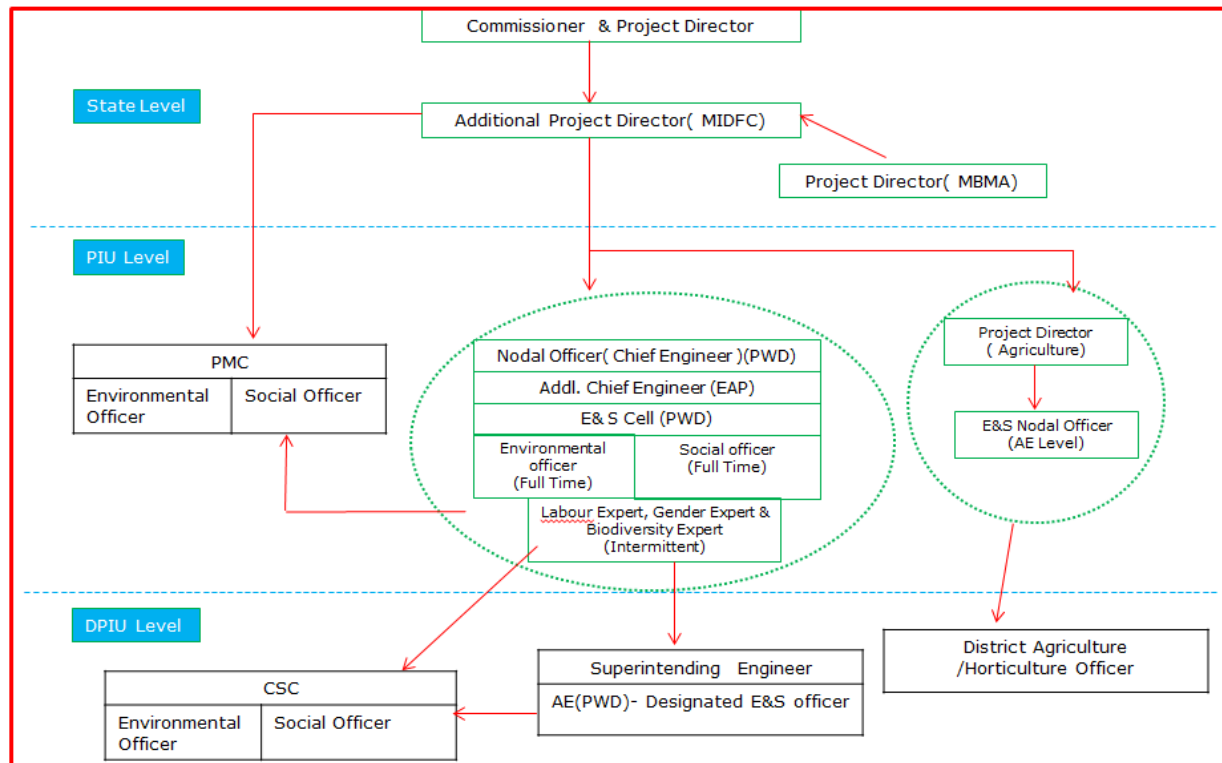
The project will be implemented through the MPWD, with MIDFC as the central PMU. Respective divisions of the PWD along with the Project Management Consultants (PMC) and Construction Supervision Consultant (CSC) will also be engaged to backstop the PMU/PIU on specific technical, institutional, and monitoring tasks. The PMU, PIU (along with the PWD division officers), PMC, and CSC must be adequately staffed with competitively recruited E&S Specialists to support implementing site-specific ESIs for DPRs and other E&S documents.

7.2 Governance and Overall Institutional Structure of the Project

The implementation arrangements will align with the current institutional architecture of the Government of Meghalaya (GoM), incorporating Sixth Schedule provisions for tribal autonomy. The MIDFC, responsible for overall project coordination and financing, will be the project holder and lead implementing agency. The MPWD will oversee civil works (roads, bridges, and ropeways), while Department of Agriculture (DoA), and MBMA will support the MPWD in agrologistics and community components.

The MIDFC-PMU will oversee overall project management and coordination through officers experienced in World Bank procedures. The PMC, a team of experts and consultants headed by a Team Leader, will provide technical support for project activities that exceed the skill set of implementing agencies. The CSC will provide construction supervision. Additionally, the PMC/CSC will assist in collating information and documenting the same. The project implementation structure is shown in **Figure 7-1**

Figure 7-1: Project Implementation Organogram



Meghalaya Infrastructure Development and Finance Corporation (MIDFC) – Project Management Unit (PMU)

The Meghalaya Infrastructure Development and Finance Corporation (MIDFC) serves as the state’s nodal agency for planning, financing, and implementing major infrastructure and development projects across Meghalaya.

The Project Management Unit (PMU) under MIDFC serves as the central coordinating body providing strategic direction, policy alignment, and oversight for the project’s implementation. It manages planning, budgeting, and inter-agency coordination between PWD and MBMA, ensuring compliance with World Bank ESF, national, and state safeguard regulations and leads stakeholder engagement. Key officials include the Commissioner & Project Director, Additional Project Director (MIDFC), and specialized Procurement and Financial experts.

Project Implementation Unit (PIU) – Meghalaya Public Works Department (MPWD)

The Project Implementation Unit (PIU) under MPWD is the main agency implementing MLCIP’s road and connectivity components. It prepares DPRs, manages procurement, and oversees construction through Divisional PIUs and Supervision Consultants. The PIU ensures technical quality, environmental and social safeguard compliance, and coordination with local institutions. It reports progress to the PMU (MIDFC) and conducts capacity-building activities for field staff and contractors. Key officials include the Nodal

officer (Chief Engineer -Roads), Additional Chief Engineer (EAP), Nodal Officer (Environmental), Liaison Officer (Social) and E&S Officers.

Project Implementation Unit (PIU – MBMA/DoA) for Agrologists

The PIU under MBMA will assist MIDFC in executing the Agrologistics Component of the MLCIP. The required technical study will be conducted first, following which the institutional framework will be clearly defined. **Divisional Project Implementation Units (DPIU – PWD)**

Project Implementation Unit

Each DPIU under PWD acts as the field-level unit implementing infrastructure works through contractors under PIU and CSC supervision. It ensures quality, safety, and timely execution, coordinates with district authorities and traditional institutions, monitors ESMP compliance, and submits progress reports to the PIU. DPIUs also facilitate community engagement and grievance redressal.

Project Management Consultant (PMC)

The Project Management Consultant (PMC) provides technical, managerial, and E&S support to the PMU and PIUs. It assists in DPR preparation, safeguards integration, progress monitoring, and capacity building, ensuring project quality, compliance, and timely implementation across all components.

Construction Supervision Consultant:

The Construction Supervision Consultant (CSC) oversees on-site construction to ensure adherence to technical, contractual, and safeguard standards. It monitors quality, safety, and environmental compliance, verifies progress, supports DPIUs in documentation, and reports any deviations to the PIU for corrective action.

Project implementation will be guided by a comprehensive Project Operations Manual (POM), to be prepared by the PMU with support from the Project Management Consultant (PMC). Each implementing entity will provide its respective inputs, and the POM will be finalized within three months of the project's effectiveness date. The Project Operations Manual (POM) will be closely aligned with the Environmental and Social Management Framework (ESMF) to ensure that environmental and social safeguard processes are fully integrated into project planning, implementation, and reporting. It will include detailed operational guidance on screening, risk categorization, preparation of Environmental and Social Impact Assessments (ESIAs), and implementation of Environmental and Social Management Plans (ESMPs). The POM will also define roles and responsibilities of the PMU, PIUs, and DPIUs in environmental and social compliance, outline reporting formats, and specify timelines for monitoring and audits. This alignment will ensure uniform application of safeguard measures across all project components, promote accountability, and strengthen the overall monitoring and evaluation (M&E) system under MLCIP.

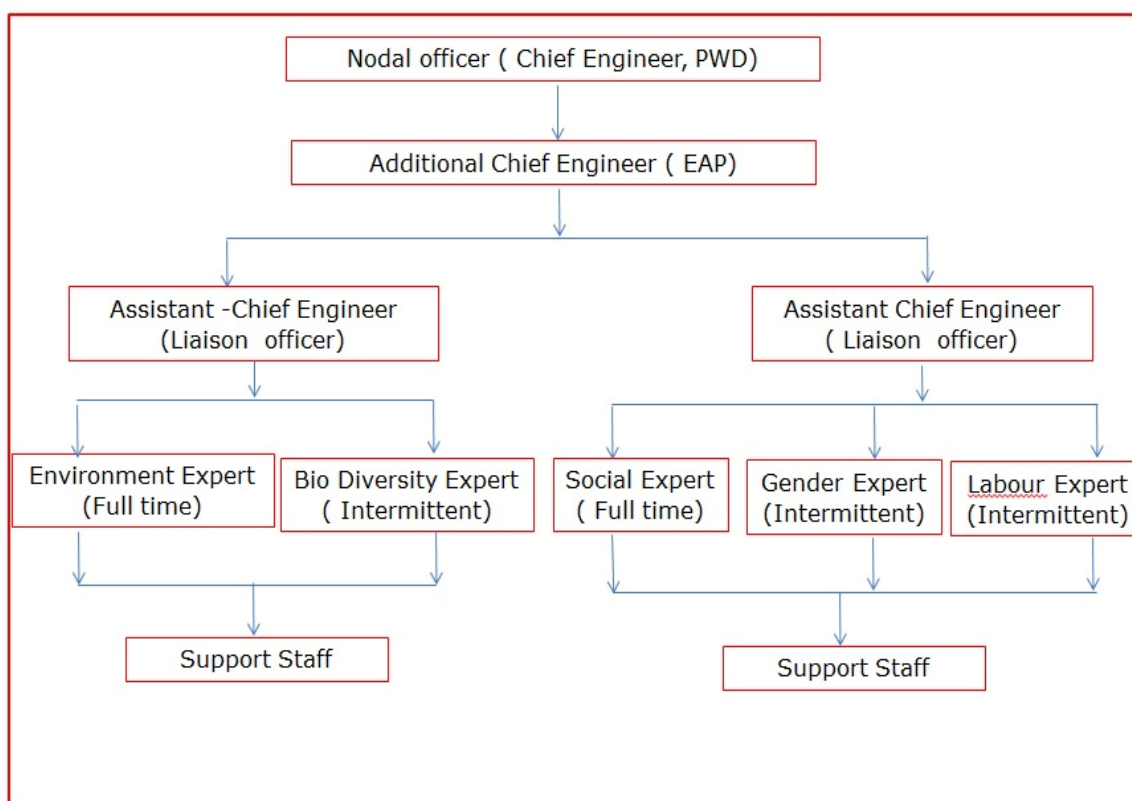
7.3 Institutional Arrangement for E&S Management

- **Project Management Unit (PMU):** MIDFC will constitute a PMU, drawing from the pool of officers that already have experience with the World Bank procedures. PMU will be responsible for management and coordination of project implementation.
- **Project Implementation Unit (PIUs):** MIDFC will be supported by PIUs in the Public Works Department (Roads & Bridges), DoA, and MBMA, GoM. There will be Nodal Officers at E&S at all the PIUs. The PIUs will have Nodal Officers with assigned charge for E&S. They will not only oversee the implementation of Environmental and Social Codes of Practice during the construction but will also support in the integration of the environmental and social aspects into the agrologistics and community interventions. Currently, there is limited E&S staff in the PIUs – especially at Agriculture and MBMA levels such capacities will be required (and client has agreed to mobilize them before implementation begins).
- **Environment and Social (E&S) Cell:** Established within PWD, headed by the Additional Chief Engineer (EAP), and supported by two Executive Engineers, Environmental Officer (full-time), Social Officer (full-time), Labour Expert (intermittent), Gender Expert (intermittent), Biodiversity Expert (intermittent) and support staff. The E&S Cell will provide support to MIDFC and PIUs across all project stages:
 - Preparatory: Screening, assisting ESIA preparation, integration into DPRs, assisting PMC/CSC for statutory clearances
 - Implementation: Site inspections, monitoring, capacity building
 - Post-Implementation: Audits, lessons learned
- **Project Management Consultant (PMC):** The technical support for implementation of project activities that are beyond skill-set of implementing agencies will be brought in by the PMC, with a team of experts/consultants, headed by the Team Leader (TL). The PMC will have one Environmental and one Social Officer to support the PMU/PIU in the implementation of the ESMF for the project and the ESMP for each sub project. The Environment and Social Specialist will verify on site the implementation of the ESMP before each bill is submitted to PMU with recommendation for payment.
- **Construction Supervision Consultant (CSC):** The CSC will provide day-to-day supervision of construction works, with Environmental Specialist, Social Specialist, to ensure contractor compliance with ESMPs, OHS, labour standards, gender inclusion, and social safeguards.

The implementation structure for the environmental and social management has been aligned to the institutional structure of the project. The E&S institution would help integrate the sustainability principle

in the ESMF into the construction of roads, bridges, ropeways, and Agrologistics systems, and the use of infrastructure in agriculture and logistics interventions planned under this project. The PMU, PIUs, PMC, CSC, and the organizations supporting this project would ensure the effective engagement of stakeholders and handhold them through the project cycle to ensure that the project makes positive environmental and social benefits. The Institutional structure for implementation of the Environmental and Social Safeguard is presented in **Figure 7-2**

Figure 7-2: Organizational Structure of the E&S Cell



7.4 Roles and Responsibilities of Key Staff and Entities

The implementation of the Environmental and Social Management Framework (ESMF) under the Meghalaya Logistics Connectivity Improvement Project (MLCIP) will be supported by a multi-disciplinary team across the Project Management Unit (PMU), Project Implementation Units (PIUs), and field divisions. The key responsibilities of staff and entities involved are summarized below:

Table 7-1: The Key Responsibilities of Staff and Entities

Designation	Institution / Entity	Core Roles and Responsibilities	Environmental & Social Responsibilities (ESF-linked)	Reporting / Coordination Line
Commissioner-cum-Project Director (PMU)	MIDFC / Government of Meghalaya	Provides overall leadership and strategic direction for MLCIP. Ensures policy alignment, resource allocation, and compliance with World Bank ESF and national/state laws. Chairs Project Steering Committee and oversees inter-departmental coordination.	Responsible for ensuring full ESF compliance, approval of ESMPs, oversight of land acquisition, labour management, stakeholder engagement, and reporting to World Bank.	Reports to Chief Secretary, GoM; Coordinates with PWD, MBMA, and World Bank.
Additional Project Director (MIDFC)	MIDFC	Supports the Commissioner in day-to-day project management, coordination, budgeting, and decision-making. Oversees PIUs and ensures timely implementation	Supervises implementation of ESMF, monitors environmental and social safeguard performance, ensures disclosure and grievance redress follow-up.	Reports to Commissioner-cum-Project Director; coordinates with PIUs, consultants, and PMU specialists.

Designation	Institution / Entity	Core Roles and Responsibilities	Environmental & Social Responsibilities (ESF-linked)	Reporting / Coordination Line
		and reporting.		
Project Director (MBMA)	Meghalaya Basin Management Agency	Leads agrologistics component implementation, ensures integration of agricultural value chains, market linkages, and climate-resilient infrastructure.	Ensures compliance with ESS5 (Land Acquisition), ESS7 (Indigenous Peoples), and ESS10 (Stakeholder Engagement). Guides community consultations and inclusion of women and tribal groups.	Reports to Additional Project Director, MIDFC; coordinates with Agriculture, Horticulture, and FPOs.
Nodal Officer Cum Project Director (Chief Engineer, PWD)	Public Works Department	Heads design, technical standards, and construction quality control for connectivity works. Integrates environmental and social considerations in DPRs and tendering.	Ensures engineering designs include environmental safeguards, slope protection, and labour-safety features. Supervises PIU-PWD E&S compliance.	Reports to Commissioner (PMU) and coordinates with PIU engineers and E&S Cell.
Additional Chief Engineer (EAP)	PWD (Externally Aided Projects Wing)	Supports coordination with contractors and	Monitors contractor adherence to	Reports to Chief Engineer; liaises with PMU and supervision

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Designation	Institution / Entity	Core Roles and Responsibilities	Environmental & Social Responsibilities (ESF-linked)	Reporting / Coordination Line
		consultants for schedule, budget, and compliance.	ESMP and safety standards. Provides quality assurance and periodic technical audits.	consultants.
Environmental Expert	E&S Cell, PIU (PWD/MBMA)	Leads environmental screening, scoping, and monitoring of subprojects. Advises on mitigation measures, pollution control, and natural resource management.	Ensures ESMP implementation, site inspections, contractor environmental performance, and reporting under ESS1 and ESS3.	Reports to Additional Chief Engineer (EAP) and Nodal Officer/Chief Engineer, PWD.
Social Expert	E&S Cell, PIU	Conducts social screening, stakeholder consultations, and supervises RAP/IPDP/ ESMP implementation. Ensures fair compensation and livelihood restoration.	Monitors ESS5, ESS7, ESS10 compliance, supports GRM operation, and prepares social audit reports.	Reports to Additional Chief Engineer (EAP) and Nodal Officer/Chief Engineer, PWD.
Gender Expert	E&S Cell	Provides	Implements	Advises and reports to

Designation	Institution / Entity	Core Roles and Responsibilities	Environmental & Social Responsibilities (ESF-linked)	Reporting / Coordination Line
(Intermittent)		technical input on gender inclusion, women's employment, and gender-based violence prevention strategies.	Gender Action Plan (GAP) and ensures compliance with ESS2 and ESS10.	E&S Cell, PIU
Labour Expert (Intermittent)	E&S Cell	Advises on labour welfare, OHS standards, and contractor compliance. Conducts periodic labour audits and site safety training.	Ensures compliance with ESS2, BOCW Act 1996, and national labour codes. Supports management of worker grievances.	Advises and reports to E&S Cell, PIU
Biodiversity Expert (Intermittent)	E&S Cell	Provides expertise on ecological sensitivity, biodiversity conservation, and compensatory afforestation plans.	Ensures compliance with ESS6 (Biodiversity Conservation), screens sites for ecological risk, and develops mitigation strategies.	Advises and reports to E&S Cell, PIU and coordinates with Forest Department.
Environmental Expert	Project Management Consultant (PMC)	Supports PMU and PIU in reviewing environmental documents,	Verifies compliance with ESS1, ESS3, ESS4, and national environmental	Reports to PIU and PMC Team Leader.

Designation	Institution / Entity	Core Roles and Responsibilities	Environmental & Social Responsibilities (ESF-linked)	Reporting / Coordination Line
		conducting audits, and quality assurance for ESMP implementation.	laws. Provides training inputs.	
Social Expert	Project Management Consultant (PMC)	Advises on social safeguards, assists in RAP/IPDP implementation, and monitors GRM effectiveness.	Ensures ESS5 and ESS10 compliance, conducts stakeholder engagement verification, and prepares review reports.	Reports to PIU and PMC Team Leader.
Project Director (DPIU)	Divisional/District PIU (PWD/MBMA)	Leads division/district-level implementation, supervises contractors, and coordinates community liaison. Ensures field-level compliance with ESMPs.	Implements safeguard measures locally, supervises labour conditions, safety, and community consultations.	Reports to PIU Project Director and PMU.
Environmental & Social Officer	DPIU	Supports Project Director (DPIU) in monitoring E&S compliance, maintaining	Implements ESMP at site, manages grievance records, and	Reports to DPIU Project Director and PIU E&S Cell.

Designation	Institution / Entity	Core Roles and Responsibilities	Environmental & Social Responsibilities (ESF-linked)	Reporting / Coordination Line
		records, and conducting field verification.	reports progress to PIU.	
Environmental Expert	Supervision Consultant	Conducts day-to-day site inspections, monitors ESMP compliance, and prepares environmental progress reports.	Ensures mitigation measures are implemented and recommends corrective actions for non-compliance.	Reports to PIU and PMC.
Social Expert	Supervision Consultant	Monitors social safeguards on-site, manages community engagement and grievance redress, and reports social performance.	Ensures adherence to RAP/IPDP commitments and ESS5 compliance.	Reports to PIU and PMC.
Project Director (Agriculture) / E&S Nodal Officer (Agrologistics)	Department of Agriculture / MBMA	Coordinates with MPWD in agrologistics subprojects, ensures integration of production, storage, and market infrastructure.	Ensures compliance with ESS3, ESS7, and ESS10. Oversees environmental management of cold-chain and market facilities.	Reports to Project Director (MBMA) and coordinates with District Agriculture Officers.

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Designation	Institution / Entity	Core Roles and Responsibilities	Environmental & Social Responsibilities (ESF-linked)	Reporting / Coordination Line
District Agriculture Officer	Department of Agriculture	Supports MPWD in agrologistics facilities at field level, supports FPOs, and supervises sustainability practices.	Ensures environmentally sustainable operations and equitable access for smallholders and women farmers.	Reports to E&S Nodal Officer (Agrologistics) and MBMA.
Contractor	Contractor EHS Team	Executes construction in compliance with technical and E&S requirements. Prepares Contractor's ESMP (C-ESMP) and maintains OHS measures.	Ensures compliance with ESS2, ESS3, ESS4, and ESS10, manages worker welfare, waste disposal, and safety.	Reports to DPIU/PIU; supervised by Supervision Consultant.

Under the institutional arrangement for MLCIP, strict enforcement mechanisms ensure accountability in environmental and social (E&S) compliance. A 1% retention from each contractor bill is applied for E&S non-compliance. The issue must be rectified within two billing cycles, failing which the amount is forfeited. More than five forfeitures trigger contract termination and encashment of the Environmental and Social (ES) Bank Guarantee by the PMU.

7.5 Grievance Redressal Mechanism

Effective grievance redressal mechanisms ensure good governance, accountability, and transparency in managing and mitigating the environmental and social issues of a particular project. This consists of defining the process for recording/receiving complaints and their redressal in respect of environmental and social matters.

An integrated system will be established with Grievance Redressal Cells (GRCs), with necessary officers, officials, and systems at MIDFC (PMU). Grievances, if any, may be submitted through various mediums, including in person, in written form to a noted address, e-mail, or through direct calls to concerned official/s. The Social and Environmental Expert within PMU shall be responsible for coordination of grievance/complaints received.

The grievance redress mechanism should be in place at the time of initiating the implementation of R&RAP and civil construction activities in the project area. A platform for grievance redressal should be organized and its regular meetings may be conducted so as to allow people to put forth their grievances. It will help the appropriate authority to find solutions and amicably address the issues. The project, apart from web-based mechanism, will have a two-tier grievance redressal mechanism, i.e., (1) at the project site level, (2) State level (PMU level) .

Web-based grievance mechanism: MIDFC website will include a link where affected person(s) can register their complaints online. A telephone number will also be on the website of MIDFC and the project sites, so that the general public can register their complaint with the PMU office. In case of grievances received through a toll-free number or web-based system, a person should be made in-charge of screening and resolution of the same/communicating with the concerned divisions for resolution of the same. The person in-charge, based on the nature of the complaint, should forward the same to the concerned official. A ticket or a unique number will be generated for all such complaints. The complainant should follow up based on that unique number. All calls and messages should be responded to within 15 days. If a response is not received within 15 days, the complaint should be escalated to the Project Director.

Tier I: Under this project, the Village representatives nominated by the Village Council and community-level organizations will function as nodal point for the first-tier grievance redress mechanism. The local Headman will serve as the focal point responsible for receiving, documenting, and addressing complaints and feedback from stakeholders.

The Tier I Grievance Redress Cell shall operate under the Chairmanship of the Village Head or any representative nominated by the Village Councils and will include the Resident Engineer (representing the Engineer), Environmental and Social (E&S) Experts of Construction Supervision Consultant (CSC), Environmental/Social Officers and Assistant Engineers from the Divisional Project Implementation Unit (DPIU), representatives from relevant line departments, and representatives from local institutions.

Upon receipt of a grievance, the focal point shall review and assess the complaint for resolution at the local level. If the grievance or dispute cannot be satisfactorily resolved at the project level within fifteen (15) days from the date of submission, the matter shall be escalated to the Project Management Unit (PMU)/ State Level for further review and mediation.

Tier II: If the aggrieved person is not satisfied with the decision of the site-level Grievance Cell, the grievance may be escalated to the PMU/State-level Grievance Redress Cell (Tier II). The Tier II Cell shall be chaired by the Secretary, Department of Planning, and shall include the Chief Engineer, Project Director,

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and Social Development Expert of the PIU as members. The State-level Grievance Redress Cell shall review the case and provide its decision or recommendations within fifteen (15) days of receiving the grievance.

If the aggrieved person is not satisfied with the decision of the State-level Grievance Cell, they shall have the right to seek redress through the judiciary. The Project Proponent shall extend all necessary assistance and support to the aggrieved person in pursuing the matter before the judicial authorities.

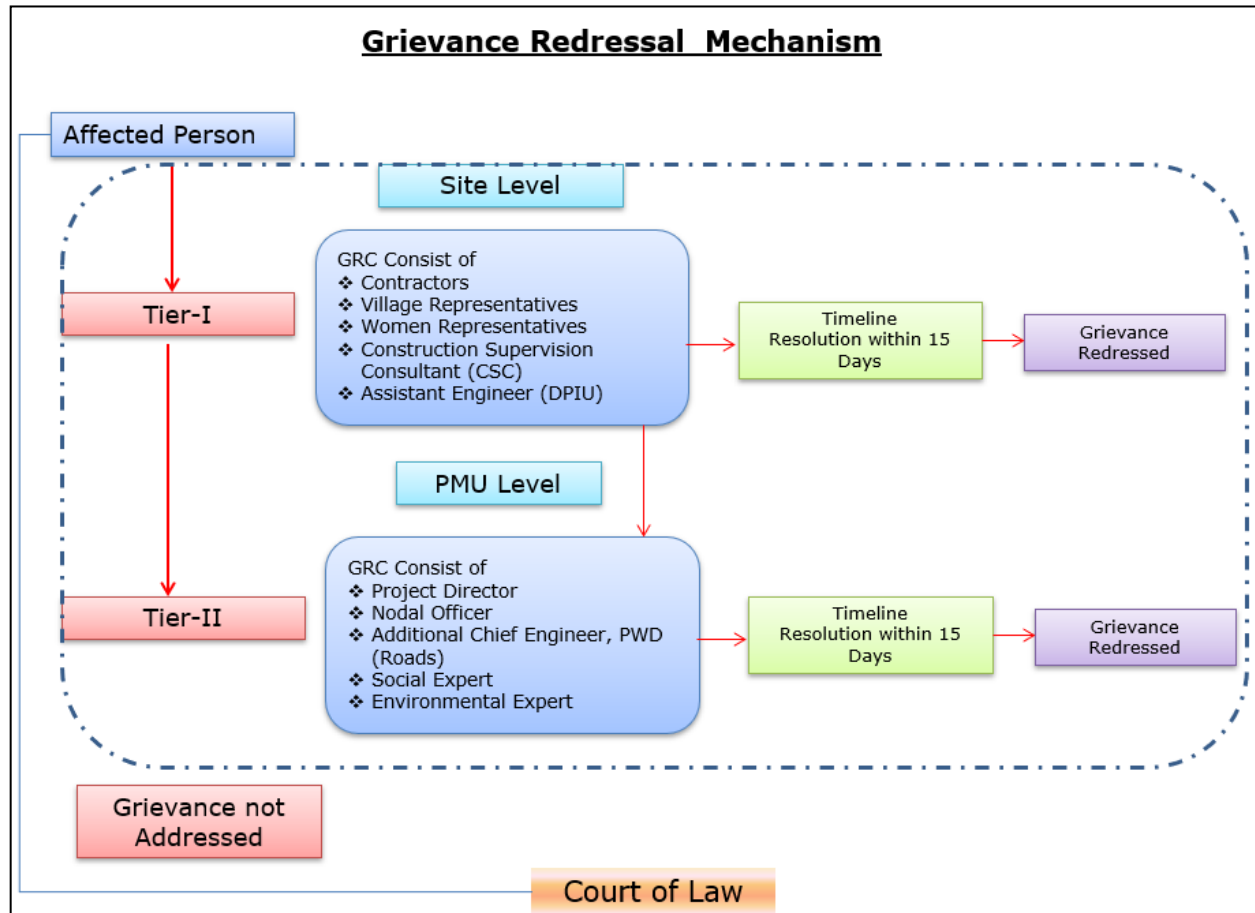
Grievance Redressal Mechanism (GRM) Flowchart

The following flowchart illustrates the Two-Tier grievance redressal mechanism with responsibilities and timelines for resolution.

Table 7-2: Two-Tier grievance redressal mechanism

Tier I: Project Site Level	Responsibility: Village Head/Representative of the Village Council Timeline: Resolution within 15 days If unresolved → Escalate to PMU (Tier II)
Tier II: State Level (PMU)	Responsibility: Secretary Planning, Chief Engineer, Project Director, Social Expert Timeline: Resolution within 15 days

Figure 7-3: Grievance redressal Mechanism



(A telephone number will also be on the website of MIDFC and the project sites, so that the general public can register their complaint with the PMU office)

7.5.1 Expanded Grievance Redressal Mechanism Details

To ensure the effectiveness and accessibility of the grievance redressal mechanism, it's crucial to elaborate on specific aspects of its implementation and operation. This includes detailed procedures, communication strategies, monitoring mechanisms, and capacity-building initiatives. Detailed Procedures for Grievance Submission and Processing

i. Multiple Channels for Grievance Submission:

In-Person: Designated officers at the project site and PMU office will be available during specified hours to receive grievances directly from affected persons. A standard form, available in local languages, will be provided to facilitate the submission process. The officer will assist individuals who may have difficulty filling out the form.

Written Submission: A dedicated postal address will be established for receiving written grievances. The address will be widely publicized through community meetings, public notices, and the project website.

Electronic Submission: The MIDFC website will feature an email for online grievance submission portal. This portal will allow individuals to submit complaints in their preferred language. Upon submission, an automated acknowledgment will be sent to the complainant.

Toll-Free Helpline: A toll-free helpline will be operational during working hours, staffed by trained operators who can record grievances and provide information on the redressal process. The helpline number will be prominently displayed at project sites and in public areas.

Table 7-3: Details of contact for Grievances

Description	Contact details
Company:	PWD, Meghalaya
To:	Chief Engineer-cum-Nodal officer
Address:	HV9P+GFJ, Lachumiere, Shillong, Meghalaya 793001
E-mail:	esmlcip@gmail.com
Website:	http://megpwd.gov.in/contacts.html
Telephone:	Tel: 0364-3572466
Fax:	-

ii. Grievance Logging and Acknowledgment:

All grievances received through any channel will be logged into a centralized Grievance Management System (GMS). The GMS will record the date of receipt, complainant details, nature of the grievance, and the assigned tracking number,

Within three working days of receiving a grievance, the complainant will be sent an acknowledgment letter or email, confirming receipt and providing the tracking number for future reference.

iii. Grievance Screening and Assessment:

The grievance focal point will screen all logged grievances to determine their eligibility and relevance to the project. Grievances that are clearly outside the scope of the project or are frivolous will be rejected, with a clear explanation provided to the complainant.

Eligible grievances will be assessed to determine their severity, urgency, and complexity. This assessment will inform the prioritization and allocation of resources for investigation and resolution.

iv. Grievance Investigation:

The grievance focal point will assign the grievance to the appropriate officer or department for investigation. The investigation will involve gathering information from relevant sources, including the complainant, project staff, community members, and technical experts.

The investigation will be conducted in a fair, impartial, and transparent manner. The complainant will be kept informed of the progress of the investigation and will be given the opportunity to provide additional information or clarification.

v. Grievance Resolution:

Based on the findings of the investigation, the grievance focal point will develop a proposed resolution, in consultation with relevant stakeholders. The resolution will aim to address the root cause of the grievance and provide a fair and equitable outcome for all parties involved.

The proposed resolution will be communicated to the complainant, along with an explanation of the rationale behind it. The complainant will be given the opportunity to accept or reject the proposed resolution.

vi. Grievance Closure:

If the complainant accepts the proposed resolution, the grievance will be closed, and the outcome will be documented in the GMS.

If the complainant rejects the proposed resolution, the grievance will be escalated to the next tier of the grievance redressal mechanism.

7.5.2 World Bank Grievance Redressal System

The World Bank's Grievance Redress Services (GRS) provides a confidential mechanism for individuals and communities affected by World Bank financed projects to submit complaints regarding actual or potential harm. In the context of Meghalaya, integration of such a system must consider the state's complex socio-ethnic landscape.

Although community consultations did not report active social conflicts, secondary sources indicate the presence of inter-tribal tensions. Since its formation in 1972, Meghalaya has experienced ethnic conflicts between indigenous tribes and settler non-tribal communities. The dominance of business establishments, labor opportunities, and other economic sectors by settlers primarily economic migrants from Bangladesh, Nepal, and other parts of India created anxiety among the native population, culminating in three major ethnic riots between tribal and non-tribal communities.

By the late twentieth century, relations between ethnic communities showed relative improvement. While interactions between indigenous tribes and settler communities have largely stabilized, emerging tensions have shifted to dynamics among indigenous tribes themselves. This evolving context highlights the importance of a responsive grievance redress system, such as the GRS, that is sensitive to inter-tribal dynamics and ensures that all affected individuals can safely report concerns related to development projects.¹⁰

¹⁰ Note: please visit <http://www.worldbank.org/GRS> / www.inspectionpanel.org. For information on how to submit complaints to the World Bank Inspection Panel

7.5.3 Conflict Resolution through Grassroots Institutions

In Meghalaya, conflicts are often resolved within tribal communities through grassroots institutions, guided by uncodified customary laws and practices. Among the Khasis, the Dorbar Shnong, and among the Garos, the Nokma, function as quasi-judicial bodies to settle disputes, including those related to land. Decisions made by these institutions are widely regarded as legitimate and are generally respected and adhered to by community members, reflecting the continued importance of traditional governance systems in maintaining social harmony.

7.5.4 Communication Strategy

Community Awareness Campaigns: Conduct regular community awareness campaigns to inform local residents about the grievance redressal mechanism, its purpose, and how to access it. These campaigns will utilize a variety of communication channels, including community meetings, public notices, radio broadcasts, and social media.

Information Dissemination: Distribute information leaflets and posters in local languages, outlining the grievance redressal process, contact details, and timelines.

Stakeholder Engagement: Engage with local leaders, community representatives, and civil society organizations to promote awareness and understanding of the grievance redressal mechanism.

Website and Social Media: Maintain an up-to-date website and social media presence to provide information on the grievance redressal mechanism, including frequently asked questions, contact details, and progress updates on grievance resolution.

7.5.5 Monitoring and Evaluation

Grievance Tracking System: Implement a robust Grievance Management System (GMS) to track all grievances received, their status, and the outcomes of the redressal process. The GMS will generate regular reports on grievance trends, resolution times, and complainant satisfaction.

Regular Audits: Conduct regular audits of the grievance redressal mechanism to assess its effectiveness, identify areas for improvement, and ensure compliance with established procedures.

Complainant Feedback: Collect feedback from complainants on their experience with the grievance redressal mechanism. This feedback will be used to improve the quality of the service and ensure that it is meeting the needs of the community.

Key Performance Indicators (KPIs): Define and monitor key performance indicators (KPIs) to measure the effectiveness of the grievance redressal mechanism. These KPIs may include:

- Number of grievances received
- Percentage of grievances resolved within the target timeframe

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- Complainant satisfaction rate
- Number of grievances escalated to higher tiers

7.5.6 Capacity Building

Capacity-building activities will include training grievance officers, creating awareness among community members on how to use the GRM, and guiding local leaders in resolving concerns at the community level. Further details are provided in the Capacity Development Chapter.

7.5.7 Integration with Project Management

Grievance Redressal as an Integral Part of Project Planning and Implementation: Integrate the grievance redressal mechanism into all stages of the project cycle, from planning and design to implementation and monitoring.

Coordination with Project Teams: Foster close coordination between the grievance redressal team and other project teams, such as the environmental and social safeguards team, the community engagement team, and the construction team.

Regular Reporting: Include regular reports on grievance redressal activities in project progress reports.

By implementing these detailed procedures, communication strategies, monitoring mechanisms, and capacity-building initiatives, the project can ensure that the grievance redressal mechanism is effective, accessible, and responsive to the needs of the community. This will contribute to building trust, promoting social harmony, and ensuring the long-term sustainability of the project. The Grievance Submission Form is given as **Annexure VII**

8 Capacity Development and Training

Training and capacity building on E&S issues under the Meghalaya Logistics and Connectivity Improvement Project (MLCIP) will be done by the implementing agencies, that is, the MPWD, as well as the participating departments such as DoA and MBMA who will provide technical input to the MPWD. The MPWD has implemented World Bank-supported projects like the MITP(P168097) in the past and therefore has some institutional understanding of the Bank's E&S policies. However, the MITP was under the earlier Safeguards Policies, therefore, a reorientation is required on the ESF and its requirements.

The training programs will include an orientation on the project concept and components for all project stakeholders, trainings on climate-resilient infrastructure design, road safety, and logistics efficiency for greater connectivity and market access, targeting community institutions, and stakeholders to ensure inclusive planning and their active participation in implementation, apart from overall awareness and training on the ESMF of the project to be able to fully manage the E&S risks under the project. Several capacity building approaches will be adopted by MPWD for improving the E&S performance, including institutional strengthening, workshops, village/community meetings, as well as group discussions with targeted stakeholders.

The capacity building support proposed to be provided to various project stakeholders will include, but not be limited to, the following E&S-related key areas:

- Overall Orientation on the Project objectives and activities.
- Training of the key staff of PMU, PIU and E&S Cell on the World Bank ESF, the project ESMF and the E&S requirements for the project and their role in ESMP implementation.
- Orientation trainings of officials of MPWD, MIDFC, DOA and MBMA on the ESMF, the E&S documents prepared and their implementation responsibilities.
- Training of implementing agencies on Monitoring and reporting responsibilities.
- Trainings of field staff of departments and CSOs/NGOs/Technical agencies engaged by the project on E&S compliance in road and bridge works.
- Trainings of field staff and contractor personnel on fair working conditions for workers, including Occupational Health and Safety (OHS) related risk management and incident reporting.
- Orientation of field staff of departments and CSOs/NGOs/Technical agencies/Representatives of Village Councils on inclusive participation of women and vulnerable and marginalized groups in project activities and their representation in decision-making bodies.

8.1 Suggested Topics:

- E&S Risk and Management Measures.
- Compliance to the Labour Regulations.
- Living and Working Conditions
- Occupational Health and Safety

- Pollution Prevention and Management, Monitoring and Reporting
- Community Health and Safety
- Implementation of the Biodiversity Management
- Stakeholder Engagement, participatory planning and implementation
- Grievance Mechanisms
- Sexual Exploitation and Abuse/Sexual Harassment
- Using Technology for E&S Monitoring and Reporting
- Social Inclusion
- Financial Literacy and Market Access for SHGs
- Going beyond E&S Risk Management to E&S Performance Enhancement.

These topics form the core curriculum for all training modules, ensuring full compliance with World Bank ESF standards and the project's ESMF. Delivery will incorporate practical case studies, field-based simulations, and interactive tools to strengthen understanding and support direct application during planning, implementation, and monitoring.

The capacity building strategy of the project will have the following elements:

- **Training of Direct Workers:** Before the effectiveness of the project, the PMU and PIU staff associated with the preparation and implementation of the ESMF and other E&S instruments would be trained on the ESF and project-related E&S requirements at Administrative Staff College of India (ASCI), Hyderabad or reputed state-based institutions and NGOs. This will focus on activities to be taken during different stages of the operation.
- **Training of Indirect Workers:** Since the Environmental Specialist and the Social Specialist of the PMU are trained experts in their own discipline, they do not need to undergo basic training on E&S risk management, but would need specialized training, especially related to climate-resilient infrastructure, biodiversity management, bio-engineering in hilly terrains, road safety, and logistics integration, for which appropriate training institutions such as Wildlife Institute of India / National Environmental Engineering Institute / National Safety Council etc. would be identified and participants sent for training under the project.
- **Training of Division/ District Workers:** The District and Divisional staff (DoA, MBMA, AEs of different divisions) other than the Nodal E&S Officer would be trained on the ESMP implementation, project GRM, monitoring and reporting requirements, and other mitigation measures proposed by the different project E&S instruments. Such trainings will be carried out by the E&S Nodal Officers and the Environmental and Social Specialist at the PMU.
- **Training of Contractor Staff:** All the Key personnel of the Contractors will need to undergo training on the ESMP, the E&S precautions and diligence to be taken, app based real-time reporting of E&S issues, the key actions related to E&S management under the project, the contractual obligations of the contractor related to works and labour management, including the Code of Conduct.

- **Refresher & Specialised Training:** Comprehensive refresher training on PPE compliance, hazard recognition, emergency preparedness, and safety measures specific to road and bridge construction in hilly regions. Additionally, interactive training will focus on prevention, response protocols, survivor-centered reporting, and establishment of Internal Complaints Committees (ICCs) in accordance with the POSH Act.
- **Self-Help Groups Training:** Dedicated workshops for Self-Help Groups (SHGs) will focus on leadership in market access and logistics, financial literacy for project benefits, grievance redressal, and digital monitoring tools. Training will include role-playing for stakeholder engagement, bylaw drafting for fair access, and monitoring connectivity improvements. Facilitated by NGOs with proven SHG expertise in Meghalaya such as Pla Tangka Cooperative Society (PTCS), Meghalaya Institute of Governance (MIG) or other reputed NGOs such as PRADAN, AKRSP etc, these sessions will aim to empower women-led SHGs as key agents in sustainable connectivity and project oversight.

The stakeholder-wise and phase-wise key topics and issues to be taken up as part of capacity building support under MPWD are presented in the table below:

Table 8-1: E&S Capacity Development Plan

Project Stage	Community Representatives	Staff of Support Organizations (NGOs/CSOs)	Project Functionaries (MPWD/DOA/MBMA/MIDFC)
Pre-planning	<p>Social mobilization through Dorbar Shnong, Nokmas, VCs</p> <p>Understanding project objectives & benefits</p> <p>Inclusion of women, IPs, and vulnerable households</p> <p>Awareness on GRM design & access mechanisms</p>	<p>ESMF orientation & participatory planning approach</p> <p>Data collection & simplifying logistics info for community use</p> <p>GRM support at village/district level</p>	<p>ESMF roles and responsibilities</p> <p>Screening of E&S risks & sensitivities</p> <p>Introduction to E&S instruments (ESCP, SEP, RPF, LMP, BMP etc.)</p>
Planning & Design	Engagement in Village and Inter-Village Plans	Support in preparing gender-responsive	ESIA support and documentation

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Project Stage	Community Representatives	Staff of Support Organizations (NGOs/CSOs)	Project Functionaries (MPWD/DOA/MBMA/MIDFC)
	<p>Dissemination of logistics connectivity improvements</p> <p>SEA/SH prevention & escalation guidance</p> <p>GRM linkage with State-level GRC</p>	<p>byelaws for market/logistics use</p> <p>Facilitation of equitable inclusion in planning.</p>	<p>SEA/SH protocols and ICC formation (POSH Act compliance)</p> <p>RAP implementation roles and relocation of assistance</p> <p>Biodiversity & hill-ecosystem considerations in design</p>
Construction & Implementation	<p>Conduct of stakeholder meetings ensuring full participation</p> <p>Support for conflict resolution and inter-village coordination</p> <p>Community-based monitoring of works</p> <p>Reporting safety and E&S issues to authorities</p>	<p>OHS, CHS & compliance monitoring</p> <p>Support in community consultations during construction</p>	<p>ESMP implementation oversight</p> <p>Contractor compliance (labour, OHS, CoC, waste mgmt. etc.)</p> <p>Road safety risk mitigation</p> <p>GRM case resolution & documentation</p>
Monitoring	<p>Community performance tracking & social audits</p> <p>Documentation of benefits, issues, lessons</p>	<p>Support digital MIS reporting & transparency in results</p>	<p>Monitoring & reporting through app-based tools</p> <p>Closure audits and knowledge transfer to GoM institutions</p>

E&S capacity development calendar is prepared below:

Disclaimer: The is a draft version and is being reviewed by the World Bank.

Table 8-2: E&S capacity development calendar

Training Themes & Core Focus Areas	Target Stakeholders	Delivery Mode	Responsible Agencies
YEAR 1			
Project Orientation: ESF/ESMF roles & responsibilities	PMU, PIU (MPWD, MIDFC, DOA, MBMA)	Workshop	ASCI + PMU E&S Cell
Participatory & Inclusive Planning; Stakeholder Engagement, inclusion of women and vulnerable groups	Community Reps (Dorbar Shnongs, Nokmas, VCs), NGOs/CSOs	Site/Village level Workshops	MIG / CEE
E&S Risk Assessment, ESMP Documentation & Reporting	PMU/PIU, Divisional Engineers	Hands-on Training	ASCI / Specialists
GRM Operation & SEA/SH Prevention, ICC Setup	PMU/PIU; Community Representatives	Demonstration and Training	PMU E&S Cell / PRADAN/MIG
RPF, RAP Implementation, PAP Support & Land Compliance	PMU and District Authorities	Focus Sessions	PMU E&S Cell/MIG
Climate-Resilient infrastructure Design & Bio-engineering	Engineers & Technical Staff	Technical Training	NEERI / TERI SAS
Orientation Workshop: ESF, OHS, SEA/SH, GRM, Biodiversity	All Stakeholders	Short Refresher Courses	PMU and All Experts

Disclaimer: The is a draft version and is being reviewed by the World Bank.

Training Themes & Core Focus Areas	Target Stakeholders	Delivery Mode	Responsible Agencies
YEAR 2			
Biodiversity Conservation & Habitat Management (BMP)	PMU/PIU, E&S Cell	Field Workshop	Wildlife Institute of India
OHS & Labor Management, Incident Reporting, CoC	Contractors, Safety Officers, PIU site engineers	On-site Demonstrations	National Safety Council
Pollution Prevention and management, Waste reuse and Management	Contractors & PIU Staff	Site Audits and Training	NEERI
Digital Monitoring & Real-Time Reporting Tools	PIU and Contractor E&S Teams	Practical Training	PMU/Tech Agency
Refresher: ESF, OHS, SEA/SH, GRM, Biodiversity	All Stakeholders	Short Refresher Courses	PMU and All Experts
YEAR 3			
OHS & Labor Management, Incident Reporting, CoC	Contractors, Safety Officers, PIU site engineers	On-site Demonstrations	National Safety Council
Community Health & Safety, Traffic & Emergency Response	Contractors and Community Representatives	Workshop & Awareness Campaigns	MPWD and Road Safety Expert

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Training Themes & Core Focus Areas	Target Stakeholders	Delivery Mode	Responsible Agencies
Conflict Resolution & Community Monitoring	Community Reps, NGOs	Training and demonstration	MIG / CEE
SHG Empowerment: Financial Literacy & Market Access	SHGs (Women-led)	Workshops/ Exposure Visits	PKCS / MBMA / NGOs
Refresher: ESF, OHS, SEA/SH, GRM, Biodiversity	All Stakeholders	Short Refresher Courses	PMU and All Experts

List of Agencies Recommended for On-boarding for Capacity Development on E&S

1. Administrative Staff College of India, Telangana – WB-approved courses on E&S management
2. National Safety Council – OHS training for construction in hilly areas
3. Wildlife Institute of India (WII), Dehradun – Biodiversity and habitat management
4. National Environmental Engineering Research Institute (NEERI), Nagpur – Pollution control and engineering
5. Centre for Environmental Education (CEE), Ahmedabad – Stakeholder engagement and inclusion
6. PRADAN (Professional Assistance for Development Action), Delhi – SHG empowerment and gender training
7. TERI School of Advanced Studies, New Delhi – ESG and resource efficiency
8. Indian Institute of Management Ahmedabad (IIMA) – Project management and ESF compliance
9. Meghalaya Institute of Governance (MIG), Meghalaya – Stakeholder Engagement and gender training.
10. The Pla Tangka Cooperative Society (PTCS), Meghalaya – SHG training and structured financial literacy and market access support.

9 Monitoring and Reporting Framework

To ensure that the Environmental & Social (E&S) risks are managed effectively, Monitoring, Reporting, and Review functions need to function effectively. The Monitoring & Evaluation(M&E) framework of the ESMF is designed to assess the progress and achievements made in line with the identified risks and mitigation measures. The M&E will enable decision-makers to review the E&S performance and take up course corrections through a feedback loop. The instruments which would be used for monitoring and reporting are:

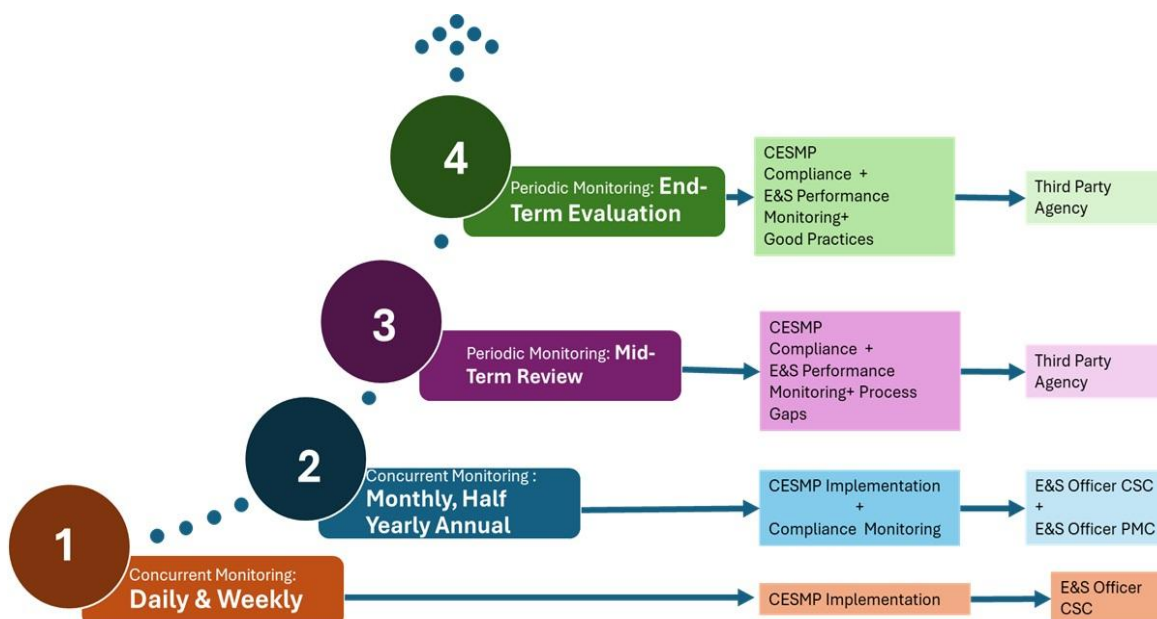
- The project Environmental and Social Commitment Plan (ESCP) will provide all the categories, timelines and responsibilities of reporting.
- As per Environmental and Social Incident Response Toolkit (ESIRT) guidelines of the World Bank, within 24 hours of incident reporting followed by a root cause analysis and a corrective action plan.
- In addition, an E&S mid-term and end-term evaluation is recommended to capture key challenges, key lessons, good practices, stories of change etc.- inputs on which will be provided in the Project Operations Manual.

9.1 Reporting Framework

Effective monitoring and supervision would require regular reporting of the implementation of the E&S Management measures by the contractor. The E&S Non-conformance / non-performance need to be flagged and followed up on a regular basis so that performance improves. Repeated non-conformance / non- performance needs to be brought to the notice of decision makers for contractual action and management decision. These aspects will be monitored and reported through the Concurrent Monitoring and Reporting.

The more strategic aspects of E&S Performance Monitoring, Gap Analysis, and documentation of good and bad practices which would guide the management to have a review and provide direction will be done through the Periodic Monitoring. The Mid-Term and End-Term audits will be carried out through specialized Third- Party Agencies to be hired under the project. The findings and recommendations of these studies along with the analysis of the concurrent monitoring will be used by the Officers of the E&S Cell to brief the Management during the review. The schematic representation of the reporting framework is presented below in **Figure 9-1**

Figure 9-1: E&S Performance Monitoring Framework



The Safeguards Officers of the Consultants will coordinate with the E&S Nodal officer at the PIU for the Monthly reporting. The reporting protocol and the primary focus areas of each of these are presented below:

9.2 Concurrent Monitoring & Reporting

The concurrent monitoring and reporting are primarily to monitor and track the implementation of the ESMP's. The analysis of the information gathered will help in the periodic monitoring and reporting.

- Daily reporting:** Contractor's E&S Officer shall report on the performance of the CESMP during the construction. These will essentially include the progress and performance of the different elements of the ESMP. The Environmental and Social Officer of the CSC and the PMC will work with the Contractor to ensure that these deficiencies are brought to compliance. The system will also be able to track non-compliances which are open for an extended period and will report the same back to Management for contractual action. The officers of the E&S Cell will also receive notification of the critical elements which need attention. Similarly, the daily activities of R&R will be reported by the AE of the respective Division (E&S Designated Officer) and will be collated by the Social Officer of the E&S Cell.
- Weekly Reporting:** The E&S Officer, CSC or the officials of PMC, PMU on the site will visit each site and provide their observations on ESMP Implementation in real-time on an app discussed earlier. The monitoring indicators mentioned in the Template ESMP of the ESMF and the ESMP in the ESIA will be used for Daily and Weekly Reporting.

- **Monthly Report:** The E&S Officer of the CSC shall also carry out monthly monitoring for each of the contract packages and report the findings through the app. The Monthly Monitoring will, in addition to ESMP compliance, shall report the compliance monitoring. The aspect for reporting is presented in the table below. The E&S Officer of the Contractor will also compile the E&S Observations and report the same as per the contractual requirements.
- **Six Monthly / Annual Report:** The Six Monthly/ Annual report should highlight a) status of the implementation of the ESMP, b) Status of implementation of RAP c) Key areas of concern which have been identified in the Monthly report d) trend analysis of the non-conformances e) training carried out, f) outstanding areas of concern/ non-compliance/non-conformance, g) Accident and incident reports, h) KPI for OHS implementation e.g. including number of , training, Toolbox talks, non-compliances, near -miss reported etc f) areas where additional support is required. This report will be compiled and submitted to the Bank before the mission or within 15 days of the closure of six months from the date of effectiveness.

The reporting would be through a real-time reporting system to be developed under this project. This will be an app-based geotagged system which will help in easy monitoring and tracking of the non- compliance or non-conformance.

9.3 Periodic Reporting

These would be specialized reports carried out by the Third- Party agencies. These will provide the strategic insights and would be helpful in monitoring the E&S Performance.

- **Mid Term Audit:** The Audit will review the E&S performance and ensure that the E&S measures suggested in the CESMP are implemented. It will primarily assess the compliance of the measures suggested in the different safeguards' documents prepared. A mid-term audit shall be carried out after the implementation 1.5 years but 2.5 years before the date of effectiveness. This Audit will also help in ascertaining that the E&S Process in the project is active and effective in mitigating risks. It would also help to identify issues especially the recurrent ones in the process, good practices, and required actions by analysing the records generated during the concurrent monitoring. The consultants will also undertake a site visit to at least 50% of the contract packages, hold meaningful consultations with different stakeholders. The findings of the Report will be presented to the Management. The reports will be shared with the Divisions. The key issues will also be presented in the refresher training. The E&S Cell will also help the division to draw up an Action Plan and help them implement the same so that systemic issues can be ironed out.
- **End Term Audit:** The end-term evaluation of the ESMP implementation will identify issues, good practices and make recommendations for strengthening E&S management of the PWD, DoA and MBMA in the future operations. The end- term evaluation will be undertaken at the end of the 3.5 year of implementation period or when the sub-project civil construction are nearing completion whichever is earlier. The audit will review the implementation status of recommendations /mitigation measures and activities proposed in the ESMF/ESMP : i) assess the major

environmental non-compliances and suggest a corrective action to bring them to compliance , ii) identifies deviations in implementing environmental measures, if any, iv) positive measures taken, v) suggestions for further improvement of social and environmental management practices, vi) to identify constraints, if any, in ensuring compliance to the measures outlined in the ESMP. The suggested areas to be covered during mid and end-term audits and the ToR is presented in are provided in in the **Annexure IX (A)**

These audit reports will be shared with all implementing agencies including the World Bank. In addition, the following reporting will also be carried out as per the bank requirement:

- Incident reporting within 24 hours (See **Annexure IX (B)** on ESIRT)
- Environmental and Social (ES) Metrics for Progress Reports for Contractor is provided below as **Annexure IX (C)**

9.4 Responsibilities for reporting

The key environmental and social aspects that have significance for the project in roads, bridges and Agrological component will be monitored periodically internally by the PMU and respective PIU's. It will help the project identify compliance to national / state benchmarks / safeguards' measures identified in the ESMF.

Table 9-1: Distribution of responsibility

Type of Monitoring	Contractor's Monitoring	District level Monitoring		PIU/PMU Monitoring	
Responsibility	Contractors E&S Personnel	E&S Nodal Officer, E&S Officers (CSC/PMC)	EEs, Ses, Non-E&S Specialists	E&S Specialist PIU	Non-E&S Members
Frequency	Daily	Weekly (minimum)		Monthly (one site minimum)	
Areas to be Covered: ESMP	ESMP Implementation, OHS Issues on Site, CHS Issues, Labour Conditions	ESMP non- conformance, OHS Noncompliance, CHS non-compliances, Labour Working Conditions, Contractor	OHS risk, CHS risk	ESMP violations, OHS and CHS violations, Labour Working conditions Violations	OHS and CHS risks

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Type of Monitoring	Contractor's Monitoring	District level Monitoring		PIU/PMU Monitoring	
		Camps			
Areas to be Covered ESMF		Safety Process non-conformance, ESMP process, Non-conformance Implementation of Specialized Plan		Safety Process violations, ESMP process violations, Implementation of Specialized Plan	
Reports	Dashboard for E&S Nodal Officer of District	Dashboard of E&S Specialist of PIU		Dashboard of Additional Project Director/ Project Director	

E&S Officer at the PIU would be responsible for monitoring the implementation of the process. Deviation in the process would be made known to the Additional Chief Engineer (EAP) and then onward to the Nodal Officer/ Chief Engineer PWD for immediate action. Designated E&S Officers and the CSC/PMC E&S specialist who would also travel to site on a regular basis will also review the project activities.

9.5 Mechanisms for reporting

Monitoring will be technology driven so that real-time information is available to, District/ division PIUs and the PMU/ PIU. An app-based E&S Monitoring and Evaluation system will be used for the project. The Monitoring Indicators developed in the ESMP will be tracked through these monitoring tools. These would be made compatible for the different staff and stakeholders to report. Thus, the Monitoring and Reporting system would source information not only from the Environmental and Social Professional in the team i.e. Contractor, CSC, PMC and E&S Cell but also form the other members of the team including PWD officials.

10 Environmental and Social Management Framework (ESMF) Budget

The implementation of the Environmental and Social Management Framework (ESMF) requires adequate financial resources to ensure effective integration of environmental and social safeguards throughout the project life cycle. The budget outlined herein provides an estimate of the costs associated with implementing, monitoring, and capacity-building activities necessary to achieve compliance with national regulations and World Bank Environmental and Social Standards (ESSs).

10.1 ESMF Budget

The Environmental and Social Management Framework (ESMF) Budget for the Meghalaya Logistics and Connectivity Improvement Project (MLCIP), amounting to approximately INR 3,60,00,000.00, ensures adequate financial and institutional resources for effective safeguard implementation. It supports recruitment of Environmental, Social, Labour, Gender and Biodiversity Specialists at the PMU and PIU levels, alongside capacity-building programs to strengthen institutional performance. The budget covers training, stakeholder awareness, and information dissemination to enhance transparency and community engagement. It also allocates funds for systematic monitoring, third-party audits, and maintenance of a digital Environmental and Social Information Management System (ESIMS). Specialized studies addressing biodiversity, climate risks, and Indigenous communities are included to guide adaptive management. Operational expenses of the E&S Cell at the PMU sustain coordination and supervision across all implementing agencies. Collectively, the ESMF budget provides a robust financial framework to ensure compliance, accountability, and sustainable infrastructure development in Meghalaya's logistics and agrologistics sectors.

The Environmental and Social Management Framework (ESMF) Budget is designed to ensure that adequate resources are available for the effective implementation of environmental and social safeguards throughout the project cycle. The objectives under each key budget component are outlined below.

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Table 10-1: ESMF Budget

Sl. No	Budget Head	Budget Sub Head	Subhead Description	Reference	Unit	Unit Cost in INR/ Unit	Unit Cost Description	Total Amount in INR
A. HUMAN RESOURCE								
A.1.1	PMU Specialist	Environmental Safeguards Specialist		Refer to ESCP A.a			Included in Project Budget	
A.1.2		Social Safeguards Specialist		Refer to ESCP A.a				
A.2.1	Specialized Staff	Gender Specialist		Refer to ESCP A.d	260	5000	10 Days a month *1 Year + 5 days a month for 28 months	1,300,000.00
		Biodiversity Specialist		Refer to ESCP A.d	60	8000	30 Days Year 1 + 30 Days next 2 Years	480,000.00
A.2.2		Labour Specialist		Refer to ESCP A.d	260	5000	10 Days a month *1 Year + 5 days a	1,300,000.00

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Sl. No	Budget Head	Budget Sub Head	Subhead Description	Reference	Unit	Unit Cost in INR/ Unit	Unit Cost Description	Total Amount in INR
							month for 28 months	
A2.3		Tribal Specialist		Refer to ESCP A.d	260	5000	10 Days a month *1 Year + 5 days a month for 28 months	1,300,000.00
A.2.4	Support Staff							
	Sub-Total (A)							4,380,000.00
B. TRAINING & CAPACITY BUILDING								
B.1.1	Training of Direct Workers	ESF/ESMF Orientation : MPWD, DoA & MBMA	15 @HQ and 2 each @29 divisions, 10@HQ and 10 DAOs, 10 Officials @MBMA	Refer to ESCP B.b and ESMF 12.1	113	2,700	venue: Conference Hall, kit+ refreshment + setup	305,000.00

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Sl. No	Budget Head	Budget Sub Head	Subhead Description	Reference	Unit	Unit Cost in INR/ Unit	Unit Cost Description	Total Amount in INR
B2.1	Training of Indirect Workers	Env Safeguards Expert & Social Safeguards Expert	1 Env Safeguards Specialist+ 1 Social Deve & management Expert	Refer to ESCP B.b and ESMF 12.1	2	350000	2 External Training	700,000.00
B.3.1	Training of Division/ District workers	Orientation of ESMF and ESMP	29 EEs+ 7 Ses + 12 DAOs+5 MBMA Officials	Refer to ESCP B.b and ESMF 12.1	80	2,500	venue: Conference Hall, kit+ refreshment+ setup	200,000.00
B.4.1	Training of Contractor Staff	Orientation of ESMF and ESMP	60 E&S Officers	Refer to ESCP B.b and ESMF 12.1	60	1000	venue: Conference Hall, kit+ refreshment+ setup	60000
B.5.1	Refresher Training	every year for 3 years	29 EEs+ 7 Ses + 12 DAOs+5 MBMA Officials	Refer to ESCP B.b and ESMF 12.1	240	2,500	venue: Conference Hall, kit+ refreshment +setup	600,000.00

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Sl. No	Budget Head	Budget Sub Head	Subhead Description	Reference	Unit	Unit Cost in INR/ Unit	Unit Cost Description	Total Amount in INR
B.6.1	Specialized Training	OHS Training by National Safety Council	29 Divisiion @2 years	Refer ESCP 2.2 and ESMF 6.3	82	2,440	Trainer Fee+ Airfare +Lodging Boarding + Cost of Training	200,000.00
B.6.2		GBV, SEA/SH Workshop	60 E&S Officers 29 EEs+ 7 Ses + 12 DAOs+5 MBMA Officials	Refer to ESCP B.c and ESMF 12.1	125	2,440	venue: Conference Hall, kit+ refreshment + setup	305,000.00
B.6.3	Specialized Training	SHG Training Workshop	5 SHGs @ 23 Projects	Refer to ESCP B.c and ESMF 12.1	2500	1008	venue: Conference Hall, kit+ refreshment +setup	2520000
	Sub-Total B							4,890,000.00
C. INFORMATION AWARENESS								
C.1.1	Awareness Program	GBV/SEA/HIV-AIDS/EHS : IEC Material	IEC material:	ESCP 6.1 ESMF 6.4	100	10000	Poster & Brochures	1,000,000.00

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Sl. No	Budget Head	Budget Sub Head	Subhead Description	Reference	Unit	Unit Cost in INR/ Unit	Unit Cost Description	Total Amount in INR
		Preparation and Display						
C.1.3			FGD with Communities	ESCP 6.1 ESMF 6.4	90	5000	refreshment+ mis. expenses	450,000.00
C.2.1	GRM	Boards/ Poster			80	1000		80,000.00
C.2.2		Dashboard				500000		500000
								2,030,000.00
C.3	GBV , SEA/SH Program							
C.3.1		GBV		Refer ESCP 4.3 ESMF _____	1550000	1	Radio Jingle + Video Snippet+ broadcast	1,550,000.00
C.3.2		SEA/SH		Refer ESCP 4.3 ESMF _____	1550000	1	Radio Jingle + Video Snippet+ broadcast	1,550,000.00

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Sl. No	Budget Head	Budget Sub Head	Subhead Description	Reference	Unit	Unit Cost in INR/ Unit	Unit Cost Description	Total Amount in INR
D.3.1	RAP Implementation	RAP Implementation Agency		Refer ESCP 5.1 a and 5.1b ESMF Chapter 9 and 6.1	8000000	1		8,000,000
D.4.1	LMP	Labour Compliance Tracking		Refer ESCP 2.1 and ESMF Chapter 8	500000	1		500,000
	Sub-Total D							1,16,12,000.00
E. STUDIES & IMPLEMENTATION SUPPORT								
E.1.1.	Audits	Mid Term Audit		Refer ESMF 13.2 (needs to be reflected in ESCP)	3000000	1	Lumpsum	3000000
E.1.2		End Term Audit		Refer ESMF 13.2 (needs to	3000000	1	Lumpsum	3000000

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Sl. No	Budget Head	Budget Sub Head	Subhead Description	Reference	Unit	Unit Cost in INR/ Unit	Unit Cost Description	Total Amount in INR
				be reflected in ESCP)				
								6000000
E.3	SPECIALISED STUDIES							
E.3.1	Biodiversity Management Plan			Refer ESCP 6.1 and ESMF 6.5	5000000	1	Lumpsum	5000000
	Sub-Total E							1,70,00,000.00
F. OPERATIONAL EXPENSES : E&S CELL								
F.1.1	Vehicle and Transport	Vehicle for Env and Social Specialist of MPWD	(@40000/per person/month)		From project Budget			0

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Sl. No	Budget Head	Budget Sub Head	Subhead Description	Reference	Unit	Unit Cost in INR/ Unit	Unit Cost Description	Total Amount in INR
F.1.2	Field Expenses	For Env and Social Specialist of PMU			From project Budget			0
	Sub-Total F							0
	Total Budget							4,83,42,000.00
	Contingency (5% of the total Budget)							24,17,100.00
				Grand Total in INR				5,07,59,100.00

Annexures

Annexure I - Proposed List of Roads prioritized under Meghalaya Logistics and Connectivity Project (MLCIP)

Proposed List of Roads prioritized under Meghalaya Logistics and Connectivity Project (MLCIP)

Proposed List of Roads prioritized under MLCIP

S. No.	Division	Name of Road	Length (Km)
1	Khliehriat	Upgradation of Dkhiah - Sutnga - Saipung - Pala upto Semmasi Road	64
2	Shangpung / Khliehriat	Upgradation of Lakadong - Moorlap upto Semmasi Road including Construction of Bridge	20
3	Sohra	Upgradation of Umtyngar - Sohra Road upto 8th Km of Mawsmat-Shella	42
4	Pynursla	Conversion of 17 Weak Bridges under Pynursla Division to Permanent R.C.C. Bridges	—
5	Nongstoin	Reconstruction of a weak bridge into permanent RCC Bridge on Nongstoin-Mawait Road at 10th Km	—
6	Shillong Central	Construction of Umpling Bridge including approaches (Inside Shillong City)	—
7	Mawkyrwat	Upgradation of Weiloi - Mawkyrwat upto Keniong including replacement of SPT Bridges into permanent RCC Bridge	50
8	Mawsynram	Upgradation of Weiloi - Mawsynram Road upto Phlangwanbroi	27
9	Khliehriat	Upgradation including construction of road from Kongong (NH-06) to Shkentalang (NH-206) passing by the side of Phe Phe and Rynji Falls (Partially Greenfield)	27
10	Umsning	Upgradation of Umsning - Jagi Road (Remaining Portion from 40.13 - 80.00 Km) i/c Major bridge	39.87
11	Mawshynrut	Construction of Umdang-Amarsang-Maheshkola Road	65

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S. No.	Division	Name of Road	Length (Km)
12	Williamnagar	Improvement and Widening of Rongrenggre - Simsanggre - Nengkhra (RSN) Road (L = 22.00 Km) including Conversion of weak bridges to Permanent RCC bridges.	22
13	Kharkutta	Improvement of Rongjeng - Mangsang Adokgre (RMA) road from 23rd to 44th Km including construction of a major Bridge at Eldek A'kong and Bridge No. 1/6	22
14	NEC Tura	Upgradation of Rongsai - Borjhora - Bajengdoba (RBB) Road from single to intermediate lane.	18.27
15	Baghmara	Improvement and Upgradation of 12th Mile of TD Road to Chokpot including reconstruction of weak bridges	38.4
16	Resubelpara	Strengthening and Improvement of Resu - Dekachang - Anogre via Gabil Road (MDR) including conversion of weak bridges into RCC bridges	44.48
17	Resubelpara	Strengthening and Improvement of Songsak - Mendipathar Road (MDR) including reconstruction of weak CD Works and Bridges	36
18	Baghmara	Improvement of Gasuapara - Chokpot Road including construction of bridges	19
19	Ampati	Improvement of Ampati to Purakhasia Road	28
20	Barengapara	Improvement of Adugre to Purakhasia Road	40
21	Baghmara / Mawshynrut	Construction of road from Shallang to Siju including construction of a major Bridge over Simsang River (New Construction)	51.3
22	Baghmara	Construction of Baghmara - Gittinggre Road to Chokpot C & RD Block via Mindikgre	20.3
23	Mawshynrut	Construction of Mangsang to Mawshynrut (Riangdo) Road (Greenfield)	38
	Grand Total in Kms		712.62

Note: Out of the above road length approx. 600km of the road will be taken for consideration under MLCIP

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Proposed List of Bridges prioritized under MLCIP

S. No.	Division	Name of Bridge	Length (m)
1	Nongpoh	Umling — Patharkhmah Road	60
2	NH Bypass	Laitkor - Pomlakrai - Laitlyngkot Road	31.2
3	North Jowai	Pasyih-Garampani Road	62
4	Barengapara	Parallel Road (Br. No. 2/1)	43.7
5	Barengapara	Parallel Road (Br. No. 21/3)	54.85
6	Williamnagar	Rongram – Rongrenggre – Darugre Road (Br. No. 52/11)	38
7	Resubelpara	Rongjeng – Mangsang – Adokgre (Br. No. 54/3)	33
8	NEC Division	AMPT Road (15/3)	24.75
	Grand Total in metres		312

Annexure II - Environmental Clearance procedure for sub- project which comes under the provision of EA 2006 (GOI)

Stage	Authority	Output / Deliverable	Typical Timeline
1.Application Submission	Project Proponent (PP) → MoEFCC / SEIAA	EC application & project details submitted	1–2 weeks
2. Screening	SEIAA (for B projects) / MoEFCC (for A projects)	Screening Report → Category determination (A / B1 / B2)	2–4 weeks
3.Scoping & ToR Issuance	EAC (A) / SEAC (B1)	Terms of Reference (ToR) specifying EIA study requirements	4–6 weeks
4. Draft EIA Preparation	Project Proponent	Draft EIA Report with baseline study, impact assessment, EMP	8–12 weeks (depends on project complexity)
5. Public Consultation / Public Hearing	SPCB / UTPCC	Public Hearing proceedings, stakeholder comments	4–6 weeks
6. Final EIA Submission	Project Proponent → MoEFCC / SEIAA	Final EIA / EMP Report incorporating public hearing inputs	2–4 weeks
7. Appraisal	EAC (A) / SEAC (B1)	Committee recommendation: Grant / Reject / Defer EC	6–10 weeks
8. EC Decision	MoEFCC / SEIAA	Environmental Clearance issued with conditions	2–4 weeks
9. Post-Clearance Compliance & Monitoring	Project Proponent, SPCB, MoEFCC / SEIAA	Half-yearly compliance reports, EMP implementation	Continuous during project life

Annexure III (A) - National Park & Wild Life Sanctuaries

National Park & Wild Life Sanctuaries

Balpakram National Park is located south of [Garro Hills](#) in Meghalaya, close to Indo-Bangladesh border. Balpakram means “land of the eternal wind” according to the myth of the Garo people. Its vegetation consists of subtropical, grassland, bamboo forest, tropical deciduous trees and carnivorous plants like the pitcher-plant and Drosera. Major Fauna: Barking deer, Asian golden cat, tiger, marbled cat, wild water buffalo, red panda, elephant. One of the prominent rivers in the vicinity of the national park is the Simsang River (Goneshwari River or Someshwari River).

Nokrek National Park is located close to Tura Peak in West Garo Hills. It forms the core area of the Nokrek Biosphere Reserve. The park is named after the Nokrek Range, which is a prominent hill range within its boundaries. The Nokrek Range is part of the larger Garo Hills, which are a series of hills and plateaus that extend across the western part of Meghalaya. The Nokrek region is also an Important Bird Area. All-important river of Garo Hills region rise from the Nokrek Range, of which the Simsang River (known as Someshwari in Bangladesh) is most prominent.

Vegetation: Evergreen, semi-evergreen and deciduous. Major Fauna: Red panda, Asian elephant, stump-tailed macaque, pig-tailed macaque, hoolock gibbon.

Wildlife Sanctuaries in Meghalaya

Baghmara Pitcher Plant Wildlife Sanctuary

The Baghmara Pitcher Plant Sanctuary is located in the South Garo Hills District of Meghalaya, on the banks of Someshwari River that divides the Garo Hills into two parts. This wildlife sanctuary is a protected area for pitcher plants. This sanctuary is known for its population of the endangered pitcher plant species *Nepenthes khasiana*, locally known Me'mang-Koksi or ghost basket. Baghmara Pitcher Plant Sanctuary is the only Sanctuary in Meghalaya where in-situ conservation of Pitcher Plant is being carried out.

Narpuh Wildlife Sanctuary

The Narpuh Wildlife Sanctuary is in the East Jaintia Hills District of Meghalaya. The Sanctuary is home to many Schedule I species such as Hoolock gibbon, Serow, Slow loris, Pied Horn bill, Leopard etc.

Nongkhyllem Wildlife Sanctuary

The Nongkhyllem Wildlife Sanctuary is in the Ri-Bhoi district of Meghalaya. The sanctuary is situated within the Eastern Himalayan Global Biodiversity Hotspot. The Umtrew River marks the western boundary of the Reserve Forest and the Sanctuary.

Siju Bird Wildlife Sanctuary

The oldest and the first Wildlife Sanctuary of Meghalaya situated in the South Garo Hills district of Meghalaya. Siju Wildlife Sanctuary is situated near the Simsang River, which is the longest river of Meghalaya. The Simsang River flows along the western edge of the sanctuary.

Annexure III (B) - Standard Operating Procedure (SOP) for Forest Clearances

Standard Operating Procedure (SOP) for Forest Clearances

1. Introduction & Purpose

1.1 Background

The Forest (Conservation) Act, 1980 (FCA), regulates diversion of forest land for non-forest use and mandates central approval for such changes. Its 2023 amendment, the Van (Surakshan Evam Samvardhan) Adhiniyam, broadens focus to conservation and sustainable forest use. In Meghalaya, with its rich ecosystems and community-managed forests, an SOP under MLCIP ensures compliance, safeguards, and balanced infrastructure development with environmental protection.

1.2 Objective of the SOP

The objective of this SOP is to:

- ❖ Provide a clear, step-wise operational guide for obtaining forest-clearance for projects under MLCIP in Meghalaya, ensuring compliance with FCA/VSAA and the relevant rules & guidelines.
- ❖ Clarify roles and responsibilities of all stakeholders: project proponent (User Agency), State Forest Department, Central Government (Ministry of Environment, Forest & Climate Change – MoEFCC), local communities, tribal institutions, and other regulatory agencies.
- ❖ Provide check-lists, templates and timelines (to be customized) for submissions, monitoring, compliance and post-approval obligations (such as compensatory afforestation, monitoring, reporting).
- ❖ Integrate social, ecological and procedural safeguards specific to Meghalaya's context (tribal lands, jhum systems, forest rights under Forest Rights Act, 2006, unique biodiversity).
- ❖ Promote transparency, accountability, time-bound action and risk avoidance (including non-compliance consequences, illegal diversion, penalties).
- ❖ Ensure that MLCIP projects that involve forest land diversion, clearance, or change in land use adopt best practices and minimize adverse forest/environment/social impacts.

1.3 Scope

This SOP applies to all components of the Meghalaya Logistic & Connectivity Improvement Project (MLCIP) wherein:

- ❖ The project involves diversion of forest land (as per FCA) or uses forest land for non-forest purposes; or
- ❖ The project involves de-reservation, assignment, lease or change of forest land status under VSAA; or
- ❖ The project involves clearing of naturally grown trees on forest land for any purpose; or The project falls under the categories of activities requiring prior approval under FCA/VSAA (e.g., mining leases, infrastructure through forest land, linear projects) in the state of Meghalaya.

It is applicable to both stage I (in-principle) and stage II (final) approvals under the FCA regime as well as any transitional provisions under VSAA. It covers pre-application, application, clearance, post-clearance compliance, monitoring, reporting and review.

2. Legal and Institutional Framework

2.1 Key Legislation & Rules

Forest (Conservation) Act, 1980 (FCA) & amendments

Section 2 of the FCA prohibits, without prior approval of the Central Government: (i) de-reservation of reserved forests; (ii) use of forest land for non-forest purposes; (iii) assignment by way of lease/otherwise to private persons or non-government bodies; (iv) clearing of naturally grown trees on forest land for re-afforestation.

The Act has been amended over time; the most recent is the Forest (Conservation) Amendment Act, 2023 which further strengthens the scope and provides for new penalties and institutional mechanisms.

The FCA is supported by the Forest (Conservation) Rules (e.g., 2003, 2022) and guidelines issued by MoEFCC, and all applications are processed online through the PARIVESH portal.

Van (Surakshan Evam Samvardhan) Adhiniyam, 1980 (VSAA)

The Bill to rename and expand FCA into VSAA proposes a broader preamble emphasizing forest conservation, sustainable use, restoration, ecosystem services, and rights of forest-dependent communities.

The associated rules, e.g., Van (Sanrakshan Evam Samvardhan) Rules, 2023, provide procedural frameworks for de-reservation, assignment of forest land, and prior approvals for non-forest use, coming into force from 1 December 2023.

State Level & Local Framework in Meghalaya

The State Forest Department of Meghalaya, environment department, tribal affairs department and land revenue departments are key institutions for implementation of forest diversion proposals under MLCIP.

The SOP should be consistent with the framework of the Forest Rights Act, 2006 (FRA) in relation to rights of Scheduled Tribes and Other Traditional Forest Dwellers (OTFDs) and ensure that rights are recognized/secured before approving diversion.

The SOP must also incorporate Meghalaya-specific statutes, policies, guidelines or circulars (if any) pertaining to forest clearance, compensatory afforestation, state CAMPA or other financing mechanisms.

The SOP is to support coordination with central guidelines (MoEFCC) and state procedures for effective implementation.

2.2 Institutional Roles & Responsibilities

2.2.1 Project Proponent / User Agency (UA)

The UA is the entity (could be State Government department, parastatal or contractor under MLCIP) seeking forest diversion.

Responsibilities: Preliminary assessment of forest land involved; obtain no-objection from state forest dept; prepare detailed application including maps, affidavits, social impact assessment, tree-felling details; deposit required funds (e.g., compensatory afforestation cost, Net Present Value (NPV), as applicable); implement post-clearance

obligations and ensure compliance with all conditions.

Ensure prior consultation with local communities, forest dwellers, panchayats/village councils, tribal institutions; address forest rights queries; prepare time-bound schedule; maintain internal records and reporting to State Forest Dept.

2.2.2 State Forest Department (SFD) – Meghalaya

Acts as nodal agency at the state level for receipt of applications, initial scrutiny, site-inspection, certification, social & environmental clearances (if required), forwarding to MoEF&CC via PARIVESH portal (for Stage I/Stage II), monitoring post-clearance compliance and ensuring that compensatory afforestation, tree-felling, rehabilitation of forest dwellers (if any) are implemented.

Coordination with other state departments (Revenue, Tribal Affairs, Environment) and local bodies; maintaining state-level forest clearance registry; public-disclosure of diversion proposals; ensuring transparency and accountability.

2.2.3 Ministry of Environment, Forest & Climate Change (MoEF&CC) – Central Government

Final authority for clearance under FCA/VSAA for diversion of forest land for non-forest purposes beyond threshold (usually >0.5 ha or as per guidelines) or for sensitive zones (national parks, wildlife sanctuaries).

Constitutes a Forest Advisory Committee (FAC) to review proposals, and its recommendations guide the MoEF&CC decision-making.

Sets guidelines, issues rules (such as VaN Rules 2023), monitors compliance, updates PARIVESH portal, and publishes annual reports.

May sanction penalties and recovery of NPV or re-afforestation costs in case of non-compliance.

2.2.4 Local Community / Village Council / Tribal Institutions

Forest land in Meghalaya often overlaps with traditional community land, shifting cultivation land, or forest rights villages. The local community and tribal institutions (Village Councils, etc) must be consulted, rights under FRA must be secured, and their No Objection Certificates (as applicable) obtained.

A participatory-process for disclosure of diversion impacts, compensation, benefit sharing, and livelihood restoration is key.

Community oversight of post-clearance activities (tree planting, monitoring of compensatory site) is encouraged.

2.2.5 Environmental / Social Safeguard Management Cell (under MLCIP)

Provide oversight and ensure that all forest clearance proposals under MLCIP integrate environmental and social safeguards (E&S), ensure compliance with environmental laws, tribal rights, gender considerations, livelihood restoration, and monitoring frameworks.

Maintain project specific checklists, audit compliance, compile reports for funding agencies (if any), coordinate with SFD and UA.

2.3 Key Definitions for SOP

Disclaimer: This is a draft version and is being reviewed by the World Bank.

Forest land: All areas recorded as “forest” in government records, or which may be defined as forest in the dictionary meaning irrespective of ownership.

Non-forest purpose: As defined in FCA Section 2 Explanation the breaking up or clearing of any forest land for cultivation of tea, coffee, spices, rubber, palms, oil-bearing plants, horticulture, etc or any purpose other than re-forestation.

De-reservation: The process by which a reserved forest ceases to be reserved; requires prior approval under Section 2(i) of FCA.

Assignment/lease: Forest land may not be assigned or leased to private person or agency not controlled by Government without prior approval.

Compensatory afforestation (CA): Afforestation in lieu of forest land diverted for non-forest purpose; includes levy of NPV, additional charge for CA and maintenance. (Guidelines under FCA)

Net Present Value (NPV): The monetary value levied for diversion of forest land to non-forest use, evaluated on standard guidelines.

3. Pre-application / Preliminary Stage

3.1 Initial Project Screening by Proponent

The User Agency (UA) should conduct an internal screening to determine whether the project or component involves forest land, and if so, whether the land is recorded or un-recorded forest, reserved forest, or degraded forest.

Confirm that the proposed activity is not exempt under the general approvals or simplified procedures (e.g., small linear projects, approved by guidelines) but if yes, ensure proper documentation of exemption.

Establish the forest land extent involved (in ha), identify the forest division and division code, obtain GIS maps, check the status of forest rights (whether the land is claimed by Scheduled Tribes / OTFDs under FRA) and identify additional clearances (environment, wildlife, hydrology).

Undertake a preliminary social-ecological due-diligence: identify whether the forest land contains sensitive biodiversity, wildlife corridor, part of a protected area, or whether shifting cultivation (jhum) is ongoing; identify local communities, Scheduled Tribe presence, customary rights, community uses (fodder, firewood, Non-Timber Forest Produce).

Coordinate with State Forest Department (SFD) of Meghalaya for pre-application meeting: It is advisable to schedule a meeting with SFD to discuss the proposed diversion, timelines, possible conditions, compensatory afforestation site options, rehabilitation of forest rights holders. The meeting may be convened by the UA assisted by the SFD-nominated nodal officer.

Prepare draft project plan including: project description, justification of forest land requirement, alternatives considered (including non-forest land alternative), preliminary impact matrix, outline of mitigation measures, draft implementation schedule.

3.2 Obtaining State No-Object / Pre-clearance from SFD

The UA submits to SFD (Meghalaya) a Preliminary Forest Land Diversion Proposal (PFLDP) which includes:

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Description of project and justification for forest land diversion.

Location map, survey map, GIS coordinates (KML/KMZ) of the forest land proposed to be diverted.

Status of forest rights (FRA claims).

Preliminary social assessment: number of households, livelihoods, dependency on forest, alternative source of livelihood.

Preliminary ecological assessment: forest type, density, species list, presence of endangered fauna/flora, etc.

Proposed amount of compensatory afforestation (CAF) site(s) and initial cost estimation.

Time-schedule chart: application submission, clearance stages, implementation timeline.

State Forest department (SFD) validates the land status: confirms it is forest land, determines whether it is reserved/un-reserved, checks whether any leases/assignments exist, verifies whether the land is free of encumbrances or claims under FRA.

SFD may carry out site-visit, inspect the proposed land, verify the ecological/social scenario, and issue a State No-Object Certificate (NOC) or list of pre-conditions. This provides clarity to the UA about major issues prior to formal submission.

Based on the meeting and NOC, UA finalises the application documentation and timelines.

3.3 Alternative Analysis & Avoidance Strategy

The UA should prepare a detailed alternative analysis showing that diversion of forest land is the least-impact option. This includes:

Examination of non-forest land alternatives.

Minimal forest land diversion design (alignments, size reduction).

Mitigation measures to reduce forest loss (tree transplantation, retention of forest patches, connecting green corridors).

Document the eco-sensitive features and planned measures to mitigate them (e.g., wildlife crossings, retaining mature trees, landscape restoration).

Prepare a stakeholder consultation plan especially where there are community uses (NTFP, grazing, jhum, sacred groves). Engage local tribal institutions and village councils early to obtain feedback and incorporate community concerns into design.

3.4 Preparation of Application / Submission Documents

The UA must compile the full application package to SFD and subsequently to MoEFCC via PARIVESH. Key components include:

- ✓ Cover letter from UA.
- ✓ Project description document (scope, location, land requirement, forest land area in ha, duration).
- ✓ Detailed site map: survey map, forest map, non-forest land map, GIS coordinates, KML/KMZ.

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- ✓ Certified extract of forest record (Form-I or other as per state).
- ✓ Status of Forest Rights Act claims and verification certificate from competent authority.
- ✓ Alternatives analysis & justification for forest land diversion.
- ✓ Ecological assessment: Forest type, tree enumeration, density, species list, wildlife/flora/fauna data.
- ✓ Social assessment: Dependency of forest dwellers, number of affected households, livelihood impact, benefit sharing plan.
- ✓ Compensatory afforestation plan: proposed land, species, cost, implementation schedule, monitoring plan.
- ✓ Net Present Value (NPV) computation (if applicable) and affidavit by UA to deposit amount.
- ✓ Impact mitigation plan: tree-felling management, phased implementation, monitoring plan, legal compliance.
- ✓ Implementation schedule/Gantt chart, co-ordination matrix with state agencies.
- ✓ Undertakings by the UA: to comply with conditions, monitoring/reporting, restoration of forest land, no diversion of area beyond approved area.

Any other statutory clearance/documents (environment clearance, wildlife clearance) if required for the project as per EIA Notification or Wildlife Protection Act.

3.5 State Level Filing & Forwarding to Central Government

The UA submits the application package to SFD (Meghalaya) in both hard copy and online portal (if state has its own submission portal).

SFD reviews for completeness; if any gaps exist, state may ask UA to rectify and resubmit within defined timeline (e.g., 15 working days).

Once SFD is satisfied, files a State Recommendation Letter to MoEFCC via PARIVESH with state observations, conditions, proposed compensatory afforestation site, NPV/CAF deposit plan, and verification of forest rights status.

The PARIVESH portal assigns a unique proposal number; UA and SFD can track process online.

SFD public-discloses the diversion proposal (area, location, map, compensation plan) on its website or local notice board (as per transparency norms) and invites objections/representations from local stakeholders within 30 days (or state-prescribed period).

After the public notice period, any representations received are forwarded to MoEFCC along with state responses.

4. Central Government Approval: Stage I & Stage II

4.1 Stage I (In-principle) Approval

After receiving the state recommendation and complete proposal, the MoEFCC channels it to the Forest Advisory Committee (FAC) for review. The FAC examines: ecological impacts, compensatory afforestation proposals, status of forest rights, wildlife issues, land alternatives, and proposed mitigation.

The FAC issues its recommendation within the specified timeline (typically 30-60 days) stating whether Stage I may be granted and specifying conditions (such as deposit of NPV/CAF, schedule, monitoring obligations).

- ✓ MoEFCC issues a Stage I approval letter (via PARIVESH) indicating:
- ✓ Approved area (in ha)
- ✓ Conditions to be adhered to by UA & state
- ✓ Deposit requirements for NPV/CAF
- ✓ Monitoring and reporting obligations
- ✓ Time-limit for Stage II submission (usually up to 3 years)

On receipt of Stage I approval, the UA may proceed with allowed preparatory work (as per rules) but cannot commence non-forest use or change of forest land until Stage II is granted.

4.2 Stage II (Final) Approval

Prior to beginning the non-forest use operation or project execution, UA must submit compliance proof of Stage I conditions to MoEFCC/SFD:

- ✓ Deposit receipt of NPV and other charges.
- ✓ Proof of compensatory afforestation area transfer to state agency or specific entity.
- ✓ Tree-felling/transplantation plan executed or ready.
- ✓ Transfer or arrangement of compensatory afforestation land and species list.
- ✓ Monitoring plan and institutional arrangements.
- ✓ Legal documentation for forest rights, where relevant.
- ✓ SFD carries out a site audit/inspection verifying that conditions are fulfilled, and provides certificate to MoEFCC.
- ✓ MoEFCC issues Stage II final approval letter, authorising the diversion of forest land for the approved non-forest purpose. The letter specifies:
- ✓ Approved area, name of user agency, location, map references.
- ✓ Conditions for post-clearance compliance (monitoring, reporting, continuation of matters like afforestation, annual review).
- ✓ Time-limit for project implementation usually 1–3 years (or as per rules) from the date of Stage II.

UA may now commence site operations that involve forest land diversion/non-forest use as per approved scope and conditions.

4.3 Validity, Extension & Variation

The approval accorded is valid for the period specified. If the UA does not commence the project within that period, it must apply for extension/permission variation as per latest guidelines.

Any variation (increase in area, change of purpose) requires fresh application or amendment.

For VSAA regime (once fully operational in Meghalaya), the rules may define new validity periods, extensions and penalties – UA should refer to the Van Rules 2023.

4.4 Post-Approval Disclosure

SFD and MoEFCC publish details of all approvals (area, agency, location, conditions) on their websites, thereby creating transparency.

UA must publicly display the approval letter and conditions at the project site or local village council office and provide information to stakeholders (local community, village council, forest dwellers) about compensatory afforestation, monitoring schedule, grievance redressal.

5. Implementation & Post-Clearance Compliance

5.1 Transfer of Compensatory Afforestation Land & Implementation

UA and SFD must ensure the identified compensatory afforestation (CAF) land is legally transferred (lease/assignment) to the Forest Department or other designated implementing agency.

The CAF plan should specify species (preferably indigenous), planting density, maintenance period (often 5–10 years), monitoring schedule, survival rate target, and budget.

The UA (or implementing agency) should begin planting within the period specified in the Stage I/Stage II approval and submit an implementation plan including: nursery preparation, planting season(s), maintenance, monitoring & reporting formats.

The UA and SFD must monitor survival rates annually, report to MoEFCC through PARIVESH, and maintain records for audit.

5.2 Tree-Felling, Transplantation & Biomass Management

Where forest land diversion involves tree-felling, the UA must obtain prior permission from SFD for tree-felling, as per state forest law, and prepare a tree enumeration report, cost of timber, biomass disposal plan, and transplantation plan (where feasible).

The UA must ensure that removal of trees is carried out only after Stage I approval and in line with conditions in Stage II.

The state may require deposit of felling charges, and biomass should be appropriately utilized or disposed in a manner that minimises waste and environmental harm.

5.3 Implementation of Mitigation Measures, Monitoring & Reporting

UA must implement all mitigation measures as specified in the approval letter (wildlife safeguards, corridor maintenance, retaining forest patches, re-vegetation of borrow pits, slope stabilisation, etc.).

A monitoring plan should be developed with clear indicators, frequency, responsible persons, reporting lines and remedial action triggers. Example indicators: number of planted trees, survival rate at 12 months, area of retained forest patches, number of households provided livelihood support, status of compensatory land, etc.

Submission of Annual Compliance Report by UA to SFD and MoEFCC via PARIVESH. The report should include: progress on CAF, survival rates, status of compensatory land, tree-felling/planting log, social benefit delivery, grievance summary, deviations (if any) and corrective action taken.

SFD conducts periodic site-visits (once a year or more frequently if needed), joint monitoring with UA, community stakeholders, and prepares State Monitoring Report for MoEFCC.

Non-compliance triggers:

- ❖ Recovery of cost + penal charges (NPV increase) by MoEFCC or SFD.
- ❖ Suspension of future clearances to UA.
- ❖ Legal action under FCA/VSAA (including penalties, imprisonment for contravention).

5.4 Social & Livelihood Components

Where forest-diversion affects forest dwellers, tribal communities or jhum cultivators, UA must implement social safeguards: livelihood restoration plan, alternative fuel/energy for forest-dependency households, training and capacity building, benefit-sharing from plantation/afforestation.

UA should coordinate with local village councils, tribal institutions, and ensure community participation in selecting species for compensatory afforestation, monitoring survival, and plantation maintenance.

A grievance redressal mechanism should be established at project site level with clear roles, timeline and escalation platform (Village Council → SFD nodal → SLC/Project E&S unit).

UA should integrate gender and vulnerable-group considerations in livelihood restoration and monitoring (e.g., women's participation, forest-dependent households headed by women).

Regular community updates (quarterly) on progress of compensatory afforestation, benefits, monitoring results, and any changes to the plan.

5.5 Audit & Review

An independent third-party audit of compensatory afforestation and compliance should be undertaken every 3 years (or as per approval conditions) by an agency approved by MoEFCC/SFD. The audit examines plantation survival, biodiversity enhancement, socio-economic benefits, adherence to schedule and budget.

The audit report must be submitted to SFD and MoEFCC, and findings acted upon (corrective plan, replanting, re-allocation of funds).

SFD should maintain a diversion tracking register (forest clearance register) for MLCIP projects. The register should include all diverted areas, agencies involved, condition status, monitoring outcomes, audits, and any non-compliance incidents.

At the project end (or annually), UA should prepare a closure report which states that the forest diversion has been fully executed as per approval, all compensatory measures are in place, monitoring mechanism institutionalized, and residual obligations (if any) clearly defined. The closure report should obtain SFD certification and then be archived.

Checklist for Document Generation

Disclaimer: The is a draft version and is being reviewed by the World Bank.

Parse the provided text to identify and categorize key sections and information related to the SOP for forest diversion.

Structure the document using appropriate HTML header and semantic elements like lists and tables.

Format detailed sections such as the SOP flow, checklists, specific considerations, roles, and risk management into readable HTML.

Ensure the output adheres strictly to the JSON format with `title`, `source`, and `html_content` fields in the correct order.

Validate the generated `html_content` for well-formedness and adherence to specified HTML tags.

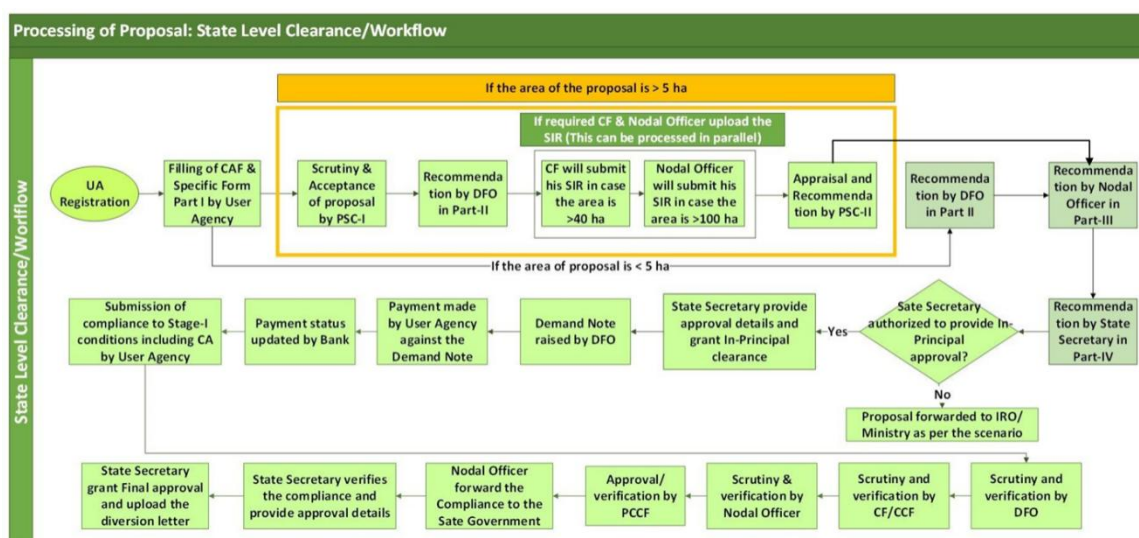
6. SOP Flow Chart & Timeline

Below is a simplified flow chart summarizing the major steps and indicative timeline. The specific timelines may vary depending on state processes, site complexity, size of diversion and sensitivity of forest area.

Step	Responsible Entity	Action	Indicative Timeline*
Screening & Pre-meeting	UA & SFD	UA screens project, obtains pre-meeting with SFD, discusses draft plan.	0-2 weeks
Submission of Preliminary Proposal	UA	Submit PFLDP to SFD.	1 week
State NOC / Pre-clearance	SFD	Review, site-visit, issue NOC with conditions.	2-4 weeks
Application compilation	UA	Prepare full application including maps, social/ecological assessment, CAF plan, NPV computation.	2-4 weeks
Submission to SFD & forwarding to MoEFCC	UA & SFD	Submit hard & online; SFD forwards via PARIVESH.	1 week
Public disclosure & stakeholder consultation	SFD & UA	Publish notice, invite objections (30 days).	4-5 weeks (incl. notice period)
Stage I approval process	MoEFCC (FAC)	Review proposal; FAC recommendation; issuance of Stage I approval with conditions.	6-12 weeks
Compliance and deposit of charges	UA	Deposit NPV/CAF, secure CAF land, implement tree-felling/transportation preparation.	4-8 weeks
Stage II final approval & start of non-forest use	MoEFCC & SFD	Submit compliance, SFD inspection, issuance of Stage II; UA begins project.	2-4 weeks
Implementation of CAF, mitigation & monitoring	UA & SFD	Planting, monitoring, social safeguards, quarterly/annual reports.	On-going (5-10 yrs)
Annual compliance & state monitoring	UA & SFD	Submit annual reports, SFD monitors.	Annually
Third-party audit & closure report	UA & SFD	Audit every 3 years, closure report at end.	Every 3 yrs / project end

* Timelines indicative and state-specific variation applicable.

Disclaimer: The is a draft version and is being reviewed by the World Bank.



Flow Chart for Community Forest / RF/PF Prior Clearance

7. Specific Considerations for Meghalaya & MLCIP Projects

7.1 Forest Rights, Jhum Cultivation & Local Communities

Many forest lands in Meghalaya are used for shifting cultivation (jhum) and are under community management. The UA must verify whether the land is subject to claims under the Forest Rights Act (FRA) and ensure that rights are duly recognised or settled before clearance.

Forest diversion may disrupt local livelihoods (firewood, fodder, NTFP, grazing, community forest use). The UA must build a strong livelihood restoration component and coordinate with tribal/village councils.

Sacred groves, locally-important forest patches, and biodiversity hotspots may be present; UA must map such features and propose measures to protect them.

The SFD should engage local Village Councils as part of the consultation process; participatory plantation monitoring by community groups can help ensure survival and community ownership of compensatory afforestation.

7.2 Ecologically Sensitive Areas & Biodiversity

Given Meghalaya's high rainfall, steep terrain, rich biodiversity, and fragility of ecosystems, special care must be taken in erosion control, slope stabilisation, protection of water-catchments, and integrating forest cover retention.

Where the forest land falls within or near protected areas, wildlife corridors or tiger reserves, extra scrutiny and possibly wildlife clearance will be required. UA should integrate an ecological study and present mitigation measures accordingly.

The UA should adopt native species for compensatory afforestation suited to local conditions, ensure adequate density, soil stabilisation, and maintenance in high rainfall/erosion-prone terrain.

7.3 Integration with Infrastructure Projects under MLCIP

Disclaimer: This is a draft version and is being reviewed by the World Bank.

For MLCIP components (e.g., rural connectivity roads, community infrastructure) that involve forest land, the SOP should anticipate linear projects (roads, pipelines) and their special requirements (cut & fill, borrow-pits, slope retention, tree-felling).

The UA should coordinate with the MLCIP environmental & social safeguard team early to align forest clearance timeline with overall project schedule, ensuring no delays.

Borrow-pit restoration, re-vegetation of disturbed areas, and monitoring of road-forest interface impact should be built into project design and budget.

Implementation of compensatory afforestation and tree planting along infrastructure (road side plantation) may qualify for offsetting; UA should capture such synergy in planning.

7.4 Time-bound Coordination & Risk Management

Delays in forest clearance can lead to cost overruns, idle commitments and reputational risk for MLCIP. The SOP emphasizes early screening, “no forest use until Stage II” compliance, and close tracking of timelines.

Non-compliance (e.g., use of forest land before clearance) may attract penalties, cancellation of approval, or suspension of project funding. UA must maintain internal tracking of conditions.

A project risk register should include forest-clearance risk: pending tree-felling permissions, compensatory land acquisition delays, community objections, non-availability of non-forest land alternatives, etc. Monthly monitoring of forest-clearance status should be integrated in overall project monitoring.

8. Transitional Provisions & VSAA Applicability

8.1 Transition from FCA to VSAA

The Van (Surakshan Evam Samvardhan) Adhiniyam (VSAA), once notified fully, will supersede or complement FCA in the long term. The Bill renames FCA to VSAA and broadens its scope to forests, tree cover, ecosystem services, community rights.

The Van Rules, 2023 (Van (Sanrakshan Evam Samvardhan) Rules, 2023) have come into effect from 1 December 2023 providing for procedures for de-reservation, lease/assignment of forest land, clearing of naturally grown trees etc.

In Meghalaya, UA should verify whether the proposed diversion will come under the VSAA regime; if yes, the UA must comply with new rules, transitional provisions and any state-level notifications.

State Forest Dept should monitor updates from MoEFCC and issue state-specific guidance accordingly.

8.2 Changes under VSAA to be accounted for in SOP

Expanded definition of forest land, possibly including tree-cover outside traditional forest boundaries, may require broader screening.

Additional or enhanced compensatory/mixed forestry regimes (including ecosystem restoration) may be required.

Stronger institutional mechanisms for community participation, biodiversity conservation, monitoring and penalty provisions.

Disclaimer: This is a draft version and is being reviewed by the World Bank.

The SOP should include a review clause every 12 months (or when regulatory changes come) to revise internal process flows, templates and checklists in line with VSAA.

9. Roles, Responsibilities & Accountabilities – Summary Table

Stakeholder	Major Responsibilities	Key Deliverables	Timeline/Remarks
User Agency (UA)	Screening, application preparation, consultations, implementation of CAF, mitigation, monitoring & reporting	Application package, consultation records, CAF planting, annual reports	Must lead & coordinate
State Forest Dept (SFD), Meghalaya	Initial scrutiny, site inspection, state recommendation, monitoring of post-clearance compliance, community engagement	NOC, State forwarding letter, monitoring reports, register of diversions	Central nodal for state
MoEFCC (Central)	Final decision making (Stage I/II), issuance of approvals, oversight, guidelines, penalties	Stage I/II approval letters, publication of clearance data, audit of compliance	Ultimate authority under FCA/VSAA
Local Community / Village Council / Tribal Institutions	Participation in consultation, monitoring of CAF, grievance redressal, benefit sharing	Minutes of meetings, community monitoring reports, grievance logs	Key for social legitimacy
MLCIP E&S Unit	Safeguard oversight, coordination between UA & SFD, risk monitoring, audit & review input	Internal SOP compliance reports, risk register updates, audit inputs	Support function across projects

10. Risk Management, Audits & Non-compliance Measures

10.1 Risk Management

Key risks: denial of clearance, delay in deposit of NPV/CAF, lack of non-forest land alternative, high tree-felling costs, community opposition, inadequate budget for CAF implementation, ecological sensitivity issues (wildlife/ESZ), terrain/soil stability issues.

Mitigation strategies: early screening and consultations; buffer in timeline; alternate design options; pre-budgeting and fund allocation for CAF; integrating social safeguards from day one; contract or MOU with implementing agency for CAF; monitoring plan with defined triggers for corrective action; regular status updates to project management.

A risk register should track each diversion component and its schedule, impact on overall project timeline, cost overruns, stakeholder grievances, compliance deadlines.

10.2 Audits & Review

Internal quarterly review of forest diversion components by UA and E&S Unit.

Annual third-party audit of compensatory afforestation by independent agency; audit covers ecological success (survival rate, species diversity), social benefit delivery, budget utilisation, compliance with conditions.

SFD/State may commission random inspections and cross-check plantation sites, survival rates, community oversight records.

Learning and adaptive management: results of monitoring/audits should feed back into future diversion proposals, design of infrastructure components, community engagement strategy.

10.3 Non-compliance / Penalties

If UA commences non-forest use before Stage II approval, or violates conditions, MoEFCC/SFD may:

- Cancel the approval;

- Levy enhanced NPV/CAF charges;

- Require restoration of forest land;

- Suspend future diversion proposals by the UA;

- Initiate legal proceedings under FCA/VSAA including penalty (imprisonment up to defined term, fine) for contravention.

UA should maintain a corrective action plan and keep records of remedial measures taken.

11. Training, Capacity Building & Documentation

UA and SFD should ensure training for their staff (forest officers, project managers, field staff) on the latest FCA/VSAA rules, guidelines, PARIVESH portal usage, community consultation methods, monitoring and reporting protocols.

Development of a manual/handbook for field-staff on forest diversion procedures, checklists, maps, GIS competency, attending consultations, preparing social & ecological assessments.

Documentation: All decisions, minutes of meetings, approvals, monitoring reports, audits, community records, corrective actions must be filed, scanned, backed up and made available for audit and disclosure.

Regular inter-departmental meetings among UA, SFD, tribal affairs department, land revenue department to discuss forest diversion schedule, key issues and ensure coordination.

A knowledge-sharing database of past diversions under MLCIP can help reuse lessons/avoid mistakes, track success of compensatory afforestation, build local institutional memory.

12. Communication & Transparency

SFD shall publish a quarterly forest clearance status report for MLCIP projects in the state: detailing number of proposals submitted, stage I/II approvals, area diverted, compensatory afforestation status, delays, pending issues.

UA shall issue public updates (quarterly or semi-annual) to local stakeholders on project status, tree-planting progress, community benefits, grievance resolution – using village notice-boards, local meetings, enabling transparent community ownership.

A dedicated grievance redressal portal (or a section in project website) for grievances related to forest diversion, plantation, community benefits, livelihood impacts. Records of grievances, resolution status, timelines must be maintained and published annually.

All project documents (approval letters, maps, consultation minutes, monitoring reports) should be archived and accessible to audit agencies and where feasible to the public (protected for sensitive data).

13. Review & Amendment of SOP

Disclaimer: This is a draft version and is being reviewed by the World Bank.

This SOP should be reviewed on an annual basis (or sooner if regulatory changes occur) by a joint committee comprising UA, SFD, MLCIP E&S Unit, and a representative of local communities.

Amendments may be needed to integrate new guidelines under VSAA, changes in compensatory afforestation norms, new online portal features, improved community engagement practices in Meghalaya (for example, jhum-management integration), or modifications based on audit findings.

A revision log should be maintained (Date, Version, Description of Change).

Training refreshers should follow each major SOP amendment.

Annexures (Indicative List)

Annexure A: Application Form Template for Forest Diversion under FCA/VSAA

Annexure B: Map Submission Guidelines (KML/KMZ, survey maps, forest/non-forest demarcation)

Annexure C: Tree Enumeration & Felling/Transplantation Format

Annexure D: Consultation Minutes Format & Attendance Register

Annexure V (A) - Terms of Reference (1)

Consultancy for Biodiversity and Critical Habitat Assessment and Preparation of Site-Specific Biodiversity Management Plans

Background

Government of Meghalaya (GoM), with financing and technical support from the World Bank, is preparing a project titled “Meghalaya Logistics and Connectivity Improvement Project (MLCIP)”. MLCIP builds on MITP to transform Meghalaya’s transport and logistics infrastructure, boost economic growth, and create jobs along key road corridors. The project aims to enhance connectivity and logistics infrastructure to efficiently deliver farm and household products from rural areas to district industrial parks, wholesale markets, and priority growth centers (Shillong and Tura). These logistics solutions reduce transportation cost, minimize post-harvest losses, ensure efficient distribution and facilitate timely and profitable sales of agricultural and horticultural produce, handicrafts at national and international markets, thus ensuring widespread economic benefits from the “Hashtag Corridors”.

The implementation of the core initiatives of the project is expected to result in:

- a) Enhanced connectivity to key growth centers along identified road corridors
- b) Improved rural and district-level logistics infrastructure and services
- c) Greater market access and reduced average cost/time for select agriculture and horticulture products to reach the markets
- d) Strengthened institutional capacity for efficient, climate-resilient transport and logistics
- e) Direct users that benefit from improved access to sustainable transport infrastructure and services.

Meghalaya is a state with close to 80% of its land under forest and tree cover and areas of high biodiversity and endemism housed not only within its six national parks and wildlife sanctuaries but also interspersed through internationally recognized sites of biodiversity such as Key Biodiversity Area (KBAs), Important Bird Areas (IBAs) and within its community and individual forest lands, sacred groves and riverine ecosystems. Unplanned and unmitigated infrastructural development and road construction could pose threats to forests, fauna and flora in the State.

The project has a ‘high’ environmental risk rating. It triggers the World Bank ESS 1 & 6 on Natural Habitats, Forests and Physical Cultural habitat and properties ESS 8. Project activities, if not properly managed and mitigated, could have adverse environmental impacts. Including impacts on biodiversity rich areas and ecologically important areas, which are protected within the 6 national parks and wildlife sanctuaries of the state but also lie outside the boundaries of these protected areas.

To manage its impact on forests and natural habitat, the project will follow a mitigation hierarchy. (a) Avoidance of impacts on critical natural habitats and EIA process that establishes the presences of such areas; This entails that no new roads passing through designated protected areas will be financed under the project and existing roads will be financed only after ascertaining that the improvements on existing road will not have any significant or irreversible impacts on critical habitat areas; (b) Work on other eco-sensitive roads (located within 10km but not passing through designated Protected Areas) will be undertaken after comprehensive ecological assessments are undertaken that establish that the project intervention would be beneficial to local communities and environmental protection can be made possible through minimization/mitigation efforts. These roads would also require the necessary clearances

from the State Environmental Impact Assessment Authority (SEIAA) and an EMP that is prepared in consultation with wildlife experts, species specialists, NGOs and local communities. (c) Training and capacity building of PWD engineers as well as contractors in addressing specific biodiversity concerns during planning, construction and operation phase and scaling up capacity in the state through the establishment of an environmental and social cell within PWD

Scope of Work

The Meghalaya Logistics and Connectivity Improvement Project (MLCIP) aims to follow an integrated approach and address the transport network of the state using a landscape approach. MLCIP seeks an independent, regional biodiversity expert, hereafter referred to as 'consultant' to strengthen the integration of biodiversity conservation and management into improvements proposed to the entire transport network and detailed biodiversity assessments on select sub-projects to strengthen biodiversity management measures where roads are proximate to critical and natural habitats. The scope of the work includes:

- i. **Design approach for managing Biodiversity and Critical Habitat under MLCIP:** The consultant will design the overall approach for addressing biodiversity and critical habitat under the MLCIP project based on i) Desk Study / Secondary Survey of Biodiversity Values (Flora & Fauna) - Using secondary information and geospatial data, the consultant should identify areas of critical habitat as per the criteria of the IFC Performance Standard 6 and WB ESS 6 to inform project decisions on selection of roads and other interventions such as ropeways and waterways. Critical habitats are identified by the presence of qualifying biodiversity features. These may include significant components of Critically Endangered and Endangered species, species with small ranges, migratory or congregator species, rare and threatened ecosystems, and key evolutionary processes. The consultant should undertake a biodiversity survey document the notable flora, fauna, including avifauna of the Core Road Network, including records of wildlife movements between community/ reserve forests and other sites ii) Field visits to project roads and consultations with species and ecosystem experts, NGOs and community based organizations to establish best practices for managing and mitigating impacts of linear infrastructure on valued species and ecosystems that would be effective in the socio-ecological context of the State of Meghalaya.
- ii. **Primary Biodiversity Survey and Critical Habitat Assessment:** The consultant should design and undertake primary surveys to ascertain the presence of critical habitat on roads selected that are proximate to national parks, wildlife sanctuaries or have the presence of Schedule 1 species. The consultant should use the methodology of a critical habitat assessment in the IFC Guidance Note 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources (IFC, 2012b). iii) The consultant should lead the survey design and implementation to ascertain the valuable flora and fauna on the selected project road sections including an inventory of wildlife movement (s) on the section.
- iii. **Site-Specific Biodiversity Management Plans:** Based on the biodiversity survey and critical habitat assessment, including any wildlife fauna movements within the selected project stretches, the consultant will analyses and assess whether any significant and irreversible degradation of forest/habitat is likely due to the proposed improvements to the road either directly, indirectly or cumulatively. If dealing with habitats for rare, endangered or threatened species, or schedule 1 species, the consultant should identify and consult with specific species specialists (such as from IUCNs Species Survival Commission Specialists Group). The consultant should assess the magnitude and significance of the impacts from the project to wildlife and its

habitat and develop site- specific and, where relevant, species-specific management plans. The consultant should work closely with the State Wildlife Board, Forest department, Autonomous District Councils, NGOs and other relevant departments while designing the Biodiversity Management Plan. The management plans should provide holistic and integrated solutions for the management of biodiversity, applying the mitigation hierarchy approach. The solutions must consider hard engineering solutions as well nature-based solutions and identify the timeline and budget to implement the measures. This should be combined with suggestion on conservation efforts, community-led approaches and measures to be taken in coordination with line departments such as forest, tourism, aquaculture mission, community and rural development.

- iv. **Contractors EMP:** The consultant work with the PIU to integrate the identified measures into the contractors EMP and sensitize the PIU and contractor on the implementation of the Biodiversity/ Species specific management plan
- v. **Training and Capacity Building in Environmental and Social Cell, PWD:** The consultant must **facilitate** the development of training modules and conduct one workshop to train master trainers within the Environmental and Social Cell of the PWD and other relevant staff of PWD, to systematically integrate biodiversity considerations through all phases of infrastructure design - through the planning, construction, operation and maintenance phase. This should include use of Geo-spatial tools, conceptual understanding of critical and natural habitats, consideration of direct, indirect, cumulative and landscape scale impacts and how to assess and manage them, relevant global and national best practices on measures to reduce impacts of roads on biodiversity.

Key position/ Consultants Profile: The Consultant should be a Regional Biodiversity Specialist with 10-15 years of experience. S/he should have specific experience working on managing impacts of linear infrastructure on biodiversity, including planning and supervision of the implementation of hard engineering measures as well as nature based solutions. Consultant should be familiar with World Bank or other multilateral organization Safeguards Policies and Standards. Consultant can expand his team after initial assessment specific survey requirements. This position will be reviewed for qualification and awarding of the contract.

Annexure 1 Schedule of Completion of Task: Total Task to be completed in 8 months

Task to be completed	In months	Payment
Submission of Inception Report covering approach for managing biodiversity under MLCIP based on i) findings of Desk Study / Secondary Survey of Biodiversity Values (Flora & Fauna) and ii) best practices for managing impacts of linear infrastructure consultations with experts, NGOs and community-based organizations.	Within 1 month from the issuance of contract	10%
Primary Biodiversity Survey and Critical Habitat Assessment Report	Within 6 months from the issuance of contract	20%
Submission of Site-Specific Biodiversity Management Plans and Contractors EMP	Within 6.5 months from the issuance of contract	30%

Disclaimer: The is a draft version and is being reviewed by the World Bank.

Task to be completed	In months	Payment
Training and Capacity Building in Environmental and Social Cell, PWD – 1 Workshop and submission of a training module	Within 7 months from the issuance of contract	20%
Submission of Final Assessment Report along with Final Site-Specific Biodiversity Management Plans and Contractors EMP after addressing all comments from the review committee	Within 8 months from the issuance of contract	20%

Support to be provided by PWD/ GoM: PWD will support the client with all relevant information on the project roads, bridges, ropeways and construction activities. PWD shall also help the consultant understand an estimated flow of traffic after rehabilitation when the roads become operational. The PWD will also support the consultant on establishing contacts with the relevant Forest and Wildlife Departments at the State, provide support as required in facilitating field visits and seek relevant information as required for the completion of the tasks. For arrangement of workshop, PWD will provide space and other workshop facilities for completion of the task. PWD will also be responsible to share review comments on the submission of deliverables within 20 days of submission.

Review of Deliverables: The deliverables will be reviewed by review committee comprising of Chief Engineer, PWD, Environmental Specialist from PWD's Environment and Social Cell, and Senior Environmental Specialist and the Transport Specialist from the World Bank. The review committee may refer to the State's Department of Forest and Wildlife and external biodiversity specialist for expert comments. The review committee will share review comments on the submission of deliverables within 20 days of submission

Annexure V (B) – Terms of Reference (2)

TERMS OF REFERENCE

Consultancy services for conducting Environmental and Social Impact Assessment (ESIA) and preparation of Environmental and Social Management Documents (East Meghalaya)

A. BACKGROUND AND PROJECT DESCRIPTION

The Government of Meghalaya (GOM) through the Government of India (GoI) has applied for a loan assistance from the World Bank to meet the cost of the Meghalaya Economic Growth Accelerator (MEGA) corridor project for improvement of road corridors to intermediate/two lanes/ 4 lane configuration as required with provision of service roads wherever necessary, type of intersections, rehabilitation and widening of existing and/or construction of new bridges and structures, tunnels, viaducts, road safety features, etc., in the hill areas of Meghalaya. A part of the construction loan is to be used for consultancy services towards Environmental and Social Support to the Project for managing the environmental and social risks and for meeting the requirements of The World Bank. This will include conducting Environmental and Social Impact Assessments and preparing required project specific instruments for management and mitigation of environmental and social impacts.

The Public Works Department (PWD) / Meghalaya Infrastructure Development and Finance Corporation (MIDFC) would implement the project on behalf of the Government of Meghalaya. The project development objective is to provide efficient, resilient and safe connectivity to key regional corridors and economic centres in Meghalaya. The PWD (Roads), Government of Meghalaya has already implemented a similar project under the erstwhile Safeguard Policies of the Bank (MITP). After the successful implementation of the earlier project, the Government of Meghalaya (GOM) will now implement the MEGA project with the following components:

1. Component 1: Climate-Resilient Roads and Road Safety

- i. **Sub-component 1.1:** Rehabilitating Critical State Roads The objective of this component is to finance (a) the construction/upgradation of about 600 kms of state roads, Major District Roads (MDRs), bridges, and feeder roads; and (b) incorporate climate-resilience and green road technologies in design and construction/upgradation of identified road corridors including improvement of drainage and slope protection works, and resurfacing of damaged road sections, preferably through locally available materials to improve all-weather connectivity between the hinterland and the 'Hashtag' corridors, national highways, and major markets. The selection of roads will be guided by an assessment of connectivity needs to economic and social infrastructure, important production and consumption centers in the state, local markets, hinterland and other key interstate and international road/rail/inland water transport networks, and potential social impacts including possibility and scale of land acquisition. The planned civil works aim to improve all-weather passability, enhance usage of alternative technologies and use of locally available materials, and increase resilience to climate change.
- ii. **Sub-component 1.2:** Promoting Road Safety Measures. This sub-component will support interventions for (a) improving road safety along project roads through safety audits during design, construction/upgradation, and implementation stages; (b) mainstreaming road safety monitoring and evaluation systems; and (c) institutionalizing road safety-related activities (database, updating codes and manuals, public awareness campaigns, capacity building, training), road accident data management and enforcement of road safety

protocols on identified project roads. The sub-component will also include provision of surveillance equipment (CCTV cameras for speed control, accident recording, etc.), Variable Messaging Systems (VMS), and establishing emergency response posts equipped with paramedics, ambulances, and tow trucks at identified locations along the project roads. The operation will also establish a communication system connecting accident sites with dedicated hospitals for post-crash care and a system to streamline reporting and recording of a road safety incident along the identified roads.

- iii. **Sub-component 1.3: Implementing Policy and Regulatory Reforms.** This sub-component focuses on (a) developing a policy and institutional reform framework for mainstreaming disaster-risk impact assessment and climate-resilient road infrastructure and to integrate findings into road project design and implementation; b) establishing a permanent Environment and Social Safeguards Management Unit at the PWD Headquarters with suitably staffed experts; (c) implementing green technologies and bio-engineering solutions along selected road corridors, along with institutionalizing the adoption of bio-engineering manual(s); and (d) preparing and implementing a multi-dimensional road safety strategy and institutional capacity building for long-term road safety management capacity in Meghalaya.

2. **Component 2: Logistics Infrastructure and Services.**

- i. **Sub-component 2.1: Developing key Logistics Infrastructure and Services for Selected Commodities.** This sub-component will support (a) establishing multi-modal logistics parks (MMLP) in Shillong and Tura; and (b) developing green rural freight and public transportation systems including: (i) district freight terminals close to district industrial parks/wholesale markets; (ii) rural transportation hubs (pickup trucks/small trucks/buses/taxi stops); (iii) georeferenced multi-purpose bus/taxi/trucks (small truck/pickup truck) stops at collection points and habitation clusters; (iv) fibre optics connection to the rural transportation hubs and truck/taxi stops at collection points/habitations; (v) annexe facilities (storage and grading/drying facilities) for rural transportation hubs; (vi) facilitating the provision of packaging and freight handling services by private operators; (vii) promoting digital transportation services; (viii) installing solar panels at hubs for support services and e-vehicle charging points and using solar-powered containers for temporary storage of perishable products (with private investments in high-traffic district freight terminals and regional hubs); and (ix) providing roadside amenities and marketplaces.
- ii. **Sub-component 2.2: Supporting Integrated Policy Reforms.** This subcomponent will include the development of (a) a State Logistics Policy for an integrated, efficient, and sustainable logistics system, benefiting the economy, environment, and society while leveraging insights from MITP project studies and the Integrated Transport Network Development Plan (ITNDP) developed by the state City Logistics Plans for Shillong and (c) strategies for creation of employment opportunities for the local population in the state's logistics sector.

3. **Component 3: Institutional Strengthening and Capacity Building.**

Sub-component 3.1: Strengthening Road and Logistics Management Capacity in the State. This sub-component focuses on (a) institutionalizing climate-resilience in road asset creation and better asset management practices for improved climate resilience, road safety, and Environmental and Social risk management; (b) capacity building of PWD/MIDFC and local contractors for managing Output and Performance-based Road Contracts; (c) undertaking analysis of transport network susceptibility to climate change and disaster vulnerability, and developing solutions to prevent climate-risk induced damages on transport and logistics infrastructures; (d) mapping geo-hazard risks and

establishing a control center for early warning systems and disaster management (including capacity building of personnel); and (e) developing a Transport Climate Emergency Management Plan.

Sub-component 3.2: Leveraging and Promoting Private Sector Participation in the sector. This sub-component will seek to create an enabling ecosystem in the state to promote private participation and assist in identifying priority logistics infrastructure projects for private investments (where traffic volumes justify such investments) on suitable PPP mode(s). The activities include knowledge support for (a) establishment of a dedicated road financing mechanism by adopting innovative financing schemes for state transport infrastructure development involving the private sector; (b) developing/updating state-level PPP policies and institutional mechanisms for promoting private sector participation in transport and logistics infrastructure; (c) devise a state-level strategy to accelerate the uptake of electric vehicles, including the establishment of charging infrastructure, by the private sector in both rural and urban areas as well as establishing green transportation hubs with solar-powered facilities, and assessing financing and infrastructure needs for greening the transport fleet.

Sub-component 3.3: Promoting Employment Opportunities for Women and Local Communities. The focus of this sub-component is on providing support and Technical Assistance to build state and institutional capacity for skilling programs related to resilient transport systems, road safety, logistics value added services and trade facilitation programs with a focus on community and women empowerment and improving access to jobs for women, VECs, and local communities.

Component 4: Contingent Emergency Response Component (CERC). This component will support PWD/MIDFC in case of an Eligible Crisis or Emergency in responding promptly and effectively to it as per the Contingent Emergency Response Manual. Following an eligible crisis or emergency, the Recipient may request the Bank to re-allocate project funds to support emergency response and reconstruction.

Meghalaya PWD (Roads) (MPWD) intends to engage qualified eligible multi-disciplinary consulting firms for (1) conducting feasibility study and preparation of detailed project reports¹¹ and; (2) Environmental and Social Impact Assessment (EISA) for the proposed project works. Both assignments would be prepared by independent consultants, in close collaboration and in parallel. The Consultants are expected to be of international level both in terms of quality and adherence to the agreed time schedule. The details of road corridors identified are given in Annexure A. The PWD / MIDFC will be the Employer and executing agency for the consultancy services.

B. OBJECTIVE

The key objective of this consultancy is to conduct Environmental and Social Impact Assessment (ESIA) for the Meghalaya Logistics and Connectivity Improvement Project and prepare associated environment and social management instruments in accordance with the requirements of the applicable national and state legal framework and the World Bank's Environmental and Social Framework (ESF) as detailed in these Terms of Reference. Further,

¹¹ There would be an independent agency responsible for Feasibility Study and preparation of Detailed Project Report. MPWD(R) will coordinate the studies undertaken by DPR and ESIA Consulting Firms to ensure sharing of data at different stages of project preparation i.e., feasibility study, preliminary design, detailed design, bid preparation and stakeholder engagement. MPWD(R) to facilitate the ESIA and DPR Consulting firms to meet every fortnightly to ensure that the findings of the ESIA are consistently incorporated in the design.

it serves to identify social and environmental impacts (positive and negative) and risks and to design respective measures to prevent, reduce, mitigate and/or offset/compensate (for) them.

C. KEY DELIVERABLES

For Corridors identified in Annexure A, the following deliverables would be required:

- i. Environmental and Social Screening Report (including Critical Habitat Assessment, CHA. and determination of need for Free Prior and Informed Consent, FPIC)
- ii. Environment and Social Impact Assessment (ESIA)
- iii. Environment and Social Management Plans (ESMPs)
- iv. Resettlement Action Plans and Indigenous Peoples Development Plan including Stakeholder Engagement Plan (RAP, IPDP and SEPs)
- v. Final ESIA Report, inclusive of all the above, along with a non-technical summary in English and local language.

D. DETAILED SCOPE OF WORK

The scope of work to be carried out by the Consultant shall include, but not limited to the following:

- i. **Task 1: Review of Project Documents:** The Consultant will review all available project design documents including the DPRs, studies, reports, plans, and planned project design to understand the context within which the environmental and social assessment should be carried out, including a robust alternative analysis articulating the application of the mitigation hierarchy. They will understand the scope of the proposed project interventions including any ancillary infrastructure and Associated Facilities. This refers to on-site and off-site infrastructure and utilities that will be required (e.g. access road networks, contractor facilities, material storage areas, quarries and borrow areas, among others); including facilities and activities by third parties that could impact or be impacted by the project, or which effects could accumulate to those from the project (e.g. synergies or antagonistic effects); administrative setup, land use and planned developments within the vicinity of the Project Location; detailed maps / photos showing the project site and its area/s of influence; summary of activities to take place during project planning, construction, operation and decommissioning along with expected timelines for execution of main project development phases.

The scope of the present ToR will include the corridors mentioned in Annexure A as well as ancillary infrastructure and associated facilities, including relevant sections of the 'Hashtag' corridors including planned district freight terminals and logistics park at Shillong and Tura and any other sites.

Consultants will also review the existing E&S Screening checklist from E&S documents/ instruments from the previous World Bank project to assess gaps with respect to the requirements of the MEGA project and the World Bank ESF The Consultant shall suggest required modifications to the existing documents in this respect as well.

Where specific activities have not been finalized yet, the Consultants will prepare a template screening questionnaire for such interventions based on the anticipated environmental and social risk and

proportionate to the scale of operation and environmental and social sensitivities in the tentative locations/ districts under consideration.

- ii. **Task 2: Policy, Legal and Regulatory Review:** The Consultant will map and analyze the (a) environmental and social laws, policies, guidelines, standards, regulations and codes that apply to the project activities taking into account national as well as state level legislations; (b) applicability of Environment and Social Standards 1-10 under the World Bank's Environmental and Social Framework with respect to specific sub-projects/proposed investments in question; (c) the existing institutional set-up relevant to these standards and with respect to required clearances and permits; (d) institutional mechanisms, operational modalities, technical expertise and resources with MPWD and other implementing partners to meet the requirements of the ESSs, and identify key gaps (if any) to be addressed. In particular, the Consultant will analyze land ownership (private, communal, government etc.) and land use patterns as well as the legal framework governing land acquisition and land management in Meghalaya. The consultant will also review the relevant legal framework applicable to indigenous / tribal communities in the project affected area to understand their legal status, legal rights, traditional institutions and practices relevant for the project activities and their potential impacts.
- iii. **Task 3: Conduct Screening and prepare Environmental and Social Screening Report:** Since the aim of the project is to develop climate resilient and sustainable road , it is important that the consultant shall considers the following as part of the screening exercise i.e. environmental settings, identification of sensitive habitats, physical and natural hazards e.g. landslide prone areas, erosion prone areas, community forest, sacred groves, areas having endangered plant species (pitcher plant) etc. for each road corridor/ project component to determine scope of assessment. The consultant shall use available tools e.g. The Integrated Biodiversity Assessment Tool (IBAT); IUCN Red list, and national / atlas etc. to undertake screening for biodiversity impacts (e.g. Critical Habitat Scoping).

Conduct an Environmental and Social (E&S) Screening using the E&S Screening Checklist as per Annexure A to determine key risks, potential impacts/ issues. In case the screening exercise identifies E&S sensitivities the same will be flagged to MPWD. The outputs of E&S screening exercise will also be provided to the Consultants preparing the Detailed Project Report (DPR Consultants) for further investigation to ensure that resilience measures are included in the design and best effort for the design team to apply the Mitigation Hierarchy to avoid critical habitats, key ecosystem services, slide prone areas, waterways, significant need for resettlement, and impact on any sensitive/ vulnerable populations. The E&S Consultants should also collaborate with the DPR Consultants to identify alignment / technology/ design alternatives to avoid the E&S sensitivity. Based on the output of these exercise, the final alignment would be agreed with MPWD. The Environmental Screening report should document these and submit for approval of the MPWD.

The Consultants will collect information from the relevant Departments and/or generate georeferenced information using published information from authentic sources as required. The Screening report for each of the project roads or components should be accompanied by a georeferenced map showing all the environmental and social sensitivities. The kml files showing all the E&S sensitivities associated with the project components also need to be submitted.

- iv. **Task 4: E&S Scoping and Preliminary Survey and Planning:** The Consultant shall (a) conduct preliminary planning survey/ strip map of the project roads to understand environment and social settings, available ROW and required ROW along the roads to identify parameters for undertaking preliminary environmental and social assessment; (b) develop formats, including MIS application/mobile application to collect data through field surveys, focus group discussions, and consultations; (c) define the 'study area' considering different environmental and social settings along the project alignment, project activities and associated facilities including watersheds, national parks/reserves/forests, sensitive habitats for critical endangered and endangered species, in-migration and settlement, natural resource exploitation and commercial development; and (d) identify stakeholders including likely project affected parties for consultations.

Considering the ecological and biodiversity sensitivities in the state of Meghalaya, Data on various ecological features including notified protected areas, critical habitats, forest areas, type of vegetation and their significance including the wild animals and their behaviors including seasonal movement pattern will be collected from available authentic secondary data sources such as forest working plan, wildlife reports, research papers, and other published data of the government bodies, survey of India maps/ toposheets, IBAT Report etc. The Consultant shall, after reviewing the documentation and conducting a preliminary site visit carry out the Critical Habitat Screening as per the requirement of ESS6. This will help shape the framework for further biodiversity assessments and surveys. Additionally, it will assist in understanding impact zones, verifying stakeholders, and facilitating meetings and coordination with relevant government and non-government representatives.

Based on the Preliminary E&S surveys including the preliminary Bio-diversity assessments the Consultants should carry out the E&S scoping. The Scoping exercise is expected to identify the environmental and social key issues likely from the project activities and which needs to be addressed in the ESIA. This will also identify the requirement for the detailed physical, ecological, and sociological assessment required for the project areas, especially those related to locations and sensitivities along the project's sites and corridors. This Scoping shall also help identify the tools would include various methods e.g., field surveys, environmental baseline monitoring focus group meetings, workshops, questionnaires, interviews, etc. The Scoping report should clearly highlight the E&S sensitivities and issues, potential impacts likely in the project

- v. **Task 5: Environmental Baseline Studies:** An environmental profile of the project influence area shall be prepared, based on appropriate primary & secondary surveys and field investigations. The objective of this profile is to establish existing environmental conditions of the project area, in terms of air, water, noise, soil and other environmental parameters, which should form the basis for the prediction of impacts due to proposed project activities. As part of this, the environmentally sensitive land uses (protected natural areas, areas of ecological value, sensitive receptors like schools, hospitals etc) would also be identified and plotted on a map to scale.

The extent and duration of surveys shall be judiciously decided by the consultant as per requirements of the environmental regulations applicable in India and guidelines of international funding agencies. The profile prepared shall be adequate to predict the impacts of the project and shall cater to the requirements of obtaining necessary environmental clearances from the authorities (if necessary).

The profile shall essentially include all physical, ecological and socio-economic components of the project environment and bring out the salient and sensitive features of the same. Important aspects such as reserve forests, national parks, major water bodies, structures of archaeological/historic importance, roadside tree/plantation, community property and other environmental resources (if any) shall be recorded.

Critical Habitat Surveys: Once the Critical Habitat is established at the Scoping Stage the field survey on biodiversity within the study area as critical habitat would be initiated to gather relevant information. The field survey will be limited with respect to the flora and fauna within the study area, as defined during the Scoping study, using latest scientifically proven and accepted methods such as surveys and camera trap/monitoring as discussion with MPWD. The visual spotting and critical habitat analysis of wild animals will be carried out. This will be conducted by using line transect &/or block/grid count methods. The GPS device will be used to map landscape elements including various habitats, vegetation, water sources, and potential threats. Record observations in a systematic and standardized format, including species sighted, habitat characteristics, any anthropogenic activity etc.

The biodiversity sampling will be carried out by using methods appropriate for the proper species inventory and their habitat preferences. Habitat details should include exact location of the species, area of occurrence, habits, time of occurrence etc. The survey should also cover the Habitat Study (Feeding, Breeding and Roosting areas); Distribution/Status of Birds; Rare & Endangered species of flora and Fauna and specific local characteristics of biodiversity in the study area. The survey will also cover other key factors like trails, droppings, water sources and feeding areas depending upon the movements of the animals, propagation in case of plants. In addition, monitoring of daily activity patterns by detecting peak activity periods for the wild animals. For plant species, it would be important to assess other wildlife resources present in the area, status of vegetation and ecosystem type/s, presence or absence of area occupants/settlers, presence or absence of man-made pressures/threats to the survival of wildlife living in the area, identification of existing land-uses, tenurial instruments and traditional claims are identified.

Stakeholder consultation will also be an important source of information. The Consultant will also conduct consultation with the local people as well as other stakeholders such as Forest and Wildlife Department, research institutes, NGOs etc. regarding the occurrence of wild animals and plant their habitats, behavioral pattern in and around the project area as well as their perceptions on presence of wildlife and land use changes. All the data will be compiled based on the findings from visual spotting, camera trap data, community feedback, and literature reviews to establish the biodiversity profile in the study area.

- vi. **Task 6: Social Baseline Studies:** The socio-economic baseline will gather secondary information on project area communities, collect socio-economic and cultural profiles of affected people (including those affected indirectly), cover demographics, poverty, human development, and social categories, mapping and profile of vulnerable populations and Indigenous groups, and evaluate community engagement in planning and disaster preparedness.
 - a. **Methodology and Approach:** A participatory approach would be adopted for establishing the social baseline and conducting the social impact assessment. This will involve the following:
 - i. Review of Relevant documents:
 - ii. Site visits

- iii. GIS mapping of land: GIS mapping of the land required will be conducted to ascertain the footprint of the project corridors and area of expected impact. Latitude and longitude of affected land and structures will be captured and recorded. The GIS mapping procedure will be participatory with landowners and community members.
 - iv. Stakeholder consultations: The consultant will conduct a mapping of key stakeholders, including landowners, PAHs, community organizations, traditional leaders, relevant government departments.
 - v. Socio-economic survey and FGDs: The principal method of assessing social impact of the proposed project will be through a socio-economic survey and FGDs. Survey instruments will include detailed interview schedules and open-ended and semi-structured interview schedules for FGDs.
 - vi. Sampling design for the survey: Socio-economic data and information about livelihoods and assets ownership will be collected for all landowners through a primary census survey using a detailed interview schedule in the local language. The sampling design of the survey will take into account the demographic profile of PAHs, ownership of land, immovable and moveable assets, vulnerability, education, occupation and skill levels and access to infrastructure.
 - vii. Focused Group Discussions (FGDs): FGDs will be carried out to obtain community feedback and understand socio-economic conditions, particularly pertaining to vulnerable groups in the community. The objective of FGDs is to gather information about the lives of the project affected families, the areas they live in, the history of their land, relationship with government authorities, challenges they may face due to the proposed project. In order to obtain information regarding possible impacts on women, future aspirations and expectations of project affected families, ecological risks, long term livelihood trajectories, institutional and development services, and impacts during construction and operation phases including social and cultural impacts, the focused group discussions will be conducted with different groups of the respondents.
 - viii. Public hearing: The draft ESIA findings would be disseminated and consulted upon at public hearings in affected areas.
- vii. **Task 7: Environmental and Social Impact Assessment:** In accordance with Environment and Social Standard ESS1 (Assessment and Management of Environmental and Social Risks and Impacts) and the applicable legal framework, the Consultant will conduct the Environmental and Social Impact Assessment for selected sub-projects as per Annexure A. The Consultant will consider, in an integrated way, all relevant direct, indirect, and cumulative environmental and social risks and impacts of the project including those identified according to the relevant ESS. They will conduct an initial screening and in-depth impact assessment to identify environment and social risks of the proposed investments and confirm the risk categorization. The Consultant will also identify and assess, to the extent appropriate, the potential environmental and social risks and impacts of Associated Facilities. The Consultant will evaluate the project design to assess the

potential environment and social risks and impacts arising from the project activities. In particular, the assessment will cover the following:

Impacts (Environmental): The Consultant shall identify positive and negative impacts likely to result from the proposed project, interpreting “environmental” throughout the EA to include socio-economic impacts as well as impacts on the natural environment. All the project activities during pre-construction, construction and operation phases shall be considered and assessed for impacts. The impact assessment shall necessarily cover the “no action” alternative in the analysis. The consultants shall regularly interact with the technical and social team of the project to share the findings of the impact assessment.

The ESIA will also analyze environmental factors such as climate change, natural hazards and inform the technical studies about those. It shall also try and influence the technical design on the reuse of existing material, recommend alternate material which can be used in the construction of the road. The risks/impacts associated to use of energy, water, and raw materials; air and water quality; generation of hazardous and non-hazardous wastes; and GHG emissions will also be identified assessed, and the mitigation measures built into the project. It will also calculate/estimate the greenhouse gas (GHG) emissions from the construction and operation of the project in accordance with internationally or nationally accepted methodology. The Community Health Safety risk during construction and operation and the impact impacts on tangible and intangible cultural heritage (if any) needs to be assessed.

Critical Habitat Assessment: In case of critical habitats an assessment of the risks and impacts of the project on terrestrial biodiversity, including habitats, protected areas, areas of high biodiversity importance and essential ecosystem services needs to be carried out. Outline threats and other factors outside the proposed project that may result in a future change of the terrestrial baseline conditions. Any potential impacts to natural or critical habitats and/or protected or biodiversity / wildlife conservation areas; and related potential impacts to key ecosystem services , species will also be documented in the ESIA.

Impacts (Social): The assessment would analyze key economic, social, and cultural impacts on different groups of people (such as landowners, small businesses, shopkeepers, commercial establishments, SCs/STs, vulnerable groups and women), and communities (common and cultural heritage properties, including lands). The impacts would cover titleholders as well as non-titleholders. The assessment would look at impacts at the pre-construction, construction and post-construction stage (such as disruption, loss of access, loss of livelihood, debris disposal, impact on host community, if any, issues arising due to labour influx, etc.) In addition, impacts on all affected community assets such as places of worship, sacred forests, schools and community would also be assessed. In case of logistics infrastructure, the assessment will analyze potential impacts related to the construction and operation, including impacts on livelihoods, safety of vulnerable groups including women, children, persons with disabilities and senior citizens. This comprehensive assessment will provide a thorough understanding of the project area's current environmental and social conditions (and past trends), enabling informed decision-making and effective mitigation strategies for the planned investments under the project.

Advise the Way Forward (if any): Determine the significance of residual impacts remaining after the application of the proposed mitigation measures and determine additional measures which might be taken by the project to ensure that adverse impacts have been minimized to the extent practicable. Provide inputs

into the existing EIA report to upgrade the report ecology and bio-diversity section and other relevant area which may need to be updated because of the finding of this study.

Gender: The ESIA will look at differential impacts on women among project affected persons through targeted consultations. It will assess their socio-economic status, agency, travel patterns and livelihoods activities. The assessment will look at risks and impacts related to Sexual Exploitation and Abuse, Sexual Harassment and Gender-Based Violence among project affected persons, particularly concerns related to project activities and improved connectivity.

Indigenous Peoples: The ESIA will consider impacts on indigenous peoples in accordance with the applicable legal framework, traditional institutional mechanisms as well as the requirements of ESS7. It will assess the positive and negative impacts of the project on the IPs or Scheduled Tribe (ST) population in the project area. The Consultant shall conduct informed and meaningful consultations with the STs in the project area and ascertain the positive and negative impacts on them, especially with respect to loss of land, structures, livelihood, relocation, as well as impacts on Indigenous peoples' cultural heritage. If any such groups are identified, the principle of ESS7 will be implemented through the development of an Indigenous Peoples Planning Framework (IPPF), consistent with the requirement of ESS7. In particular, the assessment will analyze the requirement for Free Prior Informed Consent (FPIC) as per ESS7 and implement, if required.

Land: The ESIA will assess risks and impacts of project activities on land, structures, trees, and crops, local resources, and common properties, including access restrictions as per ESS5. This will include quantitative estimation of land required for construction; impact on public, private and communal assets; number and categories of project affected people (PAPs), including displacement. The ESIA will also analyze existing livelihoods patterns and assess the potential impact on livelihoods from project activities. The Consultant will compile the land requirement, compensation and assistance for PAHs/PAPs in the state and formulate suitable compensation / assistance package in accordance with the Entitlement Matrix. Where land acquisition is required under the provisions of any law such as the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation And Resettlement Act, 2013, the ESIA will ensure that all legal requirements for Social Impact Assessment are also complied with, including coordination with MPWD for any notifications, constitution of Expert Groups etc.

Labor and Working Conditions: The assessment will estimate the labour requirement on the project. It will evaluate risks and impacts related to labor influx, working conditions, child and forced labor, migrant labor, primary suppliers, hazardous work, workplace discrimination, occupational health and safety (OHS), risk of accidents, gender-based violence (GBV), sexual exploitation and abuse (SEA), and potential grievances. The assessment will also look at existing skill levels in the local community to meet the skill requirements for the project. It will also address risks associated with primary suppliers in accordance with ESS 2 and ESS 6. This assessment will inform the development of Labor Management Procedures and the GBV Action Plan. A Generic Hazard Risk Assessment will be carried out based on the standard activities, machinery etc to identify the key OHS risk. This will help identify the key OHS risks in the project and inform the contractor through the Bidding Document.

Consultation: The ESIA shall be based on a consultative process, which shall be recorded. The ESIA will map the key stakeholders along with the level of impact on them and their influence on project activities.

Meaningful consultations as outlined in ESS10 shall be conducted with each stakeholder category. Differentiated approaches would be adopted for effective consultations with disadvantaged and vulnerable groups such as women, disabled persons, senior citizens, SCs etc. The Consultations shall be done with adequate advance notice to the stakeholders and shall be sensitive to traditional cultural institutions and practices, particularly in Scheduled Areas. Consultation would also include FPIC, if required. The ESIA shall document the public consultations process followed, stakeholders consulted, consultation methods adopted, dates of consultation and a summary of key issues/concerns raised and how they were addressed. A Stakeholder Engagement Plan for the respective sub-project as well.

Institutional Capacity Building and Training: The assessment will also identify responsibility for implementing the mitigation measures and identify any capacity or other concerns that need to be addressed. It will assess the role of the key institutions, departments, and stakeholders involved in the sub-project and describe their roles, responsibilities and relationship with the project activities in specific relation to implementation of ESMP and RAP. Provide an assessment of the strengths, weaknesses and opportunities for capacity enhancement to address environmental, social and gender issues.

Grievance Redressal Mechanism and procedures: The ESIA will assess existing grievance redressal mechanisms and procedures relevant to the planned activities to ascertain their effectiveness, responsiveness and adherence to the requirements of ESS10.

While conducting ESIA, the Consultant will work in close coordination with DPR consultant to ensure that the environmental and social measures are considered and integrated in the design. The MPWD shall be responsible for development of a coordination mechanism for ensuring timely sharing/exchange of information and documents between DPR and ESIA consultants.

- viii. **Task 8: Environmental and Social Management Plans (ESMPs):** Based on the Environmental and Social Impact Assessment (ESIA), the Consultant will prepare sub-project level Environmental and Social Management Plans (ESMPs) in line with the applicable legal framework, ESF requirements to systematically address mitigation, management, and monitoring measures across all project phases, including planning, design, construction, operations and maintenance, and decommissioning and provide clear guidance to the MPWD/and other implementing agencies on managing environmental and social impacts during different stages of the project cycle. They will encompass technical measures related to labour conditions, construction camps, occupational health and safety, pollution control, waste management, biodiversity, cultural heritage, and emergency preparedness among other aspects mentioned in the section above. The ESMP should underline the potential environmental and social risks and impacts resulting from the project activities and detail proposed mitigation measures with specific impact types, conditions, and relevant designs, alongside monitoring parameters, methods, locations, and frequencies. It shall also outline the institutional responsibilities including timeline and budget, for monitoring and implementation of mitigation measures. Additionally, the plans will include an implementation schedule and cost estimates integrated into the overall project budget, as well as a capacity development and training plan outlining institutional responsibilities. In addition, the Consultant will prepare detailed specifications for environmental, social, health, and safety (ESHS) requirements for bidding documents in consultation with the DPR consultants. The ESMP will also contain specific plans (as may be relevant for the assignment):

- **Bio-diversity Management Plan:** Based on the outcome of the impact assessment study and identification of mitigation measures, a biodiversity management plan will be formulated applying the mitigation hierarchy. The biodiversity management should outline mitigation measures, skills, equipment, timeframes and costs required for implementation. The biodiversity management plan shall also describe the ecosystems affected, species affected, eco system services affected, protection status, site ownership and control, baseline threats along with potential project related risks and impacts. Along with the mitigation measures the plan will assign responsibility for implementation and monitoring and budgetary provisions. These will be aligned with the existing institutional arrangements to ensure effective implementation. Accordingly, the capacity building and training provisions required for the Biodiversity Management Plan implementation will be developed under project so that the PMU staff will also be able to participate and have oversight on the implementation of these specific areas. The performance indicators will be defined for monitoring and evaluation will be integrated with the other EMP measures to improve efficiencies in the implementation.
 - **Occupational Health and Safety Plan:** Based on the Generic HIRA developed for the project road activities the Consultant would develop an Occupational Health Safety Management Plan which will be part of the ESMP and will be included in the bidding document. This will provide guidance to the Contractors during the Bidding process of the type of OHS precautions expected during the implementation.
 - **Dumpsite Stabilization Plan:** Based on the information available in the DPR on the excess cut material from hill slopes the consultant shall propose a Dumpsite Stabilization Plan. The plan shall include: i) Protocol for valley side dumping, ii) Stabilization of the slopes to prevent landslide/erosion of overburden material, iii) adequate safety measures to be taken to prevent landslide and rock fall accidents on construction and road stretches under the contract., iv) Traffic safety management plan with all signs and protections , v) Occupational Health and Safety Code as may be necessary for these works to be done .
- ix. Task 9: Resettlement Action Plan and Indigenous People Development Plan (RAP cum IPDP): Based on the Environmental and Social Impact Assessment (ESIA), the Consultant will prepare sub-project level Resettlement Action Plans (RAPs) in line with the applicable legal framework and ESF requirements to address the mitigation of social risks, in particular those related to land acquisition, resettlement and displacement. The RAP shall be based on the socio-economic baseline and would cover the impacts on the community and other adversely affected groups. The RAP would include: (a) census survey of displaced persons and inventory of affected land and assets¹² including titleholders and non-titleholders; (b) livelihoods impacts; (c) details of communal land; (d) description of asset valuation and compensation procedures; (e) eligibility for compensation and any other forms of assistance as per the Entitlement Matrix ; (f) consultation and disclosure arrangements; (g) Implementation arrangements; (h) timeline and budget; (i) Grievance Redressal Procedures.

¹² Kilometer-wise schedule of ownership, details of properties, such as buildings and structures falling within the right- of way, utility relocation plan (URP), and account in regard to felling of trees of different type and girth

The RAP shall also include an Indigenous People Development Plan (IPDP) for the sub-project, which will include: (a) summary of the targeted social assessment (part of ESIA) including the results of the consultation with the IP/tribal community, and verification of their broad community support for the project (including FPIC, if required); (b) mechanism to ensure that IP/tribal communities can meaningfully participate in the project activities and maximize their benefit from the project; (c) institutional mechanism to ensure that project benefits will be shared with IP/tribal community and that the project activities will not interfere with their way of living and cultural identity; (d) grievance mechanism through which affected IP/ tribal communities can voice concerns; and (e) monitoring, evaluating, and reporting mechanism including budget for the implementation of IPDP, among others.

- x. **Task 10: Provide Support in Obtaining Land:** The ESIA Consultant in coordination with the MPWD Environmental and Social Management Unit (ESMU) shall carryout the following activities:
- a. Liaise with the respective Autonomous District Councils for No Objection Certificates (NOCs) regarding the acquisition of land for the project, having considered MPWD request for land for the project.
 - b. Once the ESIA study is completed (prior to preparation of RAP), assist the Government of Meghalaya and the respective Autonomous District Councils in conducting a census survey/joint spot measurement of the affected land in the respective villages in conjunction with the Executing Agency, current usufruct occupiers of the respective land, if any and Gaon Bura (Village Headman) or Revenue Officials Autonomous Council as the case may be. During the census survey/ joint spot verification, the land to be acquired for the project will be identified, and land holding patterns, village boundaries, its trees, crops, buildings, and other assets will be recorded.
 - c. Once the census survey/joint verification is completed, facilitate consultations— among the affected households, their representatives, Autonomous Councils, Gaon Bura/ Village Headman, MPWD, and the Revenue Department, GOM officer to arrive at a fair compensation comprising land compensation and jirat (valuation) of the affected property, if required. The valuation of land, structures and other assets will be calculated as per the RFCTLARR Act, 2013.
 - d. Liaison with the Revenue Officer for drafting the 'bill of compensation' based on the ESIA report, resettlement action plan/R&R scheme, joint spot verification/census survey, land measurements, records of the jirat values, individual consent of each land user to handover the land parcel, the estimates of land values as per the rates for land approved by the autonomous district council, and the rates approved by the MPWD for civil structures and buildings inco- ordination with Revenue Department GOM.
 - e. Identification of land parcels missed out from acquisition in the first round and assist the Gaon Bura (Village Headman) in Joint spot measurement. Assist and coordinate with respective authorities for preparation and finalization of Bill of Compensation for acquisition of the land under missing plots.
 - f. Obtain approval for estimates for shifting of utilities of all types from the concerned authorities and MPWD.

- g. Coordinate with the DPR consultants in finalizing the DPRs and bid documents based on the ESIA and the status of land acquisition/land purchase process.
- h. Consultant is also required to prepare all land acquisition/land purchase papers on behalf of MPWD (i.e. all necessary schedules and draft notifications as per applicable RFCTLARR Act and Land Purchase Policy) for acquisition of land.
- xi. **Task 11: Provide Support in Obtaining Environmental and Social Clearances:** For project road corridors, the ESIA consultant, in consultation with the DPR Consultant, shall identify the road stretches requiring forest and wildlife clearances and assist MPWD in obtaining these clearances. The scope shall include developing KML files, conducting tree counting surveys and their enumeration, and preparing a forest land diversion map on toposheets and Google imagery. The consultants shall be responsible for preparing applications for Environmental, Forest, and Wildlife clearances, including supporting documents such as the land schedule verified by the Forest Department. They will also present the case before the Ministry of Environment, Forest and Climate Change (MoEF&CC) and the Forest Department, Government of Meghalaya.

The MPWD shall provide the necessary support letters and any official fees as per the demand note issued by the concerned agencies from whom the clearances or information are being sought to enable implementation. Additionally, the ESIA consultant should clearly define the likely timelines along with the necessary support required, especially for Forest Clearance, to the agency for obtaining the applicable clearances.
- xii. **Task 12: Disclosure:** The Consultant will guide the MPWD for in-country disclosure, specifying the timing and locations; translate the key documents, such as the Executive Summary of ESMP, RAP and IPDP in local language and draft advertisement for the newspaper announcements for disclosure; and help them to place all the related reports on the client's website and places accessible to stakeholders.

E. DELIVERABLES, TIMELINES AND PAYMENT SCHEDULE

Deliverable	Timeline	Payment
Submission of Inception Report including review of existing E&S Documents	30 days	10% of the Contract amount
Submission of E&S Screening Report	60 days	25% of the Contract amount
Submission of E&S Scoping Report	75 days	25% of the Contract amount
Submission of the ESIA including ESMP, RAP and SEP	120 days	40% of Contract amount
Submission of the Environmental Clearance/ Forest Clearance/ Wildlife Clearance (if required)	200 days	

The Consultant shall submit to the client the reports and documents in bound volumes (and not spiral binding form) after completion of each stage of work as per the aforementioned schedule. Further, the reports shall also be submitted in soft copies in addition to the hardcopies. Consultant shall submit all other reports mentioned specifically in the preceding paras of the TOR.

The time schedule for various submissions prescribed above shall be strictly adhered to. No time overrun in respect of these submissions will normally be permitted. Consultant is advised to go through the entire ToR carefully and plan his work method in such a manner that various activities followed by respective submissions as brought out

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above are completed as stipulated. Consultant is, therefore, advised to deploy sufficient number of supporting personnel, to undertake the project preparation activities in construction package simultaneously. As far as possible, the proposal should include complete information such as number of such persons, name, position, period of engagement, remuneration rate, etc. The Consultant is also advised to start necessary works from the beginning so as to gain time in respect of various other activities in that stage

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LIST OF WORKS FOR EAST MEGHALAYA

S. No.	Name of Scheme	Length (Km)
	Upgradation of Dkhiah - Sutnga - Saipung - Pala upto Semmasi Road (0- 64.00 Km)	64.00
	Upgradation of Lakadong - Mooriap upto Semmasi Road (0 - 21.00 Km)	20.00
	Upgradation of Umtyngar - Sohra Road upto 8th Km of Mawsmal-Shella	42.00
	Conversion of 17 Weak Bridges under Pynursla Division to Permanent R.C.C. Bridges	
	Reconstruction of a weak bridge into permanent RCC Bridge on Nongstoin-Mawait Road at 10th Km	39m
	Construction of Umpling Bridge including approaches (Inside Shillong City)	80m & 60m
	Upgradation of Weiloi - Mawkyrwat upto Keniong including replacement of SPT Bridges into permanent RCC Bridge	50.00
	Upgradation of Weiloi - Mawsynram Road upto Phlangwanbroi	27.00
	Upgradation including construction of road from Kongong (NH-06) to Shkentalang (NH-206) passing by the side of Phe Phe and Rynji Falls (Partially Greenfield)	27.00
	Upgradation of Umsning - Jagi Road (Remaining Portion from 40.13 - 80.00 Km) i/c Major bridge	39.87
	Construction of Umdang-Amarsang-Maheshkola Road	65.00

Qualifications and Requirements for Key Personnel

The Consultants shall be required to form a multi-disciplinary team for the completion of this assignment. The consultants Team shall be manned by an adequate number of experts with relevant experience in the execution of similar detailed design assignments. The consultant shall submit the CVs for Key Professionals for evaluation. The details of key professionals whose CVs will be evaluated are furnished below.

KEY PROFESSIONALS

Sl. No.	Subject Expert	Total person months
1	Team Leader	8 months full time
2	Environmental Specialist	8 months full time (50% time on site)
3	Social Development Specialist	8 months full time (50% time on site)
4	Scheduled Tribes Specialist	4 months – on site (Intermittent)
5	Bio-diversity Expert	4 months – on site (Intermittent)
6	Gender Expert	2 months (30% time on site) (Intermittent)
7	Community Consultation Expert	3 months – on site (Intermittent)
8	Land acquisition Expert	3 months – (75% time on site) (Intermittent)
9	GIS & Remote Sensing Mapping Specialist	3 months – on site (Intermittent)
	Total	43 months

It is expected that above team shall be assisted by other sub-key professional/ support staff for their respective part of the assignment, however, they shall not be considered for purposes of evaluation of technical bid. The sub-key professional staff mentioned below is tentative. The consultant shall propose the requisite staff and the respective person-months based on their understanding and experience.

All the staff manning the key positions is required to be proficient in English. The consultant shall deploy an equal or more number of suitably qualified sub-key professional and support staff as specified above to assist the key professionals to render these services in a time bound manner. It must be noted that time is the essence of these services. Consultants have to provide a certificate that all the key personnel as envisaged in the Contract Agreement have been actually deployed in the projects. They have to furnish the certificate at the time of submission of their bills to MPWD from time to time.

The Consultant shall be expected to work closely with the DPR preparation team. In case of any delays in the deliverables for this contract, including land acquisition processes, which are beyond the reasonable control of the

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Consultant, an extension for the relevant team / staff along with logistic support/ transportation shall be granted by the MPWD based on a realistic assessment of the situation.

QUALIFICATION AND EXPERIENCE REQUIREMENT OF KEY PROFESSIONALS

The key personnel required for the completion of the assignment are mentioned below. The qualification and experience requirement are also mentioned herein. CV of sub-key professional staff positions will not be used for scoring. Only the CVs of Key Professional Staff will be considered for scoring in evaluation of technical bids.

Team Leader – Environmental Engineer

i)	Educational Qualification	
	Essential	Must be a Post Graduate in Environmental Engineering/ Environmental Science / Environmental Management
ii)	Essential Experience	
	Total Professional Experience	Minimum 20 years
•	• Role specific experience	<ul style="list-style-type: none"> • Minimum 15 years on environmental impact assessment of development projects and conversant with WB and other MDBs / ADB requirements under safeguard Policy Statement. • 5 years in base line survey, environment impact assessment, monitoring and Environmental Management Plan (EMP), preparation of EIA reports, Environmental/ Forest/ Wildlife clearance reports of highway infrastructure projects/ externally aided projects. • The candidate should have experience of conducting environmental impact assessment for roads located in hilly area and should be conversant in preparing management/mitigation measures for at least three projects of similar type and scale. • Related experience of about 5 years in developing countries is essential The candidate must have full knowledge of the international financial institutions' guidelines, procedures and operational policies/directives.

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		<ul style="list-style-type: none"> Experience of working as environmental specialist in at least two international financial institutions funded projects in North Eastern states of India. The candidate must have the experience of preparing environmental management plans and supervising and monitoring implementation of the plans. The candidate should have organized participatory consultation workshops.
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	Experience in similar capacity	<p>Environmental Specialist in at least 3 highway projects (intermediate /2/4/6 laning of NH/SH/MDR/Expressways/ externally aided projects) in North Eastern states of India.</p> <p>Environmental Specialist in preparation of DPR/ Feasibility Study of intermediate/ 2/ 4 laning works of major highway projects (NH/ SH/ MDR/ Expressways/externally aided projects) of aggregate length of about 100 km.</p>
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Environmental Expert

i)	Educational Qualification	
	Essential	Post Graduate in Environmental Engineering/ Environmental Science
ii)	Essential Experience	
	a)Total Professional Experience	Minimum 10 years
	b) Role specific experience	<ul style="list-style-type: none"> Minimum 5 years on environmental impact assessment of development projects and conversant with WB and ADB requirements under safeguard Policy Statement. 3 years in base line survey, environment impact assessment, monitoring and Environmental Management Plan (EMP), preparation of EIA reports, Environmental/ Forest/ Wildlife

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		<p>clearance reports of highway infrastructure projects/ externally aided projects.</p> <ul style="list-style-type: none"> • The candidate should have experience of conducting environmental impact assessment for roads located in hilly area and should be
		<ul style="list-style-type: none"> • conversant in preparing management/mitigation measures for at least three projects of similar type and scale. • The candidate must have the experience of preparing environmental management plans and supervising and monitoring implementation of the plans. The candidate should have organized participatory consultation workshops.

Social Development Specialist

i)	Educational Qualification	
	Essential	Post-Graduate in Social Work/ Sociology or a closely related field of Social Science.
ii)	Essential Experience	
	a)Total Professional Experience	Minimum 15 years

	b) Role specific experience	<ul style="list-style-type: none"> • Experts should have 15 years of post graduate experience out of which about 10 years' experience of working as social/resettlement expert for major civil engineering projects. • The person should have experience of working as social/ Resettlement expert for at least 3major road project (s) in similar geographic/ environmental condition. • 5 years in resettlement & rehabilitation impact assessment and related studies, preparation of Resettlement & Rehabilitation plan, in externally aided project in developing country is required and conversant with WB / ADB projects. • The candidate must have full knowledge of international financial institutions' relevant policies and guidelines and operational directives, and must have worked as social/resettlement expert on at least three internationally funded projects. Thorough knowledge of prevailing land acquisition Act/ Policies. • Experience in supervising and monitoring the implementation of the resettlement action plans is preferred. • 5 years in Joint Measurement Survey (JMS) of affected land& properties to be acquired, Land Acquisition (LA) Plan, Draft LA Notifications and LA Reports of infrastructure projects / externally aided projects • Thorough knowledge of prevailing land acquisition Act, as well as current draft land Acquisition and Resettlement Act as well as state's/National Resettlement Policies on Resettlement and Rehabilitation for Project/ WB/ADB's R&R policy etc. He should have thorough knowledge of complete procedure of private and Government land acquisition up to the award stage.
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		<ul style="list-style-type: none"> Familiarity with local language and past experience as social/resettlement expert in development projects in India will be advantageous.
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	c)Experience in similar capacity	Social/ Resettlement& Rehabilitation Specialist in at least 5 highway projects in preparation of DPR/ Feasibility Study of intermediate/ 2/ 4 laning works of major highway projects (NH/ SH/ MDR/ Expressways/externally aidedprojects) of total aggregate length of about 100 km.
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Scheduled Tribes Specialist

i)	Educational Qualification	Post-Graduate in Social Work/ Sociology/ History/ Anthropology or a closely related field of Social Science. However this requirement may be relaxed in case of candidates with exceptional credentials and demonstrated body of professional work with regard to application of customary tribal laws and practices in the functioning of Autonomous Councils.
ii)	Essential Experience	

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	a) Total Professional Experience	Having significant experience of 10 years on issues related to tribal development. in North Eastern States of India. This may include publications of books, journals, etc., on tribal related issues.
	b) Role specific experience	<p>Reasonable understanding on provisions under the Sixth Schedule of the Constitution.</p> <p>Must have knowledge of local languages.</p> <p>Strong writing skills in English.</p> <p>Ability to work with minimal daily supervision and exercise sound judgment in organizing activities and meeting deadlines.</p> <p>Must have experience in working with civil society</p>

Biodiversity Expert

i)	Educational Qualification	
	Essential	Minimum of a Master's Degree in environmental science, botany, zoology, biochemistry, biotechnology, ecology, or natural resource management and related fields
ii)	Essential Experience	
	a)Total Professional Experience	<ul style="list-style-type: none"> Minimum15years

	b) Role specific experience	<ul style="list-style-type: none"> • Minimum of 10 years of experience in biodiversity assessment, biodiversity conservation activities and report preparation. Experience in wetland management activities, linear projects in environmentally sensitive areas will be advantage. • Thorough understanding of the national legislative and regulatory requirements of India. • The candidate should have experience of conducting biodiversity impact assessment for roads located in areas with similar types of biodiversity values and should be conversant in preparing management/mitigation measures for at least two projects of similar type; working knowledge of ecosystem services analysis would be an advantage. • The candidate should have thorough experience in designing, preparation and implementation of Biodiversity Management Plan. • Related experience of at least 3 years in conducting similar assignments is desired. • The candidate must have full knowledge of the international financial institutions' guidelines, procedures and operational policies/directives. • Experience of working as biodiversity expert in at least two international financial institutions funded projects is required.
	c)Experience in similar capacity	Biodiversity Expert in at least 2 highway projects in preparation of DPR/ Feasibility Study of single/ intermediate/ 2/ 4 laning works of major highway projects (NH/ SH/ MDR/ Expressways/ externally aided projects).

Gender Expert

i)	Educational Qualification	Master's degree in gender studies/ sociology/ anthropology/ social work/ Women's studies.
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ii)	Essential Experience	
	a) Total Professional Experience	At least 6 years of professional experience of working in the related field of gender, gender mainstreaming, gender-based violence, etc.
	b) Role specific experience	<p>Experience of working with tribal women's groups/ women's group</p> <p>Fluency in Khasi, Jaintia, Garo, and English and workable knowledge of local dialects of Meghalaya.</p> <p>Working knowledge of computer.</p>

Community Consultation Expert

i)	Educational Qualification	Masters in social work/ sociology/ communication/ other related social science subjects.
ii)	Essential Experience	
	a) Total Professional Experience	Atleast5yearsofexperienceincommunity development and community engagement.
	b) Role specific experience	<ul style="list-style-type: none"> • Experience in facilitating local partners and/or community in resettlement activities of civil works. • Experience in dealing with grievances and grievance redress mechanisms. • Experience in liaising and coordinating with government counterparts and/or NGOs in various community engagement and communication activities. • Experience in governance system, coordination, policies and procedures in community engagement and communications' management. • Experience of working with vulnerable and tribal communities. • Fluency in Khasi, Jaintia, Garo, and English and workable knowledge of local dialects of Meghalaya.

Land Acquisition Expert

i)	Educational Qualification	Masters in Economics, Sociology, Social Work, Anthropology and other related fields.
ii)	Essential Experience	
	a) Total Professional Experience	<ul style="list-style-type: none"> • 10 - 15 years as Deputy-Tehsildar or above • Land Acquisition Policies and procedures. • Land and records, survey maps • Land evaluation and cost estimates • Experience in establishing and implementation of Resettlement plans • Experience in managing Resettlement impacts assessment studies and other studies related to land acquisition • Desirable: Ex- revenue officers like Ex-Tehsildar, Ex-Deputy- Tehsildar etc.

GIS & Remote Sensing Mapping Specialist

i)	Educational Qualification	
	Essential	<p>Graduate in Geo Informatics Engineering/ MSc. In Environmental Science with PG Diploma in Geographical Information System and Remote Sensing</p> <p>Desirable - Geo Informatics Engineer</p>
ii)	Essential Experience	
	a) Total Professional Experience	<ul style="list-style-type: none"> • At least 5 years of experience in GIS and remote sensing applications • Minimum 2 years of experience on spatial analysis and detailed report preparation

	b) Role specific experience	<ul style="list-style-type: none">• Experience in conducting high-precision drone mapping and surveying for accurate terrain modeling• Expertise in landslide hazard mapping to• mitigate potential risks in hilly terrains.• Experience in land use and land cover analysis to inform environmentally conscious project decisions.• Preferable experience in image analysis• techniques for comprehensive geospatial insights/ LiDAR – remote sensing application
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Social and R&R support staff and LA Support Staff including revenue persons

The CV of the candidates need not be specified at the RFP stage. However, within 1 month of finalization of alignment, such experts in adequate numbers as mentioned or more shall be appointed by the consultant at its own cost. It is preferred that significant percentage of such candidates be recruited from amongst, land acquisition officers, revenue department officers of the state /private to enable smoother process. While MPWD Meghalaya will provide adequate support, it will be responsibility of the consultants to ensure timely delivery of deliverables.

Environmental support staff

The CV of the candidates need not be specified at the RFP stage. However, within 1 month of signing of contract, such experts in adequate numbers as mentioned or more shall be appointed by the consultant at its own cost. It is preferred that significant percentage of such candidates be recruited from amongst multinational companies, environment and forest department, pollution control board, wildlife, state environment impact assessment authority officers of the state to enable smoother process. While MPWD Meghalaya will provide adequate support, it will be responsibility of the consultants to ensure timely delivery of deliverables.

ENVIRONMENTAL AND SOCIAL SCREENING CHECKLIST FOR ASSESSMENT OF RISK LEVEL OF PROJECTS

Identification of Sub Project location

1	Date of Screening	
2	District	
3	Name of the division	
4	Name of subproject road/bridge/buildings/others	
5	Provide details of the categorization of the sub-project as per PWD norms	
6	Physical features	Provide details of the physical status of the sub-project (length, width, typology, etc)
7	Use of the sub-project	Quantify the use of the sub-project by different modes of transport and/or people for buildings (such as traffic,
8	GPS Coordinates	X: Y:
9	Ownership of land	If no, specify the ownership
10	Scheduled Tribes	Provide details of sub-project location in Scheduled VI and V and predominantly tribals
11	Schedule Area: Requirement of Gram Sabha resolution	Yes No
12	Highest Flood Level (HFL)	
13	Provide rational for selecting the proposed location	
14	Provide summary of alternate location considered	

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Note: Sub project map using Survey of India and google earth to consider 500-meter buffer from the location of the sub-project should be prepared. It should depict the drainage channels, bi-diversity hot spots, natural habitats, protected areas, agriculture land, landslides, land slips, marshy areas, surface water bodies, physical features, settlements and others.

Statutory Clearance requirements and No- Objection Certificates.

Sl no.	Agencies	Yes	No	Details
1	Forest			
2	Water resources – irrigation, ground water			
3	Pollution control board			
4	Others as applicable			
5	NOC for water withdrawal from surface water source			
6	Mining Permit (for dredging)			
7	NOC for transportation and storage of diesel, oil and lubricants, etc. Required			
8	NOC for establishment of labour camp			
9	Others (specify)			

Environmental Screening.

Baseline Environmental Conditions	Yes	No	Detailed information
Is the project site located on or adjacent to any of the following (Provide information for all sites and alignment of the project components/subcomponents, associated activities)			Distance in Km(Depicted on a survey of India sheet and google earth satellite imagery)
Habitat Types (modified, natural or critical Habitat)			Within 0.5 km. Mention name and distance of the nearest habitat
Critically Vulnerable, Eco- sensitive Areas			Within 0.5 km. Mention name and distance of the nearest eco sensitive area
Cultural Heritage site, Protected monuments			Within 0.5 km. Mention name and distance of the nearest sites
Natural Forests / Protected Areas Is the sub project in an eco- sensitive or adjoining an eco-sensitive area? If Yes, provide details.			Within 0.5 km. Mention name and distance Km of the nearest natural/protected area
Any other Wetlands/ other important area?			Within 0.5 km. Mention name and distance Km of the nearest site
Any Natural Habitat areas, areas with natural features?			Within 0.5 km. Mention name and distance Km of the nearest area
Any other Sensitive Environmental Components?			Religious, heritage historic sites and cultural properties Archaeological monuments/sites Scenic areas Hill resorts/Mountains/ Hills Health resorts Biosphere reserves/ Wetland/ Beel National Park and Wildlife sanctuaries and reserves Natural lakes, Swamps Seismic zones Areas of scientific and geological interests Defense installations, especially those of security importance and sensitive to pollution

Disclaimer: The is a draft version and is being reviewed by the World Bank.

			Border areas (international) Tiger reserves/Elephant reserve Habitat for migratory birds Lakes, Reservoirs, Dams Streams/Rivers/
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Baseline Environmental Conditions	Yes	No	Detailed information
			If Yes, Mention name and Distance Km Which is the nearest
Any Residences, schools, hospitals, sensitive receptors?			If Yes, mention name and distance (Km). List the sensitive receptor nearest to sub-project.
Any culturally – socially important paths, areas/religious occupancies, burial grounds, tourist or pilgrim congregation areas, borders?			If Yes, mention name and distance (Km) of the nearest sites?
Any Drinking water source, upstream and downstream uses of rivers, etc.?			If Yes, mention name and distance (Km) of the nearest to site
Any Low-lying areas prone to flooding Influence?			Provide details about area surrounding the sub-project
Any areas affected by other disasters?			Provide any other disaster (erosion)
Is the site in Critical / Over Exploited condition?			
Is the area disaster-prone? If yes; list all disaster zone categories applicable			List Flood/ erosion/ earth quake/ fire/cloudburst for the year prior to the screening
Describe the soil and vegetation on site			Provide details
Is the site area and condition suitable for proposed development?			Provide details
Describe existing pollution or degradation in the site(s)			Provide details
Any existing 'Associated Facilities' within 1km radius of the project? If yes, please furnish the details			Provide details

Baseline Environmental Conditions	Yes	No	Detailed information
Does the area have any existing component leading to Green House Gases			Provide details
Does the Area have any component leading to climate change?			Provide details
Any other remarks on baseline condition?			
Impact on land, Geology and Soils			
Impact on Surrounding Environmental Conditions including Occupation on Low lying lands/flood plains			
Substantial removal of Top Soil (sqm of area)			
Any degradation of land / eco-systems expected?			
Loss or impacts on Cultural/heritage properties			
Does the sub-project activity involve cutting and filling/ blasting?			
Will the sub-project cause physical changes in the area (e.g., changes to the topography) due to earth filling, excavation, earthwork or any other activity?			

Baseline Environmental Conditions	s		tailed information
Will the project involve any quarrying?			
Does the project involve any land reclamation? If yes, please provide the following details Activity for which land to be reclaimed Area of land to be reclaimed (Hectares)			
Will the project / any of its component contaminate or pollute the Land?			
Will the project contribute to any long- term significant adverse (negative), large scale, irreversible, sensitive impact at a regional scale or area broader than the project sites?			
Impacts on Water, Air, Soil and Noise Environment (Quantity or Quality):			
Will the activities proposed at the site(s) impact water quality (surface or underground) and water resource availability and use? Will this sub- project involve the dredging of water bodies, canals, etc.			
Impacts on Water Resources			
Pollution of Water bodies/ground water nearby or downstream			
Will the project affect the River /cannel flow pattern, stream pattern or any other irrigation canal?			Please indicate during construction – cofferdam etc.
Will the project result in stagnation of water flow or pondage or weed growth			
In case the approach road passes through a flood plain of a river following details are required: Detailed micro-drainage Flood passages Flood periodicity in the area			

Will any equipment causing air pollution be used? What kind of equipment be used?			
Will the equipment cause any noise pollution? What kind of equipment be used?			
Will there be any risk of pollution due to waste water/ solid waste/ hazardous waste?			

Note: Provide estimate on the proposed resources required in terms of area/quantity/ unit Land Area proposed to be used to be specific to location (in acre/ sq km / sq m). During construction, temporary use for camp area, storage, haul road, and estimated energy consumption which could cover source wise the fossil fuel, electricity requirements. Also, estimated usage of water quantity from ground water and surface water and estimate usage of different material such as steel, cement, sand, mud, etc.

Impacts on Biodiversity and Host Communities

Activity	Yes	No	Details
Does the site preparation require cutting of trees? If yes, please furnish the following details of how many trees are to be cut? Species of the trees			
Are there any protected/endangered species? If yes, provide details			
Will the sub- project result in Health & Safety Risks in the neighborhood including the release of toxic gases, accident risks			
Potential risk of habitat fragmentation due to the clearing activities? (e.g. Hindrance to the local biodiversity like disturbing the migratory path of animals/ birds/aquatic fauna, etc.)			
Potential Noise and Light Pollution or disturbance to surrounding habitats/communities			
Potential disruption to common property, accessibility, traffic disruptions, conflicts or disruption to the local community within the subproject area?			
Does the proposed project site involve any breeding or nesting ground? If yes, provide the following details			

-Name of the Organism			
-Type of Habitat			
- Period of the year in which the activity take place			

Impacts due to Storage and Wastes with respect to pollution and hazard

Activity	Yes	No	Details
Will the sub-project or its components cause any impact due to storage of materials, wastes or pollution due to releases during various project activities			
Will it use or store dangerous substances (e.g., large quantities of hazardous chemicals/ materials like Chlorine, Diesel, Petroleum products; any other?			
Will it produce solid or liquid wastes; including construction/demolition wastes (including dredging, de-weeding wastes, muck/silt, dust); polluted liquids?			
Will it cause or increase air pollution or odor nuisance?			

Activity	Yes	No	Details
Will it generate or increase noise levels which will impact surrounding biodiversity or communities?			
Will it generate or increase visual blight or light pollution?			
Will it cause water pollution of waterbodies/ groundwater?			
Will it involve dangerous construction activities which may be a safety concern to workers/ host communities?			
Is there a potential for release of toxic gases or accident risks (e.g. potential fire outbreaks)			
Describe any other features of the sub-project that could influence the ambient environment			
Were the probable environmental impacts discussed with stakeholders?			

Suggest Enhancement Measures

Activity	Yes	No	Details
Energy conservation measures/ energy recovery options incorporated in subproject design			
Considered waste minimization or waste reuse/recycle options			
Rainwater harvesting, water recycling and other water resource enhancement measures			
Considerations for extreme events, drought, flood, other natural disasters			
NOC for water withdrawal from surface water source			

Activity	Yes	No	Details
Mining Permit (for dredging)			
NOC for transportation and storage of diesel, oil and lubricants, etc. required			
NOC for establishment of labour camp			
Others (Mention)			

Social Screening

Impact on Assets and People	Yes	No	Details
Location of sub-project			
Is the project location in scheduled area?			
Is the project located in close proximity (within 1 km) of settlements with predominantly has scheduled tribe?			
Does the project require private land that belongs to the Tribals?			
Does the private land belong to tribal (individual or group)?			
Is the sub-project located in settlement where majority belong to Scheduled Caste?			
Is the sub-project located in settlement where majority belong to Other Backward Caste?			
Is the sub-project located in settlement where majority belong to General Population?			
Is the sub-project located within tea estate?			
Land Ownership			
Does the project require Government land? And which Department is the owner of the land?			
Will the existing land uses within the 1km radius of the project area be affected?			
Will the sub-project in the hills affect land beyond 1 km radius on valley or hill side of the sub-project? (specify)			
Land requirement for the sub-project (in ha estimate)			

Private			
Government			
Village Council Land			
Community			
Forest			
Tea Estate (Name of Tea Garden)			
Others (specify)			
Land Use Pattern			
Cropping pattern on the land that may be affected			
Shifting Cultivation			
Total number of Fruit trees likely to be affected and type of fruit trees.			
Total number of other trees and type of usage the trees.			
Area of Grazing land (Ha)			
Area of Loss of access to forest produce (NTFP) (Ha)			
Impact on Assets and People	Yes	No	Details
Others (specify)			
Structures			
Number and type (Kuchha, Semi-pucca, Pucca) of unauthorized structures including its usage, required permanently for the sub-project?			
Number and type (Kuchha, Semi-pucca, Pucca) of unauthorized structures including its usage, required temporarily for the sub-project?			

Number and type (Kuchha, Semi-pucca, Pucca) of private structures including its usage, required permanently for the sub-project?			
Number and type (Kuchha, Semi-pucca, Pucca) of private structures including its usage, required temporarily for the sub-project?			
Affected Household			
Total number of Affected Household			
Total Title Holders (residential and commercial)			
Total Non-titleholders (Encroacher residential and commercial)			
Total Non-titleholders (Squatter- residential and commercial)			
No. of boat operators/country boatmen ferrying passengers across the river to be affected			
No. of fisherman living on the proposed area to be affected			
Common Property			
Total number of common properties and type to be affected			
Drinking Water			
Electrical Poles			
Burial ground			
Temple land			
School/Anganwadi			
Is the project likely to restrict access to community resources (e.g. temporary or permanent restriction of			

access to public water source, access to school,)			
Community Centres			
Other (specify)			
Cultural Heritage			
Historical site(s) affected near (provide distance) the project site?			
Archaeological heritage site(s) affected near (provide distance) the project site?			
Impact on Assets and People	Yes	No	Details
Graves or sacred groves affected near (provide distance) the project site?			
Other Specify			
Grievance Management			
Is there any dispute on Land?			
Is there any functional grievance mechanism for tribals			
Is there any functional grievance mechanism?			
Is there any other conflict between groups in the settlements in close proximity to the sub-project?			
Community Health and Safety			
Are there any prevalent incidents of communicable disease and water borne disease?			
Do people migrate for seasonal work (distance of migration)			
Do people migrate for long duration outside the			

state?			
Are there any cases of missing children, youth and women?			
Collate secondary data on crime rate and type of crime.			
Would elements of project construction pose potential safety risks to local communities, commuters or pedestrians in the project area?			
Are there any GBV prevention and response actors (NGOs, government notified shelter homes, police stations, community groups, etc.) in project area of influence?			
<i>Labour requirement and facilities</i>			
Are there local contractors who implement similar works? (collate information from MPWD(R))			
What types of workers are expected to be involved – unskilled skilled, semi-skilled In total how many workers? (collate information from MPWD(R))			
Are there skilled and semi-skilled labour available in the neighborhood?			
Has there been any incident of contractor providing accommodation to labour near the settlements for any works implemented previously?			
Other issues			
Is the project site in a populated area and/or with high vehicular traffic volume?			
Impact on Assets and People	Yes	No	Details

Is there sufficient street-lighting for monitoring public spaces in the project location?			
Given the characteristics of the local community, are there any adverse impacts that may be anticipated?			

Beneficiaries		
Population proposed to be benefitted by the proposed project	Approx. no.:	
No. of Females proposed to be benefitted by the proposed project	Approx. no.:	
Vulnerable households /population to be benefitted	Approx. no.:	
No. of Families to be benefitted	Approx. no.:	
What is the current mode of information dissemination in the area with respect to flooding of bridges/connectivity, relief, etc.		
How do the communities want to be engaged Consultations regularly Advertisements Over phone/email Through village level workers Through Gaon bura		
What is the level of frequency of such meetings/consultations desired by the community?		
What is the type of information that they are desiring or are likely to request?		
Who are the stakeholders normally involved in during relief due flooding of bridges/connectivity (e.g. Gaon Bura, block administration, Asha workers)		

Environment and Social risk categorization to determine detailed impact assessment and identify mitigation plans.

Project Category	<input type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> Substantial <input type="checkbox"/> High (assign weights to all the parameters to arrive at a weightage average for determining risk level)
Key Reasons	
Mitigation Plan Required	Environment and Social Impact Assessment (ESIA) Environment and Social Management Plan (ESMP) including for SEA-SH and community health and safety due to labour influx Bio-Diversity Management Plan Resettlement Action Plan (RAP) Tribal Development Plan
Risk related to	
Eco – System (flooding, landslides)	Low, Moderate, Substantial or High
Biodiverse areas including protected/reserved	Low, Moderate, Substantial or High
Pollution – Air, noise, water, waste generation including hazardous	Low, Moderate, Substantial or High
Fragmentation of habitats	
Trees	Low, Moderate, Substantial or High
Land	Low, Moderate, Substantial or High
Tribal	Low, Moderate, Substantial or High
Labour	Low, Moderate, Substantial or High
Cultural Heritage	Low, Moderate, Substantial or High
GBV/SEAH	Low, Moderate, Substantial or High

Occupational Health and Safety to Labour/Community	Low, Moderate, Substantial or High
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Status	Agency / Official	Name, Signature with Date and Seal
Prepared by		
Checked and Categorized as (low, moderate, substantial, high) by		

The screening sheet must be completed for each subproject. The DPR consultant should analyse and prepare screening and scoping report along with the following enclosures:

Provide maps with the geographical location of the project; and a scaled map (on 1:10,000 scale or depicting greater details for the site and its immediate surrounding areas up to a minimum of 5 kms) clearly showing the project area and project sites with land use, existing buildings, infrastructure, vegetation, adjacent land use, utility lines, access roads and any planned construction, and any other information to describe the project, locations and possible impact as required. Land details for the project sites, location, survey numbers, extent available and required, land use classification, current use of the site, land ownership, alienation /acquisition status, as required along with a certificate giving availability of sites required for the project.

Annexure VII- Grievance Submission Form

Grievance Submission Form

Purpose: This form is for recording grievances related to social, environmental, or project implementation issues in the MLCIP. All grievances will be addressed according to the Project's Grievance Redress Mechanism (GRM) in alignment with World Bank ESS.

Section A: Complainant Information

Field	Details
Full Name	
Gender	<input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Other
Age	
Address	
Contact Number	
Email (if available)	
Preferred Method of Contact	<input type="checkbox"/> Phone <input type="checkbox"/> Email <input type="checkbox"/> In-person

Section B: Grievance Details

Field	Details
Date of Grievance	
Location / Village / Town	
Type of Grievance	<input type="checkbox"/> Land Acquisition / Resettlement <input type="checkbox"/> Environmental Impact <input type="checkbox"/> Health & Safety <input type="checkbox"/> Labor / Employment <input type="checkbox"/> Social Inclusion <input type="checkbox"/> Other:
Description of Grievance	

Supporting Documents / Evidence | ☐ Yes ☐ No (If yes, please attach copies) |

Section C: Resolution Sought

Field	Details
Desired Resolution	
Previous Attempts to Resolve	<input type="checkbox"/> Yes <input type="checkbox"/> No (If yes, describe)

Section D: Confidentiality & Consent

I consent to the project team processing my grievance and sharing relevant information with authorized staff for resolution.

I request that my identity ☐ be kept confidential if needed for my safety.

Signature of Complainant:

Date:

For Official Use Only (Project GRM Team)

Field	Details
Grievance Received By	
Date Received	
Grievance Reference No.	MLCIP-GRM-
Assigned To	
Tier Level	<input type="checkbox"/> Tier I (Local Level) <input type="checkbox"/> Tier II (Project Level) <input type="checkbox"/> Tier III (Independent Panel / Authority)
Action Taken / Investigation Notes	
Date of Resolution	
Outcome / Remarks	

Note: Complaints will be addressed in a timely and transparent manner according to MLCIP GRM guidelines. The project ensures compliance with World Bank ESS including ESS1, ESS5, and ESS10.

Process For Addressing Grievances

Stage	Description	Actions	Timeframe
1	Submission of Grievance	Workers submits grievance in writing or verbally to the designated authority.	Within 24 hours of occurrence of grievance.
2	Receipt Acknowledgement	The designated authority acknowledges receipt of the grievance.	Within 48 hours of receipt of grievance.
3	Investigation	The designated authority investigates the grievance thoroughly.	Within 3 days of receipt of grievance.
4	Resolution	The designated authority proposes a solution and communicates it to the labour.	Within 7 days of receipt of grievance.
5	Appeal Process	If the worker is unsatisfied with the resolution, they can appeal to a higher authority.	Within 3 days of receiving the resolution.

6	Review and Final Decision	The higher authority reviews the appeal and makes a final decision.	Within 7 days of receiving the appeal.
7	Implementation	If the decision favors the worker(s), the designated authority implements the resolution.	Within 7 days of the final decision.
8	Feedback	The labour provides feedback on the resolution process.	Within 7 days of implementation.

Annexure IX (A) - Terms of Reference

Terms of Reference (TOR)

Environmental and Social Audit under Meghalaya Logistics and Connectivity Improvement Project (MLCIP) funded by the World Bank

1. Background

To overcome the abovementioned challenges in a holistic and all-inclusive manner, the Government of Meghalaya, with financing and technical support from the World Bank, is preparing a project titled “Meghalaya Logistics and Connectivity Improvement Project (MLCIP)”. MLCIP builds on MITP to transform Meghalaya’s transport and logistics infrastructure, boost economic growth, and create jobs along key road corridors. The project aims to enhance connectivity and logistics infrastructure to efficiently deliver farm and household products from rural areas to district industrial parks, wholesale markets, and priority growth centers (Shillong and Tura). These logistics solutions reduce transportation cost, minimize post-harvest losses, ensure efficient distribution and facilitate timely and profitable sales of agricultural and horticultural produce, handicrafts at national and international markets, thus ensuring widespread economic benefits from the “Hashtag Corridors”.

The implementation of the core initiatives of the project is expected to result in:

- a. Enhanced connectivity to key growth centers along identified road corridors
- b. Improved rural and district-level logistics infrastructure and services
- c. Greater market access and reduced average cost/time for select agriculture and horticulture products to reach the markets
- d. Strengthened institutional capacity for efficient, climate-resilient transport and logistics
- e. Direct users that benefit from improved access to sustainable transport infrastructure and services.

To facilitate the process laid down within its ESMF, project intends to appoint consultants to audit projects taken up under MLCIP.

2. Objectives

- To audit the conformity of environmental and social categorisation of projects with respect to the categorisation prescribed in the ESMF.
- To audit the compliance of the environmental, climate and social aspects of approved projects, which are under implementation; and,
- Review and comment on how the recommendations of the previous audit have followed so far.

3. Scope of Work

- To carryout environmental and social audit with respect to the subprojects taken up under this project

4. Outline of the tasks to be carried out:

The selected Consultant will essentially provide services to the project as required, for the following tasks.

a) Audit the Environmental and Social Categorisation of Projects:

The consultants will audit the conformity of environmental and social categorisation of roads based on the ESMF. The consultants will also review the adequacy of screening procedures to identify the possible issues; considerations of incorporating the social and environmental issues identified during the screening process into the engineering designs and action plans. This audit will cover all the project roads.

b) Auditing the compliance of the Projects:

The consultants will

- Cover the compliance aspects with reference to the agreed process at different stages of project development as well as the technical content of the EAs/ESMPs and RAPs/TPPs. Such an exercise shall include the effectiveness in translating the ESMPs into contract conditions and technical specifications.
- Critically review and report the compliance on Bank's recommendations during various supervision missions;
- Undertake field visits to ascertain actual level of compliance in implementing the ESMPs and RAPs;
- Audit and confirm that the payment of compensation and assistance has been paid in accordance with ESMF procedures wherever payment of compensation and assistance is involved for the projects affected people,
- Undertake field visits to interact with the beneficiaries on sample basis to assess their levels of satisfaction with the process followed in delivering the entitlements;
- Review the process followed for redressing the grievances filed by the affected people with regard to compensation, R&R assistance or any other related complaints.
- Review and confirm that the disclosure of documents has been carried out in accordance with the established procedures; and,
- Review the internal monitoring followed by PMU in managing the social and environmental impacts during the implementation of the sub-projects and suggest suitable measures for improving the process as needed.

The consultant will audit the compliance of environmental and social aspects during pre – construction and construction of all roads under MLCIP.

c) Adequacy of the ESMP/SMP

The consultant will audit the adequacy of the ESMP/SMP and recommend practicable measures to include/improve the management measures and the agency responsible for carrying out the measures, wherever found inadequate. The consultant will also document the best practices and possible environmental and social enhancement measures with respect to the audited projects. Apart from documenting the good practices, shall discuss the deviations in following the ESMF and corrective measures (project level and in overall process).

d) Reporting

The consultant shall review the status report submitted by the PMUs / Implementing Agencies on the implementation of ESMF / SMP and the process adopted by design consultants in identification and mitigation measures while preparing the DPRs. To report on the adequacy and timely submission of the Quarterly Progress Reports including the process involved in addressing the risk management.

e) Documentation

The consultant shall document the good practices and lessons learnt with respect to Environmental and Social Safeguards implementation and its management.

f) Preparation of Audit Report

The findings of the review and audit should be summarized in a tabular form to include compliance, noncompliance, best practices and enhancement measures along with the name of the agency responsible for each of the above. This matrix should be provided as an attachment to the main report. In case of non-compliance, the consultants need to undertake a follow up visit after giving sufficient time (depending on the type of corrective measures) for the agency responsible to take corrective actions.

5. Data, services and facilities to be provided by the Client:

A copy of the ESMF and details of the projects sanctioned, Copy of ESIA's / RAP/TPP available, monitoring reports if any will be shared by the client.

6. Composition of review committee to monitor consultants' work

1. The Secretary to the Government of Meghalaya, PWD(R&B), Shillong.
2. The Chief Engineer, PWD(Roads), Meghalaya, Shillong
3. The Additional Chief Engineer, NH (EAP), PWD(Roads), Meghalaya, Shillong.
4. Concerned Superintending Engineer's and Executive Engineers of PWD (Roads).
5. Environment Expert, PWD (Roads)
6. Social Cum Gender Specialist, PWD(Roads)

The consultant would be required to submit 3(three) copies of each of the reports besides providing a soft copy of all reports, etc. All the pages in reports shall be printed in duplex mode except for A3 pages.

7. Procedure for review of reports:

The review committee will review the progress of work during each stage of the assignment and as and when required. The decision / suggestion of the review committee will be communicated in the form of minutes, for taking action.

8. Outputs, Payments and Time Schedule

Reports	Duration	Payment
On submission and acceptance of Inception Report on Compliance	Within 3 weeks from the date of award of contract.	15% of the contract value
On submission and acceptance of Draft Audit Report	Within 10 weeks from the date of award of contract	55% of the contract value
On submission and acceptance of Submission of Final Report	Within 12 weeks from the date of award of contract	30% of the contract value

9. List of key positions, whose CV and experience would be evaluated.

Sl. No	Key Professional	No. of persons	Experience
1	Environmental Specialist	1	Post Graduate in Environmental or Public Health Engineering, Environmental Planning/ Environmental Science with about 12 years of experience in preparation of EIA Reports, carrying out Environmental Audit, experience on Climate Change Adaptation and Mitigation etc.
2	Social Development Specialist	1	Post Graduate in any of Social Sciences work with 12 yearsof experience preferably in social auditing, experience in land acquisition and resettlement issues in development projects

Necessary support staff as required shall be engaged by the consultant in order to achieve the objective of the assignment.

10. Key Role and Responsibilities of the Environmental and the Social Specialist

The key role of the specialist is as under:

- To ensure that potential environmental/ social risks arising out of the project's support has been adequately addressed; identify the gaps, if any and suggest measures for addressing the same.
- To ensure that the (i) consultation process at various levels includes all possible stakeholders as part of consultations and has access to the benefits and opportunities; (ii) key issues that has been identified and addressed in terms of ecological/ socio-cultural, historical, institutional and political context; (iii) grievance redress mechanism is accessible, functional and useful to the aggrieved person.
- To ensure that the affected households have been identified and mitigation measures implemented.
- To ensure that process followed has been transparent and intended goal has been achieved and project implementation secured positive environmental/ social development outcomes and minimized the negative effects.

A. Scope of Work

The Specialist will have the following scope of work:

1. Review the project documents to understand the rationale behind the interventions; the process adopted for the selection; choice of intervention and implementing agency; and feedback mechanism.
2. Finalize terms of reference for hiring agency for social assessment, environmental/ social impact assessment and preparation of safeguard tools.
3. Assist PMU/consultants in identifying stakeholders and draw up a stakeholder's table delineating the interest in terms of expectation, benefits, and ability to commit resources, goal conflicts, etc. Engage with all stakeholders and identify tailor-made activities that are relevant in the project area / region. Finalize stakeholder engagement plan

4. Advice PMU on various national and state level laws and regulations; relevant World Bank environmental safeguard operational policies and requirements that are applicable in the context of the project interventions related to land acquisition / land taking; vulnerable community such as women headed households, tribal population; households below poverty line, etc. if any.
5. Help implement E/SMF. Specifically, screen all proposed interventions to identify any adverse impact on the community, if any. In case of any adverse impact, suggest instruments (such as EMP/ SIA, RAP, GAP, etc.) and measures to address adverse social impacts in line with project ESMF. Guide preparation of safeguard documents and disclose the same at PMU level before the start of civil works.
6. Review the adequacy and impact of project interventions on livelihood enhancement opportunities and make suggestions accordingly. Ensure that social assessment is an integral part of planning of all project supported schemes
7. Supervise implementation of social safeguard measures in project interventions and ensure that social development goals are met.
8. Liaise with various concerned State Government agencies on land and other regulatory matters
9. Be part of grievance redress cell and review types of grievance and the functioning of grievance redress mechanisms by reviewing appeals at all levels and interviewing aggrieved PAPs.
10. Periodical updating of data on social issues including grievance redressal
11. Prepare periodical social monitoring reports to be submitted to PMU.
12. Prepare TOR for any activities or studies required and other social safeguard documents as and when required.
13. Facilitate appointment of and co-ordination with consultants/agencies to carry out activities or studies if required and co-ordinate them.
14. Develop, organize and deliver training/capacity building programs on social issues and plans for the staff of implementing agency, the contractors and others involved in the project implementation.
15. Carry out other responsibilities as required from time to time.

B. Required Qualification:

16. The candidate must hold master's degree in environmental/ social science (namely sociology; social anthropology; any other subject field) from a recognized university.
17. Should have at least 12 years of experience of working independently as environmental/ social development specialist in large infrastructure projects in India.
18. Must have worked in at least two World Bank funded large infrastructure projects
19. Must have experience of both national regulations as well as multi-lateral agency's policies related to land acquisition, resettlement and indigenous community. The candidate should also have experience of carrying out and managing community consultations; preparation and implementation of livelihood enhancement strategy and plans; working with rural and peri-urban communities; and managing large scale socio-economic database.
20. The candidate should be willing to travel across the state.

Annexure IX (B) - Form B as per World Bank ESIRT Guidelines 2023**Annexure: Form B as per World Bank ESIRT Guidelines 2023*****To be completed by Borrower within 24 hours***

B1: Incident Details			
Date of Incident:	Time:	Date Reported to PIU:	Date Reported to WB:
Reported to PIU by:		Reported to WB by:	Notification Type: Email/'phone call/media notice/other
Full Name of Main Contractor:		Full Name of Subcontractor:	

B2: Type of incident (please check all that apply)
Fatality <input type="checkbox"/> Lost Time Injury <input type="checkbox"/> Displacement Without Due Process <input type="checkbox"/> Child Labor <input type="checkbox"/> Acts of Violence/Protest <input type="checkbox"/> Disease Outbreaks <input type="checkbox"/> Forced Labor <input type="checkbox"/> Unexpected Impacts on heritage resources <input type="checkbox"/> Unexpected impacts on biodiversity resources <input type="checkbox"/> Environmental pollution incident <input type="checkbox"/> Ropeway Failure <input type="checkbox"/> Bridge Failure <input type="checkbox"/> Other <input type="checkbox"/>

B3: Description/Narrative of Incident
<p><i>Please replace text in italics with brief description, noting for example:</i></p> <ol style="list-style-type: none"> <i>I. What is the incident?</i> <i>II. What were the conditions or circumstances under which the incident occurred (if known)?</i> <i>III. Are the basic facts of the incident clear and uncontested, or are there conflicting versions? What are those versions?</i> <i>IV. Is the incident still ongoing or is it contained?</i> <i>V. Have any relevant authorities been informed?</i>

B4: Actions taken to contain the incident			
Short Description of Action	Responsible Party	Expected Date	Status

For incidents involving a contractor:

Have the works been suspended Yes ☐; No ☐; Trading name of Contractor (if different from B1):

Please attach a copy of the instruction suspending the works.

B5: What support has been provided to affected people

Incident Types

The following are incident types to be reported using the environmental and social incident response process:

Fatality: Death of a person(s) that occurs within one year of an accident/incident, including from occupational disease/illness (e.g., from exposure to chemicals/toxins).

Lost Time Injury: Injury or occupational disease/illness (e.g., from exposure to chemicals/toxins) that results in a worker requiring 3 or more days off work, or an injury or release of substance (e.g., chemicals/toxins) that results in a member of the community needing medical treatment.

Acts of Violence/Protest: Any intentional use of physical force, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, deprivation to workers or project beneficiaries, or negatively affects the safe operation of a project worksite.

Disease Outbreaks: The occurrence of a disease in excess of normal expectancy of number of cases. Disease may be communicable or may be the result of unknown etiology.

Displacement Without Due Process: The permanent or temporary displacement against the will of individuals, families, and/or communities from the homes and/or land which they occupy without the provision of, and access to, appropriate forms of legal and other protection and/or in a manner that does not comply with an approved resettlement action plan.

Child Labor: An incident of child labor occurs: (i) when a child under the age of 14 (or a higher age for employment specified by national law) is employed or engaged in connection with a project, and/or (ii) when a child over the minimum age specified in (i) and under the age of 18 is employed or engaged in connection with a project in a manner that is likely to be hazardous or interfere with the child's education or be harmful to the child's health or physical, mental, spiritual, moral or social development.

Forced Labor: An incident of forced labor occurs when any work or service not voluntarily performed is exacted from an individual under threat of force or penalty in connection with a project, including any kind of involuntary or compulsory labor, such as indentured labor, bonded labor, or similar labor-contracting arrangements. This also includes incidents when trafficked persons are employed in connection with a project.

Unexpected impacts on heritage resources: An impact that occurs to a legally protected and/or internationally recognized area of cultural heritage or archaeological value, including world heritage sites or nationally protected areas not foreseen or predicted as part of project design or the environmental or social assessment.

Unexpected impacts on biodiversity resources: An impact that occurs to a legally protected and/or internationally recognized area of high biodiversity value, to a Critical Habitat, or to a Critically Endangered or Endangered species (as listed in IUCN Red List of threatened species or equivalent national approaches) that was not foreseen or predicted as part of the project design or the environmental and social assessment. This includes poaching or trafficking of Critically Endangered or Endangered species.

Environmental pollution incident: Exceedances of emission standards to land, water, or air (e.g., from chemicals/toxins) that have persisted for more than 24 hrs or have resulted in harm to the environment.

Ropeway Failure: Sudden cable snap, tower collapse, or carriage derailment causing injury, death, or cargo spill in vegetable transport systems.

Bridge Failure: Partial or full collapse of bridge structure due to overloading, scour, or material defect, disrupting access and risking lives.

Other: Any other incident or accident that may have a significant adverse effect on the environment, the affected communities, the public, or the workers, irrespective of whether harm had occurred on that occasion. Any repeated non-compliance or recurrent minor incidents which suggest systematic failures that the task team deems needing the attention of Bank management.

Annexure IX (C)- Environmental and Social (ES) Metrics for Progress Reports

Environmental and Social (ES)

Metrics for Progress Reports

[Note to Employer: the following metrics may be amended to reflect the specifics of the Contract. The metrics that are required should be determined by the ES risks and impacts of the Works and not necessarily by the size of the Contract]

Metrics for regular reporting:

- a. *environmental incidents or non-compliances with contract requirements, including contamination, pollution or damage to ground or water supplies;*
- b. *health and safety incidents, accidents, injuries that require treatment and all fatalities;*
- c. *interactions with regulators: identify agency, dates, subjects, outcomes (report the negative if none);*
- d. *status of all permits and agreements:*
 - i. *work permits: number required, number received, actions taken for those not received;*
 - ii. *status of permits and consents:*
 - *list areas/facilities with permits required (quarries, asphalt & batch plants), dates of application, dates issued (actions to follow up if not issued), dates submitted to resident engineer (or equivalent), status of area (waiting for permits, working, abandoned without reclamation, decommissioning plan being implemented, etc.);*
 - *list areas with landowner agreements required (borrow and spoil areas, camp sites), dates of agreements, dates submitted to resident engineer (or equivalent);*
 - *identify major activities undertaken in each area in the reporting period and highlights of environmental and social protection (land clearing, boundary marking, topsoil salvage, traffic management, decommissioning planning, decommissioning implementation);*
 - *for quarries: status of relocation and compensation (completed, or details of activities and current status in the reporting period).*
- e. *health and safety supervision:*
 - i. *safety officer: number days worked, number of full inspections & partial inspections, reports to construction/project management;*
 - ii. *number of workers, work hours, metric of PPE use (percentage of workers with full personal protection equipment (PPE), partial, etc.), worker violations observed (by*

type of violation, PPE or otherwise), warnings given, repeat warnings given, follow-up actions taken (if any);

f. worker accommodations:

- i. number of expats housed in accommodations, number of locals;
- ii. date of last inspection, and highlights of inspection including status of accommodations' compliance with national and local law and good practice, including sanitation, space, etc.;
- iii. actions taken to recommend/require improved conditions, or to improve conditions.

g. Health services: provider of health services, information and/or training, location of clinic, number of non-safety disease or illness treatments and diagnoses (no names to be provided);

h. gender (for expats and locals separately): number of female workers, percentage of workforce, gender issues raised and dealt with (cross-reference grievances or other sections as needed);

i. training:

- i. number of new workers, number receiving induction training, dates of induction training;
- ii. number and dates of toolbox talks, number of workers receiving Occupational Health and Safety (OHS), environmental and social training;
- iii. number and dates of communicable diseases (including STDs) sensitization and/or training, no. workers receiving training (in the reporting period and in the past); same questions for gender sensitization, flag person training.
- iv. number and date of SEA prevention sensitization and/or training events including number of workers receiving training on Code of Conduct for Contractor's Personnel (in the reporting period and in the past), etc.

j. environmental and social supervision:

- i. environmentalist: days worked, areas inspected and numbers of inspections of each (road section, work camp, accommodations, quarries, borrow areas, spoil areas, swamps, forest crossings, etc.), highlights of activities/findings (including violations of environmental and/or social best practices, actions taken), reports to environmental and/or social specialist/construction/site management;
- ii. sociologist: days worked, number of partial and full site inspections (by area: road section, work camp, accommodations, quarries, borrow areas, spoil areas, clinic, HIV/AIDS center, community centers, etc.), highlights of activities (including violations of environmental and/or social requirements observed, actions taken), reports to environmental and/or social specialist/construction/site management; and

- iii. community liaison person(s): days worked (hours community center open), number of people met, highlights of activities (issues raised, etc.), reports to environmental and/or social specialist /construction/site management.
- k. *Grievances*: list new grievances (e.g. *number of allegations of SEA*) received in the reporting period and number of unresolved past grievances by date received, complainant's age and sex, how received, to whom referred to for action, resolution and date (if completed), data resolution reported to complainant, any required follow-up (Cross- reference other sections as needed):
 - i. Worker grievances;
 - ii. Community grievances
- l. *Traffic, road safety and vehicles/equipment*:
 - i. traffic and road safety incidents and accidents involving project vehicles & equipment: provide date, location, damage, cause, follow-up;
 - ii. traffic and road safety incidents and accidents involving non-project vehicles or property (also reported under immediate metrics): provide date, location, damage, cause, follow-up;
 - iii. overall condition of vehicles/equipment (subjective judgment by environmentalist); non-routine repairs and maintenance needed to improve safety and/or environmental performance (to control smoke, etc.).
- m. *Environmental mitigations and issues (what has been done)*:
 - i. dust: number of working bowsers, number of waterings/day, number of complaints, warnings given by environmentalist, actions taken to resolve; highlights of quarry dust control (covers, sprays, operational status); % of rock/spoil lorries with covers, actions taken for uncovered vehicles;
 - ii. erosion control: controls implemented by location, status of water crossings, environmentalist inspections and results, actions taken to resolve issues, emergency repairs needed to control erosion/sedimentation;
 - iii. quarries, borrow areas, spoil areas, asphalt plants, batch plants: identify major activities undertaken in the reporting period at each, and highlights of environmental and social protection: land clearing, boundary marking, topsoil salvage, traffic management, decommissioning planning, decommissioning implementation;
 - iv. blasting: number of blasts (and locations), status of implementation of blasting plan (including notices, evacuations, etc.), incidents of off-site damage or complaints (cross-reference other sections as needed);

- v. spill clean-ups, if any: material spilled, location, amount, actions taken, material disposal (report all spills that result in water or soil contamination);
- vi. waste management: types and quantities generated and managed, including amount taken offsite (and by whom) or reused/recycled/disposed on-site;
- vii. details of tree plantings and other mitigations required undertaken in the reporting period;
- viii. details of water and swamp protection mitigations required undertaken in the reporting period.

n. compliance:

- i. compliance status for conditions of all relevant consents/permits, for the Work, including quarries, etc.): statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance;
- ii. compliance status of C-ESMP/ESIP requirements: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance
- iii. compliance status of SEA prevention and response action plan: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance
- iv. compliance status of Health and Safety Management Plan re: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance
- v. other unresolved issues from previous reporting periods related to environmental and social: continued violations, continued failure of equipment, continued lack of vehicle covers, spills not dealt with, continued compensation or blasting issues, etc. Cross-reference other sections as needed.