Meghalaya Infrastructure Development Finance Corporation

DRAFT ENVIRONMENTAL & SOCIAL MANAGEMENT FRAMEWORK

Meghalaya Logistics and Connectivity Improvement Project

JANUARY 2026

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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

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 requirements described in the Environmental and Social Management Framework (ESMF) for the Meghalaya Logistics & Connectivity Improvement Project (MLCIP). This ESMF is limited to Roads and bridges which covers upgradation, rehabilitation and maintenance of roads and bridges and institutional strengthening and capacity building.

The ESMF for the agro-logistics will be prepared following the technical studies after project becomes effective.

Purpose and Scope of the ESMF

This ESMF presently provides a uniform, robust method to screen, assess, consult, disclose, mitigate, and monitor environmental and social (E&S) risks for roads and bridges and road safety measures covered under MLCIP investments. It specifies processes, methodology, documentation, and approvals to ensure E&S due diligence is completed prior to mobilization of the contractors. These processes will also support tracking of implementation of E&S mitigation plans. Instruments foreseen by the ESMF include, 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 and Response plans. The framework functions as a living document that can be updated to reflect design development, field findings, or regulatory change without diluting safeguard requirements.

Project Context and Development Objectives

MLCIP supports resilient, efficient, and safe logistics and connectivity in Meghalaya's 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. The E&S screening of sub-project will determine the risk level that will inform the scope of ESIA and preparation of ESMP and relevant instruments that addresses site specific sensitivities and its scale, nature, of impacts.

Project Components (Overview)

Component 1 focuses on climate-resilient roads and Road Safety. The project will rehabilitate and upgrade approximately 600 km of selected state roads, MDRs, bridges, and feeder roads integrating climate resilient features and road safety measures.

Component 2: Developing the Regional and Rural Logistics Ecosystem (*The ESMF for the agro-logistics will be prepared following the technical studies after project becomes effective)*

Component 3: Institutional Strengthening and Capacity Building for Road Sector Reforms and for Efficient and Sustainable Agri-logistics and Market Access. - strengthens institutions through data

systems, asset management practices, capacity building for implementing agencies and contractors, and the standardized supervision and audit regime.

Component 4: 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 components 1, 3 and 4.

Risk and Mitigation Strategy

The ESMF details out the processes to manage the risks through: (i) early, geo-enabled screening and alternative analysis to avoid and minimize adverse impacts on resources and people (ii) preparation and implementation of 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) undertake structured stakeholder engagement to comply with the norms for FPIC; (v) preparation and implementation of plans for loss of private, community and common property, bio-diversity, cultural assets, etc 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.

Additionally, the ESMF maps responsibilities, submission formats, and sequencing so that statutory and ESF requirements are complied with and disclosure requirements followed.

Policy and Legal Framework

This ESMF follows the World Bank Environmental and Social Framework (ESF) as well as the national and state laws and regulations of Meghalaya. MLCIP operates under India's Sixth Schedule Area (Article 244(2)) granting Autonomous District Councils powers over land and forests, with customary land tenure through traditional institutions. The environmental legislation (EIA Notification 2006, Forest Conservation Act 1980, Wildlife Protection Act 1972, Water/Air Pollution Acts), social legislation (Land Acquisition Act 2013, PESA 1996, Forest Rights Act 2006, SC/ST Prevention of Atrocities Act 1989), and labor framework (four Labour Codes 2025) are relevant and directly applicable to the environmental and social risks and impacts of the project activities.

ESS1: Assessment and Management of Environmental and Social Risks and Impacts

ESS1 establishes the framework for identifying, assessing, and managing environmental and social risks throughout the project lifecycle. MLCIP shall undertake proportionate environmental and social assessments of sub-projects, covering physical environment (air, water, soil, noise), biological environment (flora, fauna, habitats), and socio-economic conditions (livelihoods, vulnerable groups, Indigenous Peoples). The Project will apply the mitigation hierarchy to avoid impacts through design alternatives, minimize unavoidable impacts, mitigate impacts through corrective measures, and address residual impacts through biodiversity offsets or livelihood restoration measures only when technically and financially feasible and consistent with ESS requirements. Environmental and Social Management Plans (ESMPs) will guide the preparation of site specific ESMPs, implementation and supervision.

Monitoring will be carried out by qualified competent professionals, with third-party verification and progress reported to the World Bank.

ESS2: Labour and Working Conditions

ESS2 ensures fair treatment and safe working conditions for all project workers: direct workers (PMU/PIU staff), contracted workers (civil works contractors), primary supply workers, and community workers. The Project shall implement Labor Management Procedures (LMP) consistent with ESS2 covering occupational health and safety, terms of employment meeting national labor law, prohibition of child labor and forced labor, SEA/SH prevention as per World Bank Good Practice Note, and a dedicated worker grievance mechanism will be established. Contractors will be contractually required to comply with ESS2, four labor codes and ESMP provisions, monitored by PIU specialists and verified through third-party monitoring, as required.

ESS3: Resource Efficiency and Pollution Prevention and Management

ESS3 requires resource efficiency and pollution prevention per Good International Industry Practice (GIIP). Sub-projects shall implement water conservation, energy-efficient equipment (BS-IV emission standards), and material reuse. Pollution prevention measures address: (i) air quality through dust suppression and NAAQS 2009 compliance; (ii) water quality through erosion control, wastewater treatment per Water Act 1974, and hazardous materials containment; (iii) noise control per Noise Rules 2000; and (iv) waste management per hierarchy (avoid-reduce-reuse-recycle-dispose) covering Construction & Demolition waste (C&D Rules 2016), hazardous waste (Hazardous Waste Rules 2016), and municipal solid waste. All Contractor ESMPs (C-ESMPs) incorporate these requirements as contractual obligations.

ESS 4 (Community Health and Safety):

ESS4 addresses risks and impacts on community health and safety arising from project activities. The Project will establish traffic management and road safety measures, emergency preparedness and response procedures, and safeguards related to construction camps, plants, and material storage areas.

Measures will also address risks related to labor influx, exposure of communities to construction-related hazards, and SEA/SH risks, with coordination mechanisms established with local authorities and emergency services, consistent with GIIP and ESS4 requirements.

ESS 5 (Land Acquisition, Restrictions on Land Use and Involuntary Resettlement):

ESS5 provides the framework for managing impacts related to land acquisition, restrictions on land use, and involuntary resettlement. Where land acquisition or livelihood impacts are unavoidable, targeted social assessments and resettlement instruments will be prepared and implemented.

The Project will ensure compensation at replacement cost, livelihood restoration for affected persons, establishment of cut-off dates, meaningful consultation and disclosure of resettlement instruments, and access to project-level grievance redress mechanisms, in line with ESS5 and applicable national legislation.

ESS6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources):

ESS6 applies to the project due to Meghalaya's location in the Indo-Burma Biodiversity Hotspot, the presence of critical natural habitats, protected areas, and ecosystem services essential to project-affected communities. The project will implement measures to protect and conserve biodiversity and promote the sustainable management of living natural resources.

ESS 7 (Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities):

ESS7 applies where Indigenous Peoples are present in, or have collective attachment to, the project area. The Project will ensure culturally appropriate and inclusive stakeholder engagement, access to grievance mechanisms, and equitable benefit-sharing arrangements.

Indigenous Peoples Development Plan (IPDP) will be prepared and Free, Prior and Informed Consent (FPIC) will be applied only under the specific circumstances defined in ESS7, related to impacts on land and natural resources under traditional ownership, physical relocation, or significant impacts on cultural heritage.

ESS 8 (Cultural Heritage):

ESS8 addresses tangible and intangible cultural heritage. The Project will implement screening procedures to identify known or potential cultural heritage sites, and apply chance-find procedures during construction.

No-go or restricted zones will be established where necessary, and activities in such areas will proceed only after obtaining statutory clearances and implementing approved mitigation measures, consistent with ESS8 requirements.

ESS 10 (Stakeholder Engagement and Information Disclosure):

ESS10 mandates early, continuous, and meaningful stakeholder engagement throughout the project lifecycle. The Project will ensure structured disclosure of information, inclusive consultations with affected parties, and accessible and responsive grievance redress mechanisms.

Engagement with Indigenous Peoples will be conducted in a culturally appropriate manner, with FPIC applied where required under ESS7, and not as a general requirement under ESS10.

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.

Environmental and Social Baseline and Key Risks

The framework uses a baseline narrative appropriate for Meghalaya's 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 ESMP 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.

The ESMF recognizes Meghalaya's social landscape and the relevance of distinct indigenous communities in the project areas. Impacts on land will vary by sub-project ; where requirements or access restrictions are unavoidable, the Resettlement Policy Framework will be adopted to prepare RAP to establish eligibility, valuation, assistance, and livelihood restoration, including provisions for

non-titleholders consistent with ESS5. The Indigenous People Policy framework sets out steps to prepare an Indigenous People Development Plan and to conduct Free, Prior and Informed Consent, where required- for the indigenous communities. 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.

Demographic Profile of Meghalaya

Meghalaya's population is predominantly tribal (86.1% per Census 2011), comprising three major Indigenous Peoples groups: Khasi (49.5%), Garo (31.2%), and Jaintia (11.4%), each with distinct languages, customary practices, and traditional governance systems. Land ownership follows matrilineal customary tenure among Khasis and Jaintias, and patrilineal systems among Garos, with no formal land titling—ownership established through clan lineage verified by Dorbar Shnong (village councils) and traditional authorities. Project areas exhibit rural agrarian economy with 65.8% population engaged in agriculture, horticulture (areca nut, oranges, pineapple), and allied activities, with average landholding of 1.2 hectares and literacy rate of 75.5% (Census 2011). Poverty levels vary by district: East Khasi Hills (11.9%), West Garo Hills (15.4%), South Garo Hills (28.9%), with vulnerable groups including female-headed households (12% of households), persons with disabilities (2.3% of population per Census 2011), and landless agricultural laborers. Traditional institutions (Syiemship, Doloiship, Sirdarship, Rangbah Shnong) maintain authority over land allocation, dispute resolution, community resources, and implementation of customary law recognized under Sixth Schedule. Sacred groves (approximately 79 documented in Meghalaya) and cultural heritage sites hold spiritual significance and are protected through customary practices and community stewardship.

Labor Management, OHS, and Community Safety

Labor Management Procedures prepared in line with the requirements of ESS2 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. 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 is consistent with ESS10 on Stakeholder Engagement and includes early-stage information sharing, site-specific consultations in local languages, and continued dialogue during 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. A separate Stakeholder Engagement Plan (SEP) has been prepared for the Project, based the World Bank's ESS 10.

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 will be required to enforce equal wages for equal work, provide facilities that meet women's needs, and implement and enforce worker codes of conduct. Monitoring uses sex-disaggregated indicators for participation, employment, and grievance uptake. Additionally, an SEA/SH Prevention and Response Plan has been prepared for the Project. Where the risk of SEA/SH are assessed to be higher, specific prevention and response measures are scaled, and these measures are explicitly incorporated into bidding documents, contracts and supervision checklists, ensuring enforceability.

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 consultant and PIU 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

The project will establish a dedicated Environmental and Social Cell (E&S Cell) within the PMU. This unit will be staffed with full-time environmental, Biodiversity, social, labour, tribal and gender specialists responsible for coordination, supervision, and documentation of implementation of ESMF. Roles are defined from the PMU to PIU, supervision consultants, and contractors. Standard templates are provided for screening, ESIA scope, ESMP/C-ESMP templates, engagement minutes, GRM logs, site-inspection records, and third-party audit terms of reference. Capacity building is ongoing throughout the project lifecycle, including induction for new staff, refresher sessions for engineers and site managers, and toolbox talks for workers. The ESMF integrates environmental and social (E&S) performance into contract management by embedding measurable compliance indicators within bidding documents and contract clauses. Compliance with E&S requirements is directly linked to payment conditions, retention, and performance-based contractual remedies. Where non-compliance is identified, the contract provides for payment withholding, retention, or other sanctions, applied as warranted and in accordance with applicable procurement and contract management procedures.

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, supervision and audits, site-specific mitigation and restoration, GRM operations, and contingency. Costs are systematically integrated into contracts and PMU/PIU budgets at planning and implementation stages to avoid under-resourcing. This ensures that E&S actions are implementable and financially sustained through construction as well as operations and maintenance phases.

1 INTRODUCTION

1.1 Background

The Sixth Schedule of the Constitution provides for the administration of tribal areas to safeguard the rights of the tribal population in the state of Meghalaya. This special provision is provided under Article 244(2) and Article 275(1) of the Constitution. The state plays an important role in the connectivity of two important river valleys in the Assam region i.e. Brahmaputra and Barak, which are important production centres. The state is thus important from the logistics point of view in the 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.

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, with support from the World Bank, had initiated a comprehensive road infrastructure improvement programme through the Meghalaya Integrated Transport Project (MITP, P168097). The project commenced on 21 January 2020 and is currently under implementation, with completion anticipated by October 2026.

The project focused on i) Improving transport infrastructure of more than 300 km and ensuring 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 *Meghalaya Infrastructure Development Finance Corporation (*MIDFC*),* with the Public Works Department, Government of Meghalaya as the major implementing partner.

Given the requirement of further road improvement and enabling logistics support for movement of the agricultural produce from the farms to the market to enable people to sell 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 the establishment of emergency response posts equipped with paramedics, ambulances, and tow trucks, with a target of reducing accidents by 20% on project roads.

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%.

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 Private sector engagement will mobilize at least two major investments in state logistics infrastructure through PPPs. Finally, the Contingent Emergency Response Component (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 MITP - Environment and Social Management

To systematically address the environmental and social issues in the Meghalaya Integrated Transport Project (MITP), the Environmental and Social Management Framework (ESMF) was developed. It provided an approach to identify, assess and manage 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 outlined procedures for screening, impact assessment, and preparing site-specific ESMPs and also process for implementation of these plans during construction activities to ensure sustainability.

By integrating safeguards into planning, procurement, and implementation, the ESMF aligned with Bank standards. The framework helps MPWD to integrate safeguards into planning, procurement, and implementation, and ensures that MITP interventions are environmentally sustainable, and aligned with national and World Bank policy requirements. It emphasizes stakeholder consultation, disclosure, grievance redress, and compliance monitoring, supported by clear institutional arrangements and capacity-building measures.

1.3 MLCIP: Environment and Social Management

The MITP's ESMF 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). Additionally, based on lessons learned from the implementation of the safeguard instruments of MITP, the ESMF of the MLCIP has been updated. 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.
- ESS 9 (Financial Intermediaries)- **Not Applicable** 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 processes established to effectively manage the E&S risks in the additional areas described above and overcome the weakness identified in MITP.

1.4 Learning from MITP

1.4.1 ESMP Implementation Learning

Independent environmental and social compliance audits conducted by third-party auditors for the MITP identified several recurring lessons and challenges, as outlined below:

- U**pstream integration of environmental considerations into the design;** MITP incorporated upstream integration of environmental considerations into project design, enhanced monitoring processes, and localized grievance management systems supported by robust oversight. These measures facilitated effective tracking of environmental performance.
- Sensitive planning and design e.g. inclusion of canopy bridges and wildlife signage, through mandatory design reviews for forest-adjacent works, helped alleviate or largely **minimise biodiversity impacts**.
- 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 inspiration from IRC guidelines and the Green Highways initiative of the Government.
- Effectively used **safety measures during construction;** speed-calming devices at habitat-sensitive locations were some of the safety measures, but there were gaps.
- While health & safety measures were effective, gaps in contracts to address risks associated with labour influx, displacement of non-titleholders without disbursement of compensation; lack of agreement on use of land for borrow areas, camps, etc; incomplete and inconsistent application of the ESMF across subprojects; **lack of information on land required;** ad-hoc institutional arrangement to implement, monitor and report on safeguard compliances— were observed.
- **The implementation of ESMP** faltered. Third-party audits revealed lapses in labour camp maintenance, PPE provision and usage, and emergency response. Irregular monitoring by the PMU and Construction Supervision Consultant delayed the corrective course of action. There was 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.

1.4.2 ESMP Implementation Challenges

Uneven Institutional Capacity: Environmental management capacity varied across the PMU, PIU, and contractors, resulting in inconsistent ESMP implementation across road corridors. While central oversight was generally effective, site-level execution depended significantly on individual staff expertise.

Staff Turnover at Contractor Level: Frequent turnover of environmental and safety personnel among contractors disrupted supervisory continuity and institutional knowledge, especially in remote and logistically challenging areas. Replacement staff typically require additional orientation and training to meet ESMP requirements.

Construction-Driven Prioritization: During peak construction periods in hilly terrain, contractors occasionally prioritized physical progress over timely environmental mitigation measures, including erosion control, waste management, and occupational health and safety protocols.

Regulatory and Statutory Clearance Delays: Delays and uncertainties in securing Consents to Establish and Operate (CTE/CTO), quarry licenses, and approvals for ancillary facilities impacted on work sequencing and, in certain instances, heightened compliance risks.

Limited Use of Monitoring for Decision-Making: Environmental monitoring (covering air, noise, and water quality) was primarily conducted to meet compliance obligations, with limited incorporation of findings into site-specific corrective actions or adaptive construction practices.

Biodiversity and Forest Interface Challenges: Implementing biodiversity mitigation measures proved complex in forested and community-managed landscapes, where wildlife corridors are informal and not officially designated, necessitating context-specific and flexible approaches.

Plantation Tracking and Maintenance: Although compensatory plantation activities were carried out, initial systems for tracking locations, survival rates, and long-term maintenance responsibilities were not sufficiently robust.

Terrain and Climate Constraints: Intense rainfall, steep slopes, and fragile geology frequently caused erosion, slope instability, and damage to temporary mitigation structures, especially during extreme weather events.

Community Interface and Expectations: Community expectations regarding access enhancements, road safety, and ancillary facilities occasionally exceeded ESMP commitments, resulting in grievances unrelated to direct impacts.

Inter-Agency Coordination under Sixth Schedule: Coordination among the Public Works Department (PWD), Forest Department, State Pollution Control Board, and Autonomous District Councils required additional time due to Sixth Schedule governance structures, thereby affecting implementation schedules.

1.4.3 Key Lessons Learned

Strengthening Institutional Arrangements: Early and ongoing capacity building, including the deployment of dedicated full-time environmental and safety staff at PMU, PIU, and contractor levels, is essential for consistent ESMP implementation in multi-corridor transport projects.

Contractual Accountability: Tying ESMP compliance to interim payment certificates, performance assessments, and supervision ratings substantially enhances contractor accountability for environmental and social safeguards.

Proactive Regulatory Management: Implementation of a centralized clearance tracking system and regular engagement with regulatory agencies helps minimize delays and compliance risks.

Outcome-Oriented Monitoring: Environmental monitoring systems prove most valuable when designed as management tools, incorporating clear feedback mechanisms that link results to corrective actions, site instructions, and supervision reviews.

Adaptive Biodiversity Management: Conducting early ecological assessments, developing flexible mitigation plans, and maintaining close collaboration with forest authorities and local communities improve the efficacy of biodiversity conservation in forested and community-managed areas.

Sustainable Plantation Management: Maintaining geo-tagged records, establishing survival rate targets, conducting regular monitoring, and clearly defining post-construction maintenance responsibilities are critical to achieving enduring environmental benefits.

Continuous Stakeholder Engagement: Aligning ESMP implementation with the Stakeholder Engagement Plan (SEP) and Grievance Redress Mechanism (GRM) effectively manages community expectations, mitigates conflicts, and fosters sustained local support.

Climate-Resilient ESMP Design: In regions like Meghalaya with high rainfall and hilly topography, ESMPs should prioritize climate-resilient designs, phased construction scheduling, bioengineering techniques, and sufficient contingency measures.

Inter-Agency Coordination: Establishing early and formalized coordination mechanisms among the PWD, Forest Department, Pollution Control Board, and Autonomous District Councils is vital for timely ESMP execution in Sixth Schedule areas.

1.5 Way Forward:

Building on the lessons from MITP, the ESMF for MLCIP will focus on strengthening institutional capacity, making the 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 the approach of risk management through the project cycle.

Institutional Strengthening and Capacity Development: The project will establish a dedicated Environmental and Social Cell (E&S Cell) within the PMU. This unit will be staffed with full-time

environmental, Biodiversity, social, labour, tribal and gender specialists responsible for coordination, supervision, and documentation of implementation of ESMF. 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, and SEA/SH prevention. An ICT-based system for monitoring and reporting will be institutionalized.

Screening and Early Identification: Screening using overlay analysis will be carried out for all proposed sites/sub-projects. The purpose of this initial screening is to enable early identification of environmental and social risks and sensitivities.

Monitoring and reporting - A performance monitoring dashboard, quarterly compliance reporting, and escalation protocols for delays will be established to enforce accountability. 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. 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. Third-party audits will continue to provide independent validation of field performance and compliance.

Stakeholder Engagement: Consultation processes will emphasize participation of traditional institutions, women's groups, and vulnerable households, using local languages (Khasi, Pnar, Garo).

Comprehensive Labour Management Procedures (LMP): In accordance with ESF requirements, the LMP is prepared to include a dedicated worker grievance redress mechanism (GRM), occupational health and safety (OHS) systems, prohibitions on child and forced labour, and ongoing monitoring of contractor labour standards to foster fair, safe, and compliant employment practices.

Integrated Community Health and Safety Measures: The ESMF includes 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.

1.6 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.

This ESMF should be read together with other plans prepared for the project, including the Stakeholder Engagement Plan (SEP), Labor Management Procedures (LMP), and the Environmental and Social Commitment Plan (ESCP).

1.7 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 investment related to Roads, bridges, road safety and institutional strengthening and CERC 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.

1.8 Environmental & Social Risk Categorization

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 effectively manage social and environmental risks and impacts in such socially and environmentally 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);

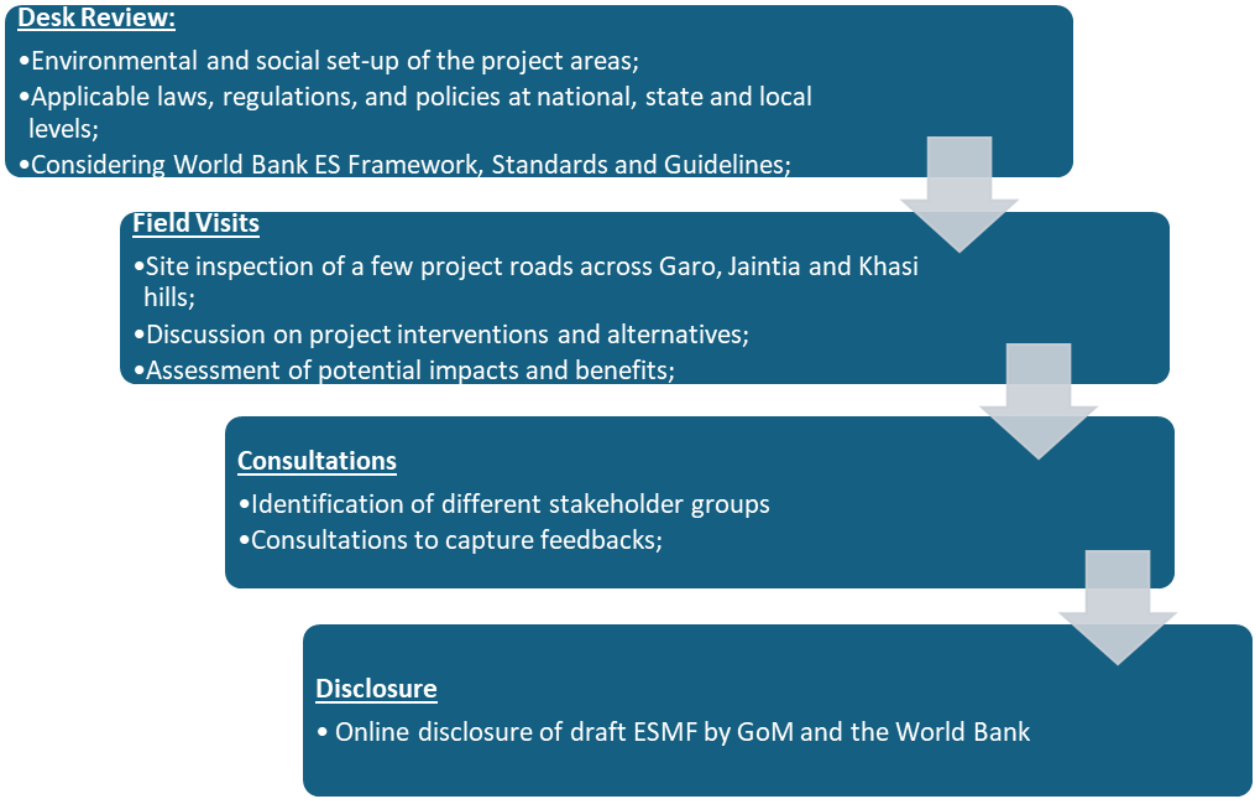
- Land acquisition, restrictions on land use, and involuntary resettlement requirements (ESS5) resulting in physical and/or economic displacement, including impacts on livelihoods, assets, and access to resources.
- Occupational and community health and safety risks during construction (ESS2, ESS4), including compliance with four labour codes (code on wages 2019, industrial relations code 2020; Cose on Social Security, 2020; and occupational, safety health and working conditions code 2020) implemented 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.

1.9 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 the 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.

1.10 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: Application of ESMF	Describes the scope, applicability, and application of the ESMF across various project components and phases. It details screening procedures, risk classification, decision-making processes, and the integration of ESMF provisions into project planning, design, implementation, and supervision.
Chapter 3: **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 4: **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 5: **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 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 7: **Institutional Arrangement**	Details the organizational structure, roles, and responsibilities of the PMU, PIU, contractors, and consultants in ESMF implementation. Defines reporting, coordination, and accountability frameworks.

Chapter Name	Details Covered in the Chapter
Chapter8: **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.
Chapter9: **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 safeguarding sustainability.

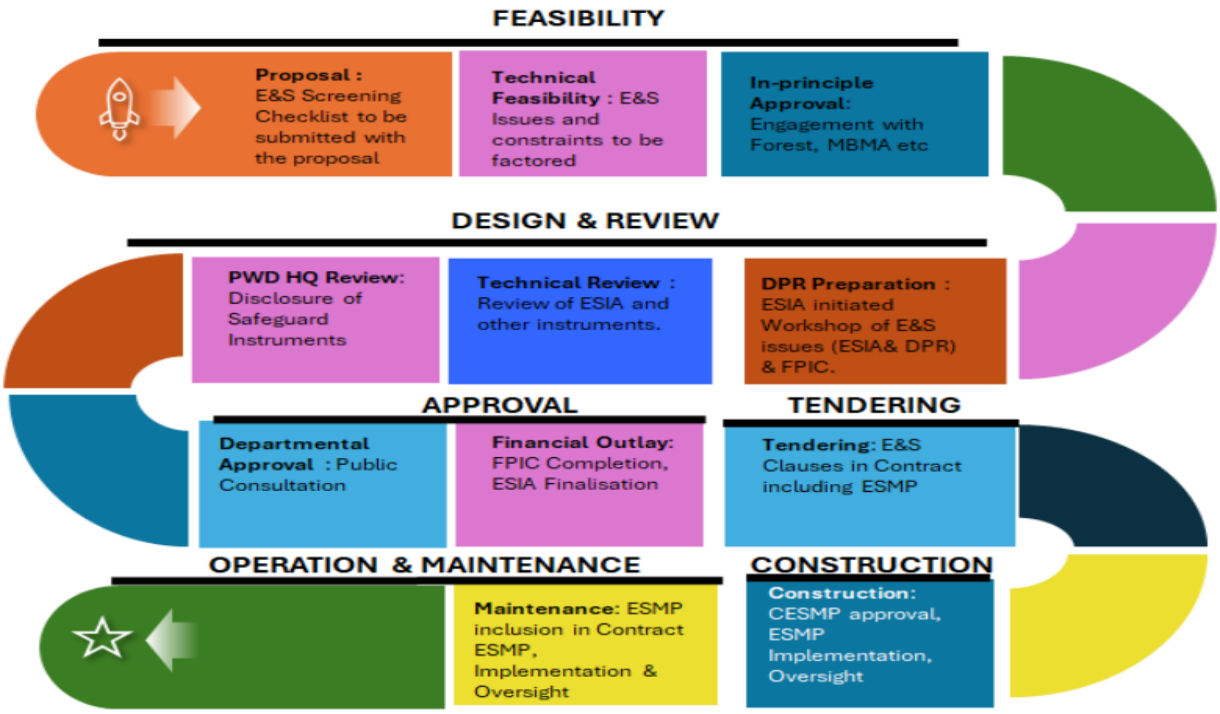
2 APPLICATION OF ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)

2.1 Introduction

The Environmental and Social Management Framework (ESMF) establishes a structured and integrated approach to ensure that all MPWD road and bridge sub-projects under the Meghalaya Logistics and Connectivity Improvement Project are planned, implemented, and maintained in an environmentally sound and socially responsible manner. It provides the overarching mechanism for identifying, assessing, mitigating, monitoring, and reporting environmental and social risks in compliance with the World Bank Environmental and Social Framework and applicable regulatory requirements.

The ESMF embeds environmental and social considerations within MPWD's core planning, design, procurement, construction, and maintenance processes, ensuring safeguards are treated as integral project inputs rather than standalone or post-facto activities. 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 1-2: The E&S Process integrated into the Project Cycle



2.2 E&S Process Table for the MPWD

Table 2-1: E&S Process Table for the MPWD

Project Stage	Activity	E&S Action	E&S Instruments	Responsibility
Feasibility: Proposal	Consolidation of proposals at MPWD HQ for prioritization	Initial identification of potential environmental and social risks and sensitivities to inform early decisions; screening for proximity to forests, wildlife habitats, water bodies, settlements, cultural properties, Indigenous Peoples' areas, and potential land acquisition; flag high-risk corridors and avoid untenable proposals.	Preliminary Environmental and Social Screening Checklist; Compendium of Environmental and Social Sensitivities (forests, wildlife corridors, cultural heritage, landslide-prone areas, Indigenous Peoples' areas)	Assistant Engineer (AE) completes screening checklist; Executive Engineer (EE) reviews and signs; HQ E&S Cell provides guidance and records
Technical Feasibility	Assessment of alignment options, preliminary engineering, cost estimates, and constructability	Integrate environmental and social considerations into technical feasibility by assessing notified forests, protected areas, wildlife corridors, sensitive zones, land requirements, customary land ownership, cultural heritage sites, and Indigenous Peoples'	Feasibility Note incorporating E&S considerations; Preliminary maps and alignment drawings with E&S overlays	Executive Engineer prepares feasibility documentation; Chief Engineer considers E&S implications; E&S Cell advises on additional studies (biodiversity, Indigenous Peoples, cultural heritage) and indicative resources

Project Stage	Activity	E&S Action	E&S Instruments	Responsibility
		presence. Identify higher-risk sub-projects for enhanced assessment and resources.		
In-Principle Approval	Submission of shortlisted proposals to the Government of Meghalaya	Initiate early coordination with statutory authorities to confirm the presence of forests, wildlife corridors, protected species, or other regulated sensitivities along alignments to reduce downstream approval risks.	Official correspondence with Forest Department and Wildlife authorities; alignment maps and GIS/KML files	Executive Engineer provides alignment data; Chief Engineer/Nodal Officer coordinates inter-departmental communication; E&S Cell provides technical inputs
DPR Preparation	Detailed engineering design and safeguard studies were undertaken concurrently	Conduct detailed E&S screening and baseline surveys (physical, biological, social). Assess impacts, evaluate alternatives, and integrate mitigation into design. Coordinate DPR and ESIA consultants so E&S findings inform alignment refinement, design modifications, and cost estimates.	Detailed E&S Screening Report; Environmental and Social Impact Assessment (ESIA); Environmental and Social Management Plan (ESMP), including monitoring framework and cost estimates	E&S Cell facilitates appointment of ESIA consultants and reviews outputs; Additional/Chief Engineer oversees coordination between DPR and ESIA consultants; outcomes incorporated into ESIA and DPR
Technical Review	Review and acceptance of DPR and	Present ESIA findings (impacts, mitigation, residual risks,	Draft ESIA and ESMP	Executive Engineer forwards documents for review; E&S Cell

Project Stage	Activity	E&S Action	E&S Instruments	Responsibility
	safeguard instruments by MPWD	implementation arrangements). Incorporate comments from technical and E&S reviewers to finalize safeguard instruments.		reviews and provides consolidated comments; ESIA consultants revise documents
HQ Review	Final scrutiny of DPR, costs, and technical soundness at MPWD HQ	Review ESIA and ESMP for completeness and compliance with World Bank ESF and national regulations; highlight critical E&S issues, risks, and mitigation costs for senior management decision-making.	Draft ESIA and ESMP ready for disclosure; summary of critical E&S issues	E&S Cell reviews and approves safeguard instruments; briefs MPWD senior management on key E&S risks and obligations
Departmental Approval	Formal approval of DPR, ESIA, and ESMP by the Department	Upon approval, disclose ESIA publicly for transparency. Conduct public consultations in project-affected areas to disclose findings, record stakeholder concerns, and integrate feedback into final ESIA and ESMP.	Disclosure notice; ESIA disclosure on website; minutes of public consultation meetings with attendance sheets and photographs	E&S Cell manages disclosure and consultations; reviews outcomes and ensures stakeholder feedback is integrated
Financial Outlay	Finalization of project budget and financial approvals	Integrate environmental and social costs (mitigation, monitoring, capacity	FPIC documentation (where applicable); Final ESIA and ESMP	ESIA consultants finalize documents; E&S Cell verifies FPIC documentation and safeguards

Project Stage	Activity	E&S Action	E&S Instruments	Responsibility
		building, compensation) into budget. Complete and document FPIC processes for Indigenous Peoples where applicable.		compliance
Tendering	Procurement of civil works contractors	Embed E&S requirements into bidding documents, including ESMP provisions, Codes of Conduct, labour management, and E&S qualification criteria to bind contractors contractually to safeguard obligations.	ESMP; Codes of Conduct; E&S clauses in bidding documents	E&S Cell provides E&S inputs to Procurement Cell; Procurement Cell incorporates into bid documents
Construction	Execution of civil works	Contractors prepare site-specific Contractor ESMP (CESMP), Occupational Health & Safety Plans, and Traffic Management Plans. Real-time monitoring of E&S performance by supervision consultants; non-compliances tracked, corrected, and linked to payment approvals.	CESMP; Safety Management Plans; daily and monthly E&S monitoring reports	Contractor E&S Officer implements CESMP; CSC E&S Officers review and monitor; E&S Cell provides oversight and reports KPIs to MPWD management
Maintenance	Routine and intensive	Apply relevant ESMP provisions during	E&S monitoring and reporting	Responsible maintenance teams

Project Stage	Activity	E&S Action	E&S Instruments	Responsibility
	maintenance of completed assets	maintenance to manage environmental, safety, and social risks. Monitor long-term impacts and implement corrective actions as required.	formats; maintenance-related ESMP provisions	and E&S Cell ensure continued compliance

This table translates the ESMF from a policy framework into an implementable management tool by embedding environmental and social requirements within each defined stage of the MPWD project cycle. It specifies stage-wise E&S actions, applicable instruments, and institutional responsibilities, thereby establishing clear lines of accountability and decision-making authority. By aligning screening, assessment, mitigation, disclosure, implementation, and monitoring activities with existing engineering and procurement processes, the table ensures timely risk identification, regulatory compliance, and integration of mitigation costs into project planning. This structured approach enables systematic tracking, audit ability, and effective supervision of E&S performance throughout the lifecycle of MPWD road and bridge projects.

3 EXISTING POLICY AND LEGAL FRAMEWORK

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 standards (ESS) of the World Bank that apply to the project.

3.1 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 3-1: 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	The Environmental (Protection) Act, 1986, empowers MoEFCC to set standards, regulate pollution, and issue notifications like the EIA Notification (2006). Its rules on air, water, waste, and hazardous substances apply to all MLCIP sub-project works.	State Pollution Control Boards (SPCBs)	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 the construction, operation, and maintenance of Project infrastructure do not cause environmental degradation	Contractor & MPWD
Environmental Impact	Regulates prior Environmental Clearance (EC) for	MoEF&CC and SEIAA	Project components do not trigger Item 7(f) unless they involve major highway	1. MPWD 2. DPR/ESIA

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
Assessment Notification-2006, and its amendments	categorized projects.		expansion or land acquisition, as documented in screening. Ropeway projects under Item 7(g) require mandatory EC Category A (MoEFCC) for eco-sensitive/protected areas and Category B (SEIAA) elsewhere with ESIA, ESMP, and consultation. Contractors must obtain prior EC for material extraction under the EIA Notification, 2006. Procedures are in Annexure II.	Consultant 3. Contractor
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	Under the Meghalaya Logistic & Connectivity Improvement Project (MLCIP), environmental screening pinpointed just three road sections that cross notified forest areas. For these, all works will stay strictly within the pre-1980 right-of-way (RoW), eliminating the need for additional forest diversion. Should any expansion occur beyond this RoW, full compliance with the Forest (Conservation) Act is mandatory, routed through the PARIVESH portal, with Stage-I and Stage-II approvals, compensatory afforestation (CA), net present value (NPV) payments, and settlement of Forest Rights Act (FRA) rights. Even though	1. MPWD 2. DPR Consultant 3. ESIA Consultant

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
			Meghalaya's forests are largely community-owned, the state Forest Department has verified that no MLCIP alignments overlap with designated Community Forest areas.	
Wildlife (Protection) Act, 1972 amended 1993 and Rules 1995; Wildlife (Protection) Amendment Act, 2002	The Wildlife (Protection) Act, 1972 provides comprehensive protection for wild animals, birds, and plants through six Schedules with varying degrees of safeguards. Schedule I and Part II of Schedule II offer absolute protection with the highest penalties, while Schedules III and IV offer protection with lower penalties. Schedule V lists animals that may be legally hunted, and Schedule VI identifies endemic plant species prohibited from cultivation and planting.	National / State Board for Wildlife	Meghalaya's forest and wildlife context triggers MoEF&CC OM No. J.11013/41/2006-IA/II(I) (2 December 2009), requiring NBWL clearance for projects on forest land or within 10 km of National Parks, Wildlife Sanctuaries, or ESZs under the Wildlife (Protection) Act, 1972. As no MLCIP subprojects fall within or near notified ESZs, NBWL clearance is not required. However, subprojects near elephant corridors shall incorporate enhanced, species-specific safeguards in line with the Act and Supreme Court directions Civil Appeal Nos. 3438–3439 of 2020 for protecting elephant migration routes.	1. MPWD 2. DPR Consultant 3. ESIA Consultant
Biological Diversity	The Act emphasizes the Conservation of	**National Biodiversit**	In compliance with the Biological Diversity Act, 2002,	1. MPWD

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
Act, 2002	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.	**y Authority** (NBA), State Biodiversit y Board	MLCIP shall consult the Meghalaya Biodiversity Board and Biodiversity Management Committees, particularly near Biodiversity Heritage Sites, and adhere to their directives. Project activities shall avoid Biodiversity Heritage Sites and eco-sensitive zones, undergo pre-construction biodiversity screening, and integrate appropriate safeguards to mitigate impacts on sensitive habitats, species, and community-conserved landscapes.	2. DPR Consultant 3. ESIA Consultant
Notificatio n 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 Departmen t, GoM and MoEFCC	The MLCIP avoids all activities prohibited in Eco-Sensitive Zones (ESZs). Assessments confirm that no road subproject alignments fall within or intersect any notified ESZs; all are located outside legally designated boundaries. Consequently, no ESZ-related restrictions or regulatory procedures apply. The project fully complies with relevant wildlife and environmental protection provisions.	1. MPWD 2. DPR Consultant 3. ESIA Consultant 4. Contractor
Water (Preventio	This Act provides for the control and	Meghalaya State	Water pollution risks from sediments, oil and grease, and	CSC &

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
n and Control of Pollution) Act, 1974, and amendments	prevention of water pollution by regulating the discharge of pollutants into water bodies in accordance with prescribed standards.	Pollution Control Board	organic runoff from construction plants, workshops, ancillary facilities, and labour camps shall be managed through mandatory Consent to Establish and Consent to Operate from the Meghalaya State Pollution Control Board, to be obtained prior to commencement of related activities.	Contractor
Air (Prevention and Control of Pollution) Act, 1981, and amendments	This Act provides the standards for the prevention and control of Air pollution.	Meghalaya State Pollution Control Board	Air pollution may arise from emissions from crushers, hot-mix plants, and concrete batching plants, as well as fugitive dust from scarification, aggregate handling, and waste management. Accordingly, Consent to Establish and Consent to Operate from the State Pollution Control Board are mandatory before 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 various land use categories, to regulate and control ambient	State Pollution Control Board	Noise pollution during construction may arise from heavy machinery, material transport, piling and foundation works, demolition, drilling, and cutting activities. While no specific “noise permission” is required under the Noise Pollution Rules, all activities shall comply with the prescribed	CSC & Contractor

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
	noise levels.		ambient noise limits applicable to the respective 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 contains several nationally and state-protected heritage sites and ancient caves. Sub-projects near ASI notified monuments shall comply with the Act, including the 100 m prohibited and 200 m regulated zones. Project documentation ensures adherence to these requirements, avoidance where feasible, and application of mitigation measures and a Chance Finds Procedure for any unanticipated discoveries.	1. MPWD 2. DPR Consultant 3. ESIA Consultant 4. Contractor
Construction and Demolition Waste Management Rules, 2016	The rules provide a framework for the management of construction and demolition (C&D) waste generated from the construction, repair or demolition of any civil structure, ensuring environmentally sound handling, recycling, and disposal practices.	Village council, Municipal authority	Construction and demolition (C&D) waste generated during project activities shall be managed, handled, and disposed of in accordance with the provisions of the Rules. Disposal of C& D waste shall be done under the guidelines of local authorities, like the Village council, and municipal boards	CSC and Contractor
Municipal Solid Waste	Segregation, Handling, & safe Disposal of Domestic Solid Waste	Municipal Boards/ Town	All workforce campsites shall provide designated waste collection and storage facilities	MPWD, CSC and Contractor

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
(Management & Handling) Rules, 2000 (MSW Rules)		Committees, village council	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 the Village council and municipal boards	
Hazardous and other Wastes (Management and Transboundary Movement) Rules, 2016 and amendments	The Hazardous and Other Wastes (Management and Transboundary Movement) Rules define and classify hazardous wastes, and establish procedures for their handling, storage, treatment, and disposal, including the use of Treatment, Storage, and Disposal Facilities (TSDFs).	Central Pollution Control Board (CPCB) and Meghalaya State Pollution Control Board	All waste oil and hazardous wastes generated during construction and operation must be managed in accordance with CPCB guidelines and the Extended Producer Responsibility (EPR) framework. Producers, importers, recyclers, and collection agents shall register on the CPCB EPR portal, ensuring wastes are supplied only to authorized recyclers. Contractors must obtain authorization from the Meghalaya State Pollution Control Board (MSPCB), maintain accurate records, submit statutory returns, and ensure safe storage, transportation, and disposal. Unauthorized disposal is strictly prohibited, and all activities must be reported via the EPR system.	MPWD, CSC and Contractor
The	Safe transportation,	PESO,	Blasting for hill slope cutting,	MPWD, CSC and

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
Explosive Act 1884; Explosives Rules, 2008	storage and use of explosive material	District Magistrate /Deputy Commissioner	bridge foundations, shall be conducted only by trained, licensed personnel using controlled methods. All required licenses and approvals must be obtained in advance, and explosives shall be stored, handled, and transported according to safety standards. Adequate safety measures, warnings, and exclusion zones shall be maintained, with contract provisions ensuring full compliance with the Explosives Act and related rules.	Contractor
Batteries (Management and Handling) Rules, 2022	The rules require the proper collection, disposal, and recycling of used lead-acid batteries, assigning responsibility to manufacturers, dealers, and consumers to ensure their return for environmentally sound recycling.	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, CSC and Contractor
Central Motor Vehicle Act 1988 and Central	To check vehicular air and noise pollution	Regional Transport Authority (RTA), the State Transport	Contractors shall ensure that all vehicles deployed during construction hold valid Pollution Under Control certificates and comply with the applicable Bharat Stage CEV/TREM IV and V	MPWD, CSC and Contractor

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
Motor Vehicle Rules 1989		Authority (STA),	emission standards as notified under MoRTH G.S.R. 1114(E). All Construction Equipment Vehicles and agricultural tractors used at project sites shall employ certified engines meeting conformity of production, durability, and NOx control requirements under AIS-137, thereby supporting cleaner, energy-efficient, and environmentally compliant construction practices under MLCIP.	
Public Liability and Insurance Act 1991	The Act aims to provide immediate relief to those affected by accidents involving hazardous substances.	District Collector	The Contractor shall maintain Public Liability Insurance as mandated under this Act, covering third-party damages or injuries, particularly during hazardous operations, to ensure prompt compensation and minimize financial exposure.	MPWD, CSC and Contractor
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 and Explosives Safety Organization (PESO) and the district authority	Storage of petroleum up to 2,500 litres in non-bulk containers does not require a license but must comply with prescribed safety guidelines. Bulk storage above 1,000 litres and up to 25,000 litres requires a license from the District Authority, subject to safety, fire protection, and facility compliance. Storage between	MPWD, CSC and Contractor

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
	petroleum products.		25,000 and 45,000 litres requires prior PESO approval, while quantities exceeding 45,000 litres require a full license in Form XVI.	
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, CSC and Contractor
State Level				
Meghalaya Forest Regulation (Application and Amendment) Act, 1973	Protection of unsettled government forests includes regulating or prohibiting the felling, cutting, girdling, lopping, tapping, or injury of trees, the sawing, conversion, and removal of timber, and the collection of other forest produce. It also covers the regulation or prohibition of quarrying stones, boiling catechu, and burning 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

Legislation (Acts/ Rules)	Key provisions and purpose	Regulatory Authority	Applicability to Project	Responsibility
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

Table 3-2: 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-Jainta Hills	The Rules establishes a multi-tiered	Executive Committee

Legislation (Acts/Rules)	Key provisions and purpose	Regulatory Authority
Autonomous District (Management and Control of Forests) Rules, 1960	management system for various types of forests.	Khasi Hills Autonomous District Council Jaintia Hills Autonomous District Council
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

3.2 Social Laws and Regulations

Applicable Social Legislations and Specific Requirements for the Project

Table 3-3: Social Legislations and Regulatory Requirements

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 authority, ensuring protection of tribal land rights and consistency with ESS5 (Land Acquisition, Restrictions on Land Use, and Involuntary

Legislation	Description	Regulator	Applicability
			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 District (Regulation and Administration of Land) Act 2021	The Khasi Hills Autonomous District (Regulation and Administration of 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	Autonomous District Council through the Executive Member – Land Management; Village Council (Dorbar Shnong etc)	Applicable as it ensures project initiatives like deforestation control, natural resource management, and community conservation align with Khasi tribal customs, preventing unauthorized transfers or conversions, and requiring approvals from Village Councils – Autonomous District Council.

Legislation	Description	Regulator	Applicability
	purposes, excluding government and reserved forest lands		
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)	FRA is not being implemented in Meghalaya. Substantial proportion of community-owned forest lands in Meghalaya have been notified as Community Reserves under the Wildlife (Protection) Act, 1972, as amended. Accordingly, the provisions of the Wildlife (Protection) Act relating to Community Reserves are applicable and must be read in conjunction with the FRA to ensure that conservation objectives are pursued in a manner consistent with recognized community rights and customary governance systems.
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	Public Information Officers (PIOs)	Applicable to the project as a whole

Legislation	Description	Regulator	Applicability
	Commission and State Information Commissions and for matters connected therewith or incidental thereto.		
Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (RFCTLARR)	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 (R&R) of those displaced or whose livelihoods are impacted.	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 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	The Meghalaya Transfer of Land (Regulation) Act, 1971 stipulates that no land (includes immovable	Revenue and Disaster Management Department ADCs	Under this project, comprehensive land-related initiatives shall be undertaken, including systematic

Legislation	Description	Regulator	Applicability
(Regulation) Act, 1971	property of every description 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.		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.

The applicable Labor laws for MLCIP are given as follows:

Table 3-4: Labor laws applicable

S. No.	Act / Regulation	Applicability to MLCIP	Key Provisions / Obligations	Implementing Authority (Central + Meghalaya State Law / Rules)
1	Occupational Safety, Health & Working Conditions (OSH) Code, 2020 + Meghalaya Factories Rules, 2015	Applicable to all construction, labour camps, work fronts, and site facilities.	Site safety standards, PPE, welfare amenities, working hours, accident reporting, medical checks, registration of establishments.	Central: MoLE State: Labour Commissioner, Meghalaya State Rules: Meghalaya Factories Rules, 2015
2	Code on Wages, 2019 + Meghalaya Minimum Wages Notifications (latest revision)	Applicable to all wage payments through contractors and subcontractors at MLCIP sites.	Minimum wages (Skilled/Semiskilled/Unskilled), equal pay, wage slips, timely payment, prohibition of illegal deductions.	State: Labour Commissioner, Meghalaya State Rules: Latest Meghalaya Minimum Wage Notification
3	Industrial Relations (IR) Code, 2020 + Meghalaya Industrial Disputes Rules, 1973	Applicable for grievance redress, worker disputes, conciliation and retrenchment-related issues.	Conciliation, dispute settlement, prohibition of unfair labour practices, notice of changes in service conditions.	State: Labour Commissioner; Industrial Tribunal, Meghalaya State Rules: Meghalaya Industrial Disputes Rules, 1973
4	Code on Social Security, 2020 + Meghalaya BOCW Welfare Board Rules, 2006	Applicable to EPF/ESI coverage (where notified), worker registration, welfare board	Social security benefits, maternity benefits, PF/ESI, construction worker registration, insurance and disability benefits.	Central: EPFO, ESIC State: Meghalaya BOCW Welfare Board; Labour Department State Rules: Meghalaya BOCW

S. No.	Act / Regulation	Applicability to MLCIP	Key Provisions / Obligations	Implementing Authority (Central + Meghalaya State Law / Rules)
		benefits.		(RE&CS) Rules, 2006
5	Building & Other Construction Workers Act, 1996 (BOCW) + Meghalaya BOCW Rules, 2006	Directly applicable to all MLCIP construction packages.	Registration of workers, provision of drinking water, toilets, crèche, first aid, PPE, accident reporting, skill training.	State: Meghalaya BOCW Welfare Board; Inspector of Labour State Rules: Meghalaya BOCW Rules, 2006
6	Contract Labour (Regulation & Abolition) Act, 1970 + Meghalaya Contract Labour Rules, 1971	Mandatory for all contractors and subcontractors in MLCIP.	Contractor licensing, employment conditions, muster rolls, wage registers, living facilities, equal wages for equal work.	State: Labour Commissioner, Meghalaya State Rules: Meghalaya CLRA Rules, 1971
7	POSH Act 2013 + Meghalaya State POSH Guidelines / LCC Rules	Applicable at PIU offices, contractor camps, site offices.	ICC formation, LCC jurisdiction, awareness programmes, gender sensitization, confidential investigation & reporting.	State: District Local Complaints Committee; Meghalaya State Women's Commission State Guidance: Meghalaya POSH Implementation Guidelines
8	Child Labour Act 1986 (amended 2016) + Meghalaya Child Labour Advisory Committee Rules & Rescue Guidelines	Mandatory for contractors; prohibits child labour at MLCIP sites.	Prohibits <14 years; adolescents only in non-hazardous work; age verification; rescue & rehabilitation protocols.	State: District Labour Officer; State Child Labour Task Force State Rules: Meghalaya Child Labour Monitoring & Rescue Guidelines
9	Bonded Labour System (Abolition) Act, 1976 + Meghalaya Bonded Labour Rules	Applicable for preventing forced/bonded labour at contractor worksites.	Prohibits bonded labour, coercion or debt-based labour; rescue, rehabilitation and legal action for offenders.	State: Deputy Commissioner (DM); Labour Dept. Meghalaya State Rules: Meghalaya Bonded Labour (Abolition) Rules
11	Meghalaya Shops & Establishments Act, 2020	Applicable to PIU offices, consultant offices, and contractor administrative offices.	Registration of establishments, working hours, leave, holidays, health & safety conditions for office staff.	State: Labour Commissioner, Meghalaya
13	District Labour &	Applicable for	Monitoring teams, rescue	State: District Task

S. No.	Act / Regulation	Applicability to MLCIP	Key Provisions / Obligations	Implementing Authority (Central + Meghalaya State Law / Rules)
	Employment Guidelines on Child Labour, Bonded Labour & Rescue Mechanisms 2014 & 2017	site inspections, worker screenings, rescue operations and social audits.	protocols, rehabilitation, coordination with DCPU/WCD and police.	Force (Labour Dept + Police + WCD)

3.3 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 3-5: World Bank Safeguard Policies- ESSs

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.)
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.

ESS No. & Title	Objective / Key Provisions	Applicability to the Project	Implications / Required Actions
ESS3 – Resource Efficiency and Pollution Prevention and Management	Promotes sustainable resource use and pollution control related to air, water, waste, noise, and hazardous materials.	Applicable – Construction activities will generate waste, dust, and noise. Minimize the use of water, energy, fuel, and construction materials through efficient design and work practices. Contractors must adopt measures that reduce waste generation and promote reuse or recycling wherever feasible. These actions ensure sustainable resource use and compliance with national regulations and World Bank standards.	Implement waste management and pollution control plans; monitor emissions, effluents, and resource use (fuel, water).
ESS4 – Community Health and Safety	Ensures protection of local communities from project-related risks (traffic, construction hazards, communicable diseases, GBV).	Applicable – Project passes through villages and settlements. 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	Develop Community Health and Safety Plan; implement traffic management and road safety measures; conduct awareness on communicable disease and GBV risks.

ESS No. & Title	Objective / Key Provisions	Applicability to the Project	Implications / Required Actions
		hazards.	
ESS5 – Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Prevents forced displacement and ensures fair compensation, livelihood restoration, and support to affected persons.	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. Involuntary resettlement will be avoided or minimized through design optimization. Where unavoidable, a 100% census, asset inventory, and socio-economic baseline with a publicly disclosed cut-off date will be conducted. Resettlement Action Plans (RAPs) fully compliant with ESS5, national law, the Sixth Schedule, and KHADC/GHADC/JHADC regulations will be prepared, consulted upon, and disclosed before 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.
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 & Fauna. Details given in Table 3-7	Undertake biodiversity screening; integrate wildlife crossing measures; avoid critical habitats; obtain necessary forest/wildlife clearances.
ESS7 – Indigenous	Respects rights,	Applicable – Project is	Conduct Free, Prior, and

ESS No. & Title	Objective / Key Provisions	Applicability to the Project	Implications / Required Actions
Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	culture, and livelihoods of Indigenous Peoples; promotes inclusive benefits.	located in tribal areas of Meghalaya.	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 customary use or occupation; or 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. Prepare the Indigenous Peoples Planning Framework (IPPF), ensuring culturally appropriate benefits.
ESS8 – Cultural Heritage	Protects tangible and intangible cultural heritage from adverse project impacts.	Applicable – Presence of community sacred sites, shrines, or traditional landmarks is 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 information disclosure throughout the project cycle.	Applicable – Engagement required with affected communities, local authorities, and institutions.	Develop and implement a Stakeholder Engagement Plan (SEP) with regular consultations and functioning GRM for communities.

4 PROJECT BASELINE STUDY

4.1 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), and Eastern Meghalaya (Jaintia Hills).

4.2 Geology and Soil

Geologically, Meghalaya is part of the Shillong Plateau, dominated by Precambrian and Paleozoic sedimentary formations comprising sandstone, shale, and extensive limestone belts, particularly in the southern hills. Prolonged weathering and dissolution of limestone under very high rainfall have resulted in well-developed karst landscapes, underground drainage systems, and caves such as Siju. The combination of steep terrain, intense monsoon rainfall, and soluble rock formations strongly influences surface hydrology, slope stability, and erosion processes.

The soils of Meghalaya are mainly lateritic, red loamy, red and yellow, alluvial, and ferralsolic, with localized peaty and colluvial soils. These soils are generally acidic, low in fertility, and prone to erosion due to steep slopes and heavy rainfall. From an engineering perspective, lateritic and red loamy soils are suitable for embankment construction with stabilization, while alluvial and organic soils require ground improvement and robust drainage and slope protection measures.

4.3 Climate

Meghalaya features a humid subtropical to temperate climate, strongly influenced by orography, and receives some of the world's highest rainfall, particularly in Mawsynram and Cherrapunji. Annual precipitation varies from approximately 2,800 mm to over 12,000 mm, with the majority occurring

during the southwest monsoon season (June–September). Temperatures typically range from 10–32 °C, varying with elevation.

Recent observations show a 1.0–1.5 °C increase in mean temperatures, accompanied by greater rainfall variability, including more frequent extreme events (>150 mm/day). These changes have heightened risks of flash floods, landslides, slope failures, and soil erosion, which significantly impact roads and bridges.

Climate projections from CMIP6 models, the World Bank Climate Knowledge Portal, and the State Action Plan suggest a temperature rise of 1.5–3.0 °C by mid-century and up to 4 °C by 2100 under high-emission scenarios. Total annual rainfall is expected to remain largely stable, but with increased storm intensity and prolonged dry spells. The primary climate-related hazards flash floods and landslides pose the most significant threats to hill roads, bridges, and logistics infrastructure, while heat and wind effects remain moderate.

Recommended adaptation measures include enhanced drainage systems, slope stabilization, greater bridge free board and scour protection, durable construction materials, flood resilient and elevated facilities, wind-resistant designs, and bio-engineering combined with catchment area treatments to mitigate runoff and erosion.

4.4 Drainage Pattern

Meghalaya has a structurally controlled drainage system, with rivers aligned along joints, faults, and monoclines, reflecting the influence of lithology, tectonics, and long-term erosion. The Garo Hills are characterized by relatively gentler slopes but fault-controlled rivers requiring flood and erosion management, while the Eastern and Central Plateau features hard-rock terrains with incised valleys and ridge–valley systems influencing alignment design. The southern Khasi and Jaintia Hills exhibit steep gradients, deep gorges, waterfalls, and karst features in limestone terrains, necessitating high bridges, robust drainage, and slope stabilization. The State is drained by eight major rivers to the north (Brahmaputra basin) and five to the south (Meghna basin), with several rivers flowing into Bangladesh. Consequently, infrastructure works affecting these waterways may trigger World Bank OP 7.50 requirements, including transboundary impact assessment, notification to Bangladesh, and prior clearance to manage downstream hydrological, sediment, and ecological impacts.

4.5 Springs and Streams of Meghalaya

Meghalaya's springs and streams are closely linked to its geology, high rainfall, and rugged terrain. Groundwater percolates through fractured gneisses, granites, and sedimentary formations and emerges as springs locally known as umïong or umshyiap. These springs feed a dense network of hill streams such as the Umkhrah, Umiew, Umngot, and Umiam, which join larger river systems including the Umiam, Myntdu, Simsang, Kynshi, and Umngot. Major spring types include fracture, depression, contact, karst, and seepage springs, reflecting varied hydrogeological conditions. Springs are widely distributed across

the Khasi, Jaintia, Ri-Bhoi, and Garo Hills and are critical sources of drinking water and base flow for streams, making their protection important for water security and slope stability.

4.6 Natural Hazards

As the State's 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 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.

4.7 Vulnerability to Earthquakes

Meghalaya lies entirely in India's Seismic Zone V, the highest-risk area, perched on the active Shillong Plateau. Hilly terrain worsens quake impacts, loose soils amplify shaking, while steep slopes trigger landslides, rockfalls, surface ruptures, liquefaction, settlement, slope failures, and river disruptions. These threats endanger roads, pavements, bridges, culverts, and embankments. Seismic forces and debris block corridors, demanding swift restoration. Critical infrastructure—elevated roads, storage facilities, and buildings—must resist shaking; failures could cripple supply chains and cause severe losses.

4.8 Vulnerability to Cyclones

Meghalaya’s proximity to Bangladesh and the Bay of Bengal makes several districts vulnerable to strong winds and occasional cyclonic impacts, particularly during the monsoon. The western districts (South West and South Garo Hills, South West and West Khasi Hills) fall in a very high wind zone with speeds up to about 50 m/s, while West and East Jaintia Hills may experience winds up to 55 m/s. For the Meghalaya Logistics Corridor, the main risks are rainfall-induced landslides affecting slope cuttings and embankments (high vulnerability), cyclone-related heavy rainfall impacting roads, bridges, and drainage systems (medium to medium–high), and moderate disruption risks to logistics facilities and communities.

4.9 Vulnerability to Floods

Meghalaya’s intense monsoon rainfall frequently causes flash floods in hilly areas and inundation of river valleys, driven by cloudbursts and rapid runoff from saturated slopes. High-velocity floodwaters can erode road embankments, damage bridges and culverts, and deposit debris along transport corridors, with risks aggravated by deforestation and unplanned urban growth. Low-lying stretches and flood-prone facilities are particularly vulnerable to submergence and waterlogging, affecting traffic and logistics continuity. Flood-prone areas include western Meghalaya (Tikrikilla–Phulbari belt), plains near

the Bangladesh border (Baghmara, Dawki–Shella), localized urban pockets of Shillong, Tura, and Williamnagar, and parts of West, South West, and East Khasi Hills, Jaintia Hills, and Ri-Bhoi districts.

4.10 Vulnerability to Landslides

Meghalaya's hilly terrain makes it highly prone to landslides, particularly during heavy rains from June to October, causing loss of life, property, and disruption of transport. Landslides are driven by steep slopes, fragile geology, neo-tectonic activity, and unplanned land use. The southern regions are more vulnerable, with landslide-prone stretches along highways such as Bajengdoba–Tura–Dalu, Damra–Siju–Baghmara, Guwahati–Shillong–Tamabil, and Shillong–Jowai–Badarpur. Urban areas like Shillong, Tura, and Jowai also face risks due to rapid urbanization and poor construction practices.

4.11 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.

4.11.1 Flora

Meghalaya, part of the Indo-Burma hotspot, supports 4,243 flowering-plant species (1,449 genera, 216 families) across the Khasi, Jaintia and Garo Hills. Vegetation ranges from tropical/subtropical broadleaf forests to montane temperate woodlands and grasslands, hosting high endemism and phylogenetic diversity. Notable groups of conservation and project relevance include orchids (110 genera, 439 taxa), gymnosperms and tree ferns (e.g., *Podocarpus neriifolia*, *Cyathea gigantea*), and carnivorous plants (endemic *Nepenthes khasiana*, *Drosera* spp.). These taxa—many confined to sacred groves, riparian strips and high-altitude grasslands—are highly sensitive to habitat loss, fragmentation and overcollection. Given that the MLCIP corridor intersects such sensitive landscapes, targeted botanical surveys, avoidance of key sites, and site-specific mitigation (buffering, translocation only as last resort, community engagement) are required to minimize biodiversity impacts.

- **Endemism and Rare Plant Species:**

Meghalaya's Khasi and Jaintia Hills are rich in endemic and rare plant species, including *Aeschynanthes parasiticus*, *Aeschynanthes superba*, *Callicarpa psilocalyx*, *Camellia caduca*, *Citrus latipes*, *Ilex embelioides, Impatiens khasiana, Impatiens laevigata, Lindera latifolia, Paramignya micrantha, Rubus khasianus,* and *Tectona grandis. Nepenthes khasiana,* a notable endemic pitcher plant, 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.

4.11.2 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

Meghalaya's vertebrate fauna comprises 451 genera and 1,112 species across five classes: mammals, birds, reptiles, amphibians, and fishes.

Mammals: 139 species (35 endangered, vulnerable, or data-deficient), including Western Hoolock gibbon (Hoolock hoolock), clouded leopard (Neofelis nebulosa), Indian elephant (Elephas maximus indicus), and Asiatic black bear (Ursus thibetanus). Most are forest-dependent and vulnerable to habitat fragmentation.

Birds: 659 species, including forest-dependent endemics and threatened species such as Great Hornbill (Buceros bicornis), Rufous-necked Hornbill (Aceros nipalensis), and Blyth's Tragopan (Tragopan blythii). Wetlands host significant migratory waterbird assemblages.

Reptiles: 107 species (nine threatened), including king cobra (Ophiophagus hannah) and hill endemics associated with rocky and forested habitats.

Amphibians: 55 species, many endemic and highly sensitive to alterations in water quality and hydrology.

Fishes: 152 species in rivers, streams, and wetlands, with notable endemism. Key taxa include hill-stream cyprinids (Danio meghalayensis, Devario aequipinnatus), loaches (Schistura spp., Aborichthys garoensis), mahseers (Tor spp.), carps (Labeo pangusia), catfishes (Clarias, Mystus spp.), spiny eels (Mastacembelus spp.), ornamental species (Aplocheilus spp., Botia rostrata), cold-water specialists (Schizothorax spp.), and hillstream catfishes (Pillaia, Glyptothorax spp.).

Meghalaya's invertebrate fauna includes 2,114 genera and 4,580 species, dominated by insects (3,624 species). Other groups comprise bryozoans, annelids, mollusks, nematodes, rotifers, platyhelminthes, medusae, porifera, and protozoa

These diversity patterns emphasize the necessity for corridor planning, habitat retention, and hydrological safeguards under the Meghalaya Logistics & Connectivity Improvement Project (MLCIP) to prevent habitat fragmentation and degradation of critical sites.

- Endangered, Vulnerable, and Endemic Species

Meghalaya hosts a significant number of species with high conservation priority. Table 4.1 provides a summary.

Table 4-1: 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

4.11.3 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 reserves 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
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 Nepenthes khasiana (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

4.11.3.1 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, supports diverse habitats—subtropical forests, wetlands, grasslands, and rivers—that are vital for resident and over 150 migratory bird species. Key migratory species include Bar-headed Goose (*Anser indicus*), Eurasian Wigeon (*Mareca penelope*), Common Teal (*Anas crecca*), Oriental Honey Buzzard (*Pernis ptilorhynchus*), and Pacific Swallow (*Hirundo tahitica*). Migratory birds use Meghalaya as a stopover or wintering ground along the East Asian–Australasian and Central Asian Flyways, with major corridors in the Garo Hills (Simsang, Ganol, Bokabil wetlands), Khasi Hills (Umiam, Umsning reservoirs), and Jaintia Hills (small riverine wetlands). Wetlands, reservoirs, and forested ridgelines are particularly sensitive, while agricultural margins provide feeding areas. Integrating these routes into the MLCIP planning—through strategic alignment, timing of construction, buffer retention, and limiting tree clearing—ensures sustainable infrastructure development while minimizing ecological impacts.

Elephant Migration Routes in Meghalaya:

Elephant migration routes in Meghalaya connect forests across the Garo, Khasi, and Jaintia Hills, linking habitats with Assam and Bangladesh and maintaining ecological connectivity for this Schedule I species. In the Garo Hills, key corridors include Siju–Rewak (Balpakram National Park to Rewak Reserve), Nokrek–Imangre–Simsang (Nokrek National Park to Simsang valley), and Baghmara–Khakija–Balpakram toward Bangladesh. In the Khasi Hills, major routes are Umsning–Nongpoh–Khanapara (toward Assam's Kaziranga–Karbi Anglong landscape), Mawphlang–Mawsynram–Shella (extending to Bangladesh), and Nongkhyllem–Jorabat (linking to Assam's Amchang–Killing forests). In the Jaintia Hills, Saipung–Tyrshi–Narpuh and Amlarem–Borhill–Sutnga corridors connect Narpuh Reserve Forests with the Barail Hills (Assam) and Patharia Hills (Bangladesh), supporting seasonal movement, reducing human–elephant conflict, and reinforcing conservation efforts.

4.12 Forest

Meghalaya, a forest-rich state, has 76.3% of its area under forest cover, with only 1,113 sq. km managed directly by the State Forest Department; the remainder is community-managed under the Khasi, Jaintia, and Garo Hills ADCs, including Community Reserve Forests and vegetative green patches. These forests are vital for ecological balance and tribal livelihoods. For the Meghalaya Logistics and Connectivity Improvement Project (MLCIP), corridor alignments have been finalized, and site-specific mitigation measures will ensure construction and operation respect forest ownership, biodiversity-rich habitats, and community-managed areas, promoting sustainable infrastructure while balancing economic growth and conservation.

4.12.1 Reserved Forest

There are 23 Reserved Forests (RFs) in the state with areas varying from 0.44 km2 to 150 km2, covering a total of 712.74 km2. The largest of these is Saipung RF in the Jaintia Hills district (150.35 km2, Table 3.3.3). Nongkhyllem RF is the second largest RF of the state, and it lies adjacent to Nonkhyllem 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 the need for long-term conservation of mega-herbivores such as the Asian elephant.

4.12.2 Community Reserve Forest

Community and Conservation Reserves in Meghalaya serve as ecological buffers and corridors linking larger protected areas, supporting landscape-level conservation. Introduced under the Wildlife (Protection) Amendment Act, 2002, they recognize the role of local communities in biodiversity protection while allowing subsistence use. As of October 2025, 182 Community Reserves are notified. Under the Sixth Schedule, over 88% of forests are managed by ADCs and communities, and any diversion for non-forest purposes requires compliance with the Forest (Conservation) Act, 1980. Legally notified Community Reserve Forests are treated as "deemed forests" under Section 36C of the Wildlife

(Protection) Act 1972 and amended, making FCA clearance mandatory for land-use change, as per SOP (Annexure-III B).

4.12.3 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.

4.12.4 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.

4.12.5 Socio-Demographic Profile

Meghalaya has a geographical area of 22,429 sq Km. The State has a predominantly tribal population which contributes 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 are also called Achiks. The Khasis and the Jaintias predominantly inhabiting the districts towards eastern parts of the state. The Garo, Khasi and Jaintia follow a matrilineal system of society. 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. The population of the state as of 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 4-2: 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%

Source: Census of India, 2011

4.13 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 4-3: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 (***Niam Khasi*** *(also called* Ka Niam Khasi*)-This is the traditional religion practised by many Khasi communities. It is an indigenous belief system centred on reverence for nature, ancestors, and a supreme creator (*U Blei Nongthaw*).* ***Niamtre*** *(also spelled* Niam Tre*)-This is the traditional religion of the Jaintia (Pnar) community. Like Niam Khasi, it emphasizes rituals, ancestral worship, and a deep connection with natural elements.*

4.14 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 4-4: 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**

4.15 Health

According to National Family and Health Survey-5 (NFHS) 2019-21 Meghalaya continues to show a child malnourishment (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.

4.16 Livelihood

Agriculture: Meghalaya, a predominantly agrarian state, has nearly 80% of its population dependent on agriculture for their livelihood. The agricultural sector is a major driver of the state's economy, contributing around 22% to the Gross State Domestic Product (GSDP) 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)*

4Particular	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

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 forests 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 %. The recent survey (2020) 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.[1]

4.17 Status of Women

The indigenous communities of Meghalaya the Khasi, Garo, and Jaintia follow matrilineal systems in which lineage, clan affiliation, and inheritance of ancestral property pass through the female line. While these systems grant women significant rights to custodianship and succession, they do not automatically confer authority in communal governance or collective decision-making. In practice, women's participation in traditional institutions remains limited, and formal leadership structures continue to be male-dominated.

In Khasi society, adjudicative authority over clan matters and the dorbar (traditional village councils) is traditionally held by male kin, typically the maternal uncle (kñi) or, less commonly, the husband. Among the Garos, the Nokma, the formal head of the female lineage holds nominal oversight, but her husband (nokrom) typically exercises substantive control over land management, village administration, and external representation. Similarly, in Jaintia communities, women inherit property and lineage rights yet remain under the supervisory authority of maternal uncles and brothers, with little claim to spousal assets.

Thus, despite the central role of matrilineality in inheritance and descent, governance structures across these communities retain strong patriarchal features, restricting women's meaningful engagement in public decision-making. For development initiatives and risk-mitigation efforts, this highlights the need for targeted gender interventions to promote genuine participation, equitable representation, and full integration of women into consultative and decision-making bodies.

[1] Source- ***North East Slow Food and Agrobiodiversity Society (NESFAS) publication 2020***

Village administrative hierarchies are predominantly led by men, casting women mainly as moral influencers rather than decision-makers. Although women may offer insights and recommendations on various issues, final authority rests with men. Only in contemporary urban settings have women begun to attend and contribute to *dorbar* proceedings on a regular basis.

Moreover, negotiations between government entities and stakeholders on land use often exclude community members especially women leaving decision-making power concentrated among village authorities. Despite the matrilineal framework, Meghalaya shows gender disparities in key socioeconomic indicators, including higher poverty rates among women, lower literacy, higher unemployment, greater school dropout rates, and early marriage. In recent decades, however, women's educational attainment has improved significantly, nearing parity with men. Notably, women in Meghalaya are largely protected from widespread issues faced elsewhere in India, such as dowry demands, sex-selective abortions, and neglect of girl children. (Source: "Matrilineality in Meghalaya." (2023).[2]

4.18 Gender work participation rate

Female labour force participation rates (FLFPR) in Meghalaya are well above the national average, while male participation remains comparatively lower. According to the Census of India (2011), approximately 35% of rural women were engaged in the labour force. More recent data indicate a state-wide FLFPR of ~60.9% in 2022–23 (NITI Aayog), with rural participation rising sharply to ~76.9% in 2023–24 (IWWAGE, 2024), reflecting a robust post-COVID recovery consistent with national trends reported by the Periodic Labour Force Survey (PLFS) and the Directorate General of Employment.

The majority of women are employed in self-employment, agriculture, and informal sector enterprises (IWWAGE, 2024). Despite high participation rates, access to formal employment opportunities remains limited due to structural and socio-cultural barriers, including entrenched gender norms, occupational segregation, and restricted access to skill development and training.

Table 4-5: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 are calculated by combining main workers (employed ≥183 days/year) and marginal workers (employed <183 days/year) as per Census 2011 classification of workforce participation.***						

[2] Civils daily. **https://www.civilsdaily.com/news/matrilineality-in-meghalaya-khasis-jaintias-garos**)

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								

4.19 Land use Practices

4.19.1 Khasi Society

Each village in the Khasi Hills exercises jurisdiction over its own village land, within which rights of private ownership are formally recognized under customary law and practiced in accordance with established community norms. There are two main classes of land in Khasi Hills, namely (i) Ri Raid (ii) Ri Kynti. And under these, there are subclasses of land by different names in the various Himas.

1. Ri Raid constitute community lands set aside for collective use, where individuals do not possess proprietary, heritable, or transferable ownership rights, but may use and occupy the land on a continuing, usufruct basis for as long as such use is maintained.

2. Ri Kynti lands are privately owned customary lands belonging to an individual, family, clan, or group of persons, demarcated by boundary stones, over which the owners hold proprietary, heritable, and transferable rights of use, enjoyment, and disposal, subject to Khasi customary law and the regulatory authority of the Hima and the Autonomous District Council.

4.19.2 Jaintia Society

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 Doloi), Raid (group of villages), and Shnong (village under Waheh Shnong headman). The Doloi, assisted by elders (Basan), oversees allocation and disputes.

4.19.3 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 the 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 a 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. and cannot take any arbitrary decisions in matters of sale, mortgage, gift, transfer, etc. Land Classification

Table 4-6: land classification amongst Khasis, Garos and Jaintia 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	Can be used by individual/ community	Community land	Managed by the Village Durbar/Clan

		the public			
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 the right of apportionment.	Used by the members or descendants of one mother	Owned by the youngest daughter	Managed by the maternal uncle or brothers
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	Used by members	Owned by the	Managed by

		acquired on receipt of a ceremonial bottle of liquor	of one family or descendants of one mother	youngest daughter	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 or government wasteland. Private ones can be bought, sold or mortgaged at the will of the inheritors	Used by the family	Private property under the name of a female	Managed by the family, that is the 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 Dolois, Pators and Chief	Government Land	Managed by Delois, Pators, and Chiefs.
5.	Village Puja	Consists of the lands	Held by and	Owned by the	Managed by

	Land	held by the Lyngdohs or the Dolois who performs the pujas of the doloiships	cultivated by the headmen and the yield is utilized for meeting expenses connected with religious ceremony.	Lyngdoh and Dolois	the Lyngdoh Dolois 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.

GAROS					
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

GAROS					
S.No	**Type**	**Definition**	**Use**	**Ownership**	**Control and management**
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
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

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

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. They can make laws on land, forests, water use, and customary practices, subject to the Governor's assent. They play a key role in implementing Biodiversity Management Plans (BMPs), and community-based conservation initiatives like sacred groves and forest reserves. The district council can establish, construct, or manage primary schools, dispensaries, markets, ferries, fisheries, roads and so on in the district.

4.21 Protected Archaeological and Historic Sites

The Monolithic Garden (Moo Iong Syiem) near Jowai, Scott's Memorial in Cherrapunji, and the Monolithic Garden in Jowai are designated Monuments of National Importance under the Ancient Monuments and Archaeological Sites and Remains Act, 1958 (amended 2010) and fall within the project area. They are protected by a 100 m prohibited zone and a 200 m regulated buffer where construction and other disruptive activities are legally restricted. Key sites include the Stone Memorial of U-Mawthoh-dur in Bhoi Country, East Khasi Hills (within the indirect impact zone along Umsning–Jagi Road), and Scott's Memorial, Cherrapunji (within 500 m of the proposed Umtyngar–Sohra road alignment), requiring adherence to strict conservation protocols to safeguard their archaeological and cultural significance.

5 Impact Assessment

5.1 Introduction and Objectives

The Meghalaya Logistics and Connectivity Improvement Project (MLCIP) aims to improve connectivity, trade efficiency, and logistics performance through integrated infrastructure development in Meghalaya. Implemented by MIDFC with PWD, 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.

5.2 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 upgradation of roads, bridges and road safety interventions.
- Provide a structured basis for decision-making on project design, site selection, and implementation sequencing. Ensure that adverse impacts are identified for each type of intervention, so that processes can be developed to minimize or mitigate them so that the positive benefits are maximized.
- The ESMF establishes standardized procedures, methodologies, and institutional arrangements that guide the Project Implementation Entity (PIE) in developing site-specific Environmental and Social Management Plans (ESMPs) for individual road sub-projects once locations, designs, and potential environmental and social impacts are identified during project preparation and implementation. Each site-specific ESMP translates and operationalizes the ESMF's generic mitigation measures, monitoring requirements, and institutional responsibilities for the specific sub-project context, ensuring consistent and proportionate application of World Bank Environmental and Social Standards (ESS) across all MLCIP supported activities.
- Integrate environmental and social considerations into the overall project design.

5.2.1 Scope of the Assessment

The Impact Assessment covers 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.

Specifically, the chapter identifies and characterizes potential environmental and social receptors, impact pathways, and impact magnitudes by project phase (e.g., land loss and livelihood disruption

during pre-construction; dust, noise, erosion, runoff, and biodiversity disturbance during construction; road safety, traffic emissions, and roadside community impacts during operation). It outlines phase-specific mitigation measures (avoidance, minimization, mitigation, and restoration/ compensation), along with monitoring requirements, institutional responsibilities, and reporting protocols. Defines applicable social safeguards processes, including valuations and entitlements for land acquisition, consultation and Free, Prior and Informed Consent (FPIC) process under ESS7 for Indigenous Peoples, livelihood restoration, gender-sensitive measures, and a grievance redress mechanisms consistent with the Resettlement Policy Framework (RPF) and Indigenous Peoples Policy Framework (IPPF).

The Chapter establishes environmental management measures addressing erosion and sediment control, waste and hazardous materials management, biodiversity protection, ambient air and noise control, and contingency planning for accidental releases and cultural heritage discoveries. It integrates compliance pathways and performance indicators aligned with national regulatory permits and World Bank Environmental and Social Framework (ESF) standards (ESS1–ESS10, as applicable), including monitoring frequencies, data quality controls, independent verification provisions, and triggers for corrective actions.

The chapter thus serves as the operational bridge between impact assessment and implementation, translating identified impacts into measurable mitigation actions, monitoring systems, and institutional arrangements to ensure regulatory compliance, safeguard effectiveness, and adaptive management throughout the project lifecycle.

5.3 Error! Reference source not found.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 and Informed Consent (FPIC) from community, where the three circumstances under the ESS7 are met. Finalizing the Right-of-Way with documented agreements and considering alternative routes for risk-prone zones helps prevent major issues early.

5.4 Pre-Construction Phase

During this phase, it is essential to ensure that regulatory compliances are completed, land is secured before any physical works or contractor mobilization. Key actions to be completed include:

- Finalization and disclosure of sub-project documents, consultation with stakeholders and, clearance completed: ESIAs/ESMPs, RAPs (with census, cut-off dates, replacement-cost valuation, livelihood restoration plans), IPDPs, and documented FPIC outcomes (per RPF, IPPF, and ESS7);
- 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, labour license, ESI/Workmen's Compensation coverage; ;

- 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, mapping of stakeholders and consultation plans, 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.

5.5 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 risks 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, etc), 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 15 days); 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.

5.6 Operation Phase

Ongoing maintenance addresses 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.

Table 5-1: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	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	ESIA is completed with ESMP and submitted along with the Biodiversity Management Plan if applicable.
Pre-construction						
PC 1	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
PC 2	Contractor's ESMP (CESMP) Preparation and Implementation	Inadequate preparation and implementation leave 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	CESMP, TMP, LMP, OHS Plan	Contractor/MPWD	Approved CESMP including TMP, LMP.

Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
			and the same should not be approved unless this is approved.			
PC 3	Supply of Construction Material	Use of unauthorized or unlicensed sources	Material sourcing must be legal and approved. Processes are detailed in ESMP.	EC, quarry approvals, challans/receipts	Contractor/SEIAA/Mining Dept	Material source approval and records maintained
PC 4	Water Sourcing	Over-extraction	Processes and mitigation measures in ESMP	Water permits, consumption records	Contractor/Water Resources Dept./Groundwater Authority	Permission for water use; Wastewater management measures
PC 5	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
PC 6	Identification of OHS Hazard and Risk Categorization	Risk of injury, illness, death	Applicable to all construction sites. A Hazard Identification and Risk Assessment need to be completed for all activities. The OHS Plan	Inspection checklist, hazard register	Contractor	OHS hazard register, checklist, and templates, inspection reports

Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
			has to be submitted along with the Work Methodology			
PC 7	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 along with tools to enforce them	PUC certificates, inspection log	Contractor/Transport Dept	Valid records maintained
PC 8	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 the Template ESMP need 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, and safety hazards	Borrow areas require EC and a 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	Dust, noise, traffic, safety risks	Material from legally approved quarries.	Quarry permits, haul road plans	Contractor/SEIAA/Mining Dept/PMU	Quarry permit, EC, Safety inspection

Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
	Quarries (Operation of Quarries follows regulatory processes)		Processes have been defined in the ESMP			reports, Dust control records
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
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	Contamination of Surface/Groun	Wastewater treatment, sanitation	Wastewater manageme	Contractor/MPWD/ PMU	Water quality monitoring

Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
	form plants and machinery	d Water	facilities	nt, monitoring plan		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./Groundwater 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
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	Permanent damage if trees do not survive,	Compensatory plantation, limit clearing. PMC to keep	Tree felling register, plantation record	Contractor/Forest Dept/ PMC/ PMU	Plantation records; Forest NOC

Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
		regulatory non-compliance	an oversight and report.			
C15	Landside activities in forest / vegetated areas	Disturbance to terrestrial flora and fauna; potential wildlife injury; habitat degradation due to worker movement and resource extraction	Applicable Mitigation measures to be implemented in accordance with ESMF provisions on biodiversity conservation. A Biodiversity Management Plan (BMP) shall be prepared and implemented, as required	Trained environmental personnel; biodiversity awareness materials; budgetary provision for BMP preparation and implementation	Contractor (implementation); MPWD / PMC (supervision); PMU (oversight)	Approved Biodiversity Management Plan; worker awareness and training records; wildlife sighting and incident logs maintained and reported
C16	Water side activities / in water activities	Disturbance to Aquatic flora and Fauna	Schedule work during Low-flow work, avoid the monsoon/breeding season. The specific guidance in ESMP	Work timing records, inspection checklist	Contractor/MPWD/ PMC/PMU	Work timing records; Site inspection checklist
C17	Occupational Health and Safety at Worksites	Injuries, accidents, health risks due to work and other hazards, e.g. operating traffic in case of highways	Implementation of the OHS plan to eliminate, reduce risk, provide appropriate PPE, first aid, and implementation of, emergency	OHS Plan, PPE, training log	Contractor	Approved OHS plan; Training records; Health inspection reports

Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
			response, training and awareness of the workforce			
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, and 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; 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, and 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	Air pollution, visibility reduction	Roadside plantation, smooth surfaces,	Planting materials, signage	Contractor (during defect liability period/ long-term maintenance	Air quality results; Plantation survival

Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
	Movement		speed control		contract)/ MPWD	record
O5	Air Pollution from Vehicular Emissions	NOx, SO_2, CO, PM increase	Green buffers, driver awareness, and monitoring	Air monitoring equipment	Contractor (during defect liability period/ long-term maintenance contract)/ MPWD	Air quality results; Awareness records; 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, and recycling	Waste disposal plan, logs	Contractor (during defect liability period/ long-term maintenance contract)/ MPWD	Waste disposal records; Waste logbook
09	Building & Station Operations	Waste, fire hazards, and sanitation issues	STP/septic maintenance, fire systems, and daily cleaning	Sanitation logs, fire inspection	Contractor (during defect liability period/ long-term maintenance contract)/ MPWD	Waste logs; Fire inspection report; Sanitation log
O10	Storage House Operation	Occupational hazards, fire/spills	Containment, firefighting, inspections, training	Inspection checklists, training logs	Concerned Agency	Inspection checklist; Emergency drill records
O11	Solid Waste Management	Environmental degradation	Segregation, authorized disposal, and record keeping	Waste segregation records	Ropeway Operator/Agency	Waste disposal receipts; Segregation records
O12	Sewage & Wastewater Manageme	Water pollution, health hazards	Sanitary tanks, soak pits, treated water reuse	Water quality monitoring plan	Concerned Agency	Water quality reports; Disposal

Issue ID	Project Activity	Environmental Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
	nt					records
O13	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
O14	Air & Noise Pollution from Vehicles	Localized pollution	Monitoring, maintenance, green belts	Air/noise monitoring equipment	Concerned Agency	Monitoring data; Maintenance logs
O15	Fire & Emergency Preparedness	Accidents, injuries, property damage	Fire systems, drills, emergency contacts	Fire safety equipment, training	Concerned Agency	Fire drill log; Equipment inspection report
O16	Maintenance Waste (Oils, Lubricants, Scrap)	Contamination	Collection, disposal through authorized aggregators	Waste disposal records, containers	Concerned Agency	Waste inventory; Disposal certificates

Table 5-2: 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	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	MPWD	Completed Preliminary Screening Checklist submitted; social risk register initiated; no-go options for high-risk social areas identified.

Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
		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.		presence survey.		
P2	Identification of RoW, Land requirement and FPIC	Involuntary resettlement (physical/economic displacement, loss of homes/farms/livelihoods); no FPIC leading to conflicts with IP or vulnerable groups; exclusion of women from land decisions; forced eviction risks[3]; 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 is integrated into the early ES screening and scoping.	Land records[4], GIS maps, public consultation records, FPIC documentation, vulnerability assessment, and socio-economic baseline.	MPWD/Consultants	RoW fixed; ESMF with standalone documents submitted; FPIC documentation submitted; displacement avoidance measures documented.
P3	Environmental and Social Impact	Social risks/impacts on communities (e.g., health from habitat loss affecting	Applicable for all civil works; ESIA/ESMP	Baseline/ project data, socio-	MPWD/ Consultants	ESIA completed with ESMP submitted; social impact register and

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

[4]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).

Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
	Assessment and Management	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 ESIA consultations; cultural heritage chance finds; economic marginalization of IP.	per ESMF, including social baselines and vulnerability studies. FPIC processes as part of ESS 7.	economic surveys, IP mapping, gender analysis. FPIC documentation and evidence pack.		management plan included; RAP/IPDP scoping reports if applicable. FPIC documentation submitted with the FPIC evidence included in the document.
PRE-CONSTRUCTION PHASE						
PC 1	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 RPF; ESMP, RAP and IPDP for site preparation risks.	RPF/RAP records, FPIC evidence-based documentation, grievance documentation, livelihood restoration baseline, and asset valuation reports.	MPWD	FPIC Documentation with evidence 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 about Land Procurement are to be disclosed by the PMU.
PC 2	Contractor's ESMP (CESMP) Preparati	Social risks (e.g., labor exploitation/ discrimination, community conflicts	CESMP aligns with project ESMP;	CESMP, TMP, LMP, OHS Plan, social risk	Contractor/ MPWD	Approved CESMP including TMP/LMP; social compliance

Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
	on and Implementation	over camps); non-compliance with worker/community rights; supply-chain child/forced labor; gender disparities in CESMP planning; exclusion of vulnerable groups in consultations.	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 unless this is approved.	assessment.		checklist signed off; RAP/IPDP elements incorporated.
PC 3	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;
PC 4	Appointment of Social and Labour specialist	Inefficient social supervision leading to non-compliance (e.g., discrimination/grievances unaddressed for	Required for CESMP/OHS implementation per ESMF.	CVs, OHS Plan, social expertise qualifications (e.g.,	MPWD/ Consultants/ Contractors	Mobilization completed; Approved OHS Plan with social safeguard

Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
	Officers	migrants/women); lack of gender/IP expertise;		gender/tribal, labour specialists).		specialist's appointments; training logs for RAP/IPDP.
PC 5	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; long-term economic hardship from unaddressed restrictions.	RAP/IPDP stand-alone documents /ESIA per ESMF. FPIC consultations for the RAP/IPDP documents	Socio-economic census, IP consultations, valuation studies, grievance logs. FPIC consultations	MPWD/ Consultants	RAP/IPDP approved, disclosed, and consulted; livelihood restoration baselines established.
Implementation - Pre-construction						
PC 6	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 register, accessibility audits, training materials.	Contractor/ MPWD	MoMs of consultations with attendance sheets 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);	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.

Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
		displacement from temporary safety zones.				
C2	Operation of labour camps, worker accommodation facilities, and associated camps	Risk of communicable disease transmission among workforce and adjacent communities, including sexually transmitted infections, water-borne diseases, and vector-borne illnesses. Migrant labourers, women, and Indigenous Peoples may face heightened vulnerability due to increased camp-community interactions and labour influx along project corridors.	ESMF and LMP provisions on Community Health and Safety (CHS), Occupational Health and Safety (OHS), Labour Influx Management, and Workers' Health Management Plans applicable to all labour camps and project-affected areas.	Health screening facilities; medical service agreements; trained health personnel; awareness-raising materials; vector control supplies; sanitation infrastructure; systems for health baseline data collection and monitoring.	Contractor/ CSC/ PMC/ MPWD	Documented pre-employment and periodic health screening records; medical check-up and emergency care service agreements; awareness session logs; maintained health baseline data; verified implementation of vector-control and sanitation plans; absence of community disease outbreaks linked to project activities; labour influx monitoring reports.
C3	Traffic management 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.

Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
C4	Emergency Response 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/PMU/PMC	Approved ERP; Emergency Response Boards set up at camp 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 and preventive measures as per ESMP and SEA/SH Action and Response Plan	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 livelihood losses; theft/exclusion in management.	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.

Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
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 and LMP.	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 SEP.	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, delays or gaps in RAP and IPDP implementation); exclusion in monitoring; cumulative risks overlooked.	Monthly/quarterly per ESMP, RAP, IPDP.	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						
O1	Employment & Socio-Economic Benefits	Local economic impacts; unequal access to jobs/training for vulnerable (e.g.,	Local hiring/skill programs per ESMP.	Training records, employment document	Concerned Agency	Employment records; Training attendance; livelihood restoration

Issue ID	Project Activity	Social Issues	Applicability of ESMF	Resources Required	Responsibility	Indicator for Completion
		women, youth, IP); persistent displacement effects; limited benefit-sharing.		ation, IPDP monitoring.		verified.
O 2	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.

5.7 Conclusion

Through phased impact avoidance, minimization, and management as detailed above, the MLCIP integrates environmental sustainability and social risk management into core project delivery. Coordinated implementation by MPWD, 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.

5.8 Environmental and Social Management Plans (ESMP)

The Environmental and Social Management Plan (ESMP) provides a robust tool to manage and mitigate environmental and social risks throughout corridor and infrastructure development. Aligned with the ESIA, ESMF, national/state regulations, and World Bank ESS, it guides the preparation of site-specific ESMPs once sub-project locations are confirmed, ensuring tailored mitigation.

Each site-specific ESMP must cover project components, baselines, legal requirements, impacts, mitigation measures, responsibilities, monitoring, grievance redress, and dedicated budgets. For low-risk activities use the ESMF's generic ESMP for consistent safeguards.

The ESMP must be read with related instruments (LMP, ERP, GBV/SEAH Plan, SEP, IPDP and RAP) to deliver systematic mitigation, monitoring, and reporting, driving environmentally sustainable and socially inclusive development across Meghalaya.

Environmental and Social Monitoring Indicators

- ✓ Air quality (PM10, PM2.5, NO_2, SO_2)
- ✓ 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 5-3: Environmental and Social Management Plan (Roads and Bridges)

S. No	Environmental/Social Aspect	Potential Impacts	Mitigation/Management Measures	Implementation/Responsibility	Completion Indicators	Supervision/Monitoring	Frequency
PRE-CONSTRUCTION							
1	Consents, Permits, Approvals & Compliances	Non-compliance leading to legal risks	Secure all statutory clearances (CTE, CTO, Labour License, Fire NOC, Tree Cutting Permission, etc.) and renew them promptly before expiry.	Contractor / MPWD	All permits obtained, submitted, and tracked	MPWD/ PMC / CSC	Obtain required permits prior to commencement of works; renew and update approvals as necessary; and undertake quarterly reviews through a tracking system.
2	Land Procurement	Loss of land and livelihoo	Adhere to Resettlement Policy	MPWD Division, Contractor &	Compensation records; grievances	MPWD/ CSC / NGO	At each acquisition event

		ds	Framework (RPF) and Resettlement Action Plan (RAP); deliver full compensation and resolve grievances.	Authorities	resolved		and through consolidated monthly RAP progress reports to the PMU and the World Bank.
3	Contractor ESMP (CESMP) Preparation & Implementation	Unaddressed E&S issues from inadequate planning	Contractor prepares CESMP aligned with project ESMP (including Traffic and Labour Management Plans) and secures MPWD approval.	Contractor	Approved CESMP with evidence of ongoing implementation	MPWD/ PMC / CSC	Approval once before construction; followed by monitoring monthly implementation
4	Site Selection for Material Storage, Construction & Labour Camps	Pollution and social tensions from poor locations	Select sites away from water bodies and wetlands; obtain leases/NOCs; restore land to original condition after use.	Contractor	Approved site plans; lease/NOC copies; restoration records	MPWD/ PMC / CSC	Once during selection; pre-mobilisation and handover surveys; monthly inspections
5	Construction Material Supply	Sourcing from illegal or unapproved vendors	Procure only from licensed quarries/vendors; maintain approvals and receipts.	Contractor	Environmental clearances, delivery challans, source approvals	MPWD/ CSC	Document checks per delivery; monthly procurement audits
6	Water Sourcing	Overuse or pollution of surface/g	Contractor arranges water supply; obtains permissions;	Contractor	Permission documents; usage logs; wastewater controls	MPWD/ PMC / CSC	Permission once; daily logs; monthly complian

		roundwater	minimizes wastage and pollution.				ce checks
7	Wastewater Discharge from Camps, Plants & Machinery	Contamination of surface/groundwater	Implement effective wastewater treatment at camps and sites.	Contractor	Functional wastewater systems in place	MPWD/ CSC	Weekly system checks; monthly discharge sampling
8	Appointment of EHS Officers	Weak environmental, health & safety oversight	Mobilize qualified Environment, Social and Safety Officers; prepare CESMP, OHS Plan, and Traffic Management Plan per World Bank guidelines.	Contractor	Officers deployed; approved plans	MPWD/ CSC	Once before construction; monthly staffing verification
9	OHS Hazard Identification & Risk Assessment (HIRA)	Injuries, illnesses or fatalities	Develop HIRA with mitigations; conduct regular inspections; consult workers; review safety data sheets.	Contractor	Hazard register; inspection reports	MPWD/ CSC	HIRA once before start; monthly reviews; weekly inspections
10	Construction Vehicles, Equipment & Machinery	Emissions and safety hazards	Maintain valid fitness and Pollution Under Control (PUC) certificates; comply with MoRTH/GSR emission standards.	Contractor	Valid PUC/fitness records; inspection logs	MPWD/ PMC / CSC	On mobilization and monthly renewals; weekly inspections
11	Tree Cutting	Loss of greenery and	Minimize felling; follow Forest	Contractor	Tree-cutting register; records of	MPWD/ CSC	Per event; immediat

		biodiversity	Department protocols for cutting, disposal and compensatory planting.		trees preserved		e register updates; quarterly plantation monitoring
12	Joint Field Verification	Overlooked impacts or inadequate mitigation	Conduct joint MPWD-contractor site walks; document any changes and justifications.	Contractor / MPWD	Verification reports	MPWD	Monthly or as needed after complaints
13	Borrow Areas	Ecosystem damage from pits	Obtain Environmental Clearance; operate and rehabilitate per MoEF&CC/SEAC guidelines.	Contractor	EC; approved management & closure plans	MPWD/ CSC	EC/plan once before operations; weekly inspections; closure verification upon completion
14	Material Transportation Routes	Public inconvenience and safety risks	Use existing roads; secure transport authority approval; consult communities.	Contractor	Approved route plan; consultation records	MPWD/ CSC	Approval once; monthly route inspections; notifications as needed
15	Construction Camp Setup	Pollution, poor living conditions and wildlife risks	Obtain site approval; follow IFC/EBRD worker accommodation standards; provide sanitation, waste management, used oil	Contractor	Approved camp layout; sanitation records	MPWD/ CSC / PMU	Approval once; weekly inspections; daily sanitation checks

			recovery and access controls.				
16	Debris/Waste Disposal Sites	Pollution from improper dumping	Identify sites with local authorities; develop Debris Disposal Plan; secure NOCs/agreements.	Contractor	Approved sites & plan; NOCs; waste records	MPWD/ CSC	Approval once; records per disposal; monthly site checks
17	Relocation of Utilities & Common Property Resources	Disruption of public services	Coordinate with communities and agencies; relocate based on community preferences.	Contractor / MPWD Division	Relocation completion records	MPWD/ PMU / CSC	Per event; verification within one month post-relocation
18	Community Health & Safety at Work Zones	Risk of injuries or fatalities	Install 2m metal barricades; control access; provide safe excavation ramps; cap rebar; conduct daily inspections.	Contractor / MPWD Division	Inspection reports; incident logs	MPWD/ PMU / CSC	Daily safety and barricade checks; immediate incident reporting
19	Noise at Sensitive Receptors	Disturbance to residents, schools and hospitals	Perform noise modelling; implement targeted mitigations where significant impacts are predicted.	Design/ESIA Consultants	Modelling results in ESIA; monitoring reports	MPWD/ PMC	Once during design; monthly monitoring or per complaint
CONSTRUCTION							
1	Crushers, Hot-Mix & Batching Plants	Dust, noise, traffic and communi	Map and engage stakeholders within 1 km; site plants ⇒	Contractor	Stakeholder reports; meeting minutes; approved	MPWD/ PMC / CSC	Consents once before setup; monthly

		ty concerns from operations	1,000 m from settlements, forests or wildlife corridors; secure layouts, approvals and CTE/CTO from MSPCB; deploy dust suppression, noise controls and ongoing consultations.		layouts; valid CTE/CTO; suppression records		inspections and emissions monitoring; daily suppression logs
2	Borrow Areas	Environmental degradation from improper operation or closure	Position areas ⩾ 300 m from settlements; install barricades and security; obtain EC, landowner agreements and approved restoration plans; follow EC and standard operating procedures.	Contractor	EC documents; agreements; approved closure plans	MPWD/ PMC / CSC	EC/plan once before start; weekly inspections; closure verification on completion
3	Quarries	Safety risks and environmental harm from poor management	Source only from licensed quarries with valid EC and CTE/CTO; submit permits; avoid quarries within 1,000 m of settlements; maintain haul roads and	Contractor	Quarry permits/EC; safety reports; maintenance and suppression logs	MPWD/ PMC / CSC	Approvals once, weekly transport /safety checks, and monthly environmental monitoring

			dust controls.				
4	Dismantling Bridges, Culverts & Structures	Drainage obstruction and pollution	Prevent watercourse blockage; segregate reusable materials; transport debris to approved sites; use silt fences; restore sites and maintain 3 m barricades.	Contractor	Disposal/reuse records; restoration photos	MPWD/ PMC / CSC	Plan approval once; daily inspections during activity; records per shipment
5	Bituminous Waste Disposal	Hazardous waste contamination	Maximize recycling (DBM/BC layers); store in lined containers; dispose only at authorized landfills; track quantities and promote reuse per standards.	Contractor	Reuse/disposal records; site details; photos	MPWD/ PMC / CSC	Records per event, weekly inspections, and monthly recycling reviews
6	Soil Contamination (Oil/Fuel Spills)	Soil and groundwater pollution	Site workshops/storage ⩾ 500 m from water bodies; install interceptors and bunding; maintain equipment; provide spill kits and proper used oil disposal.	Contractor	Spill logs; disposal and inspection records, and photos	MPWD/ PMC / CSC	Daily storage checks; weekly inspections; immediate spill response
7	Air Pollution — Dust Generation	Health risks and community nuisance	Cover loads; sprinkle water regularly; stabilize slopes	Contractor	Monitoring reports; suppression /PPE logs; complaint records	MPWD/ PMC / CSC	Daily sprinkling; monthly (or more frequent) monitorin

			quickly; enforce speed limits; supply PPE; monitor air quality and address complaints promptly.				g; ongoing complaint tracking
8	Vehicle & Equipment Emissions	Air quality and health impacts	Maintain PUC/fitness certificates; use LPG for cooking; equip plants with emission controls.	Contractor	Valid certificates; maintenance/emission records	MPWD/ PMC / CSC	Monthly PUC renewals; weekly maintenance; quarterly testing
9	Surface/Groundwater Contamination	Pollution from sites and camps	Clear debris promptly; ensure camp sanitation; restrict pollution; use biodegradable fluids and contain slurry.	Contractor	Water quality reports; disposal/camp records	MPWD/ PMC / CSC	Daily camp checks; monthly sampling; checks per piling
10	Project Water Requirements	Resource scarcity from over-extraction	Use water efficiently; secure permissions; install rainwater harvesting; promote conservation awareness; log daily usage.	Contractor	Consumption logs; permissions; harvesting evidence	MPWD/ PMC / CSC	Daily logs; monthly inspections; permission once
11	Cofferdams for Dry Working	Altered flow, quality and habitat disruption	Choose low-impact designs; use reusable materials; treat discharges; restore sites fully.	Contractor	Inspection records; restoration proof	MPWD/ PMC / CSC	Design approval once, daily checks, verification on removal

12	Noise from Vehicles, Plants & Equipment	Disturbance to communities and wildlife	Limit to daytime; maintain silencers; avoid sensitive hours near schools/hospitals; install barriers and provide PPE.	Contractor	Noise reports; PPE/complaint records	MPWD/ PMC / CSC	Monthly monitoring; checks per complaint; daily hour enforcement
13	Blasting Operations	Safety and health hazards	Notify stakeholders; secure permissions; follow the approved Blasting Management Plan and explosives laws.	Contractor	Approved plan; permissions; incident photos	MPWD/ PMC / CSC	Plan once; records per blast; immediate post-blast checks
14	Tree Loss & Compensatory Plantation	Biodiversity decline	Minimize clearing; use alternative fuels; site facilities in low-vegetation zones; implement compensatory planting.	Contractor	Felling/plantation records	MPWD/ PMC / CSC	Per felling event, seasonal planting, quarterly survival checks
15	Terrestrial Flora & Fauna	Harm from worker activities	Train and monitor workers; ban hunting/fuel wood collection; sustain awareness programs.	Contractor	Training attendance; sighting logs	MPWD/ PMC / CSC	Orientation on mobilization; quarterly refreshers; ongoing logs
16	Aquatic Fauna Protection	Habitat and species disruption	Schedule in-stream works for dry/low-flow periods; avoid monsoon/bre	Contractor	Timing/inspection records	MPWD/ PMC / CSC	Scheduling per activity; daily inspections during

			eding seasons; secure wire ends.				work
17	Occupational Health & Safety	Accidents and illnesses	Develop WB-aligned OHS plan; conduct screenings/checks; supply PPE/first aid; deliver EHS/HIV awareness; perform audits.	Contractor	Approved plan; training/PPE/health reports	MPWD/ PMC / CSC	Screenings pre-employment/bi-annual; daily toolbox talks; monthly audits
18	Community Health & Safety	Risks to the public and livestock	Site plants remotely; install signage, 3 m barricades, lighting and diversions; follow IRC/MoRTH guidelines; educate on road safety.	Contractor	Signage/traffic records; complaint logs	MPWD/ PMC / CSC	Signage before works; daily checks; weekly complaint reviews
19	Emergency Response System	Heightened incident impacts	Prepare and implement ERP; train staff; conduct drills and maintain channels.	Contractor	Approved ERP; drill/training reports	MPWD/ PMC / CSC	ERP once, semi-annual drills, annual training
20	Communicable Disease Management	Outbreaks from labour influx	Partner with health centers; screen workers; run awareness (including COVID protocols).	Contractor	Screening/awareness records; agreements	MPWD/ PMC / CSC	Quarterly screenings/sessions; immediate case response
21	Natural Hazard Risks (Floods,	Damage and safety threats	Assess sites; protect adjacent lands; adhere	Contractor	Hazard assessments; compliance	MPWD/ PMC / CSC	Assessment once; post-event

	Earthquakes)		to SDMA mitigation standards.		records		checks; annual reviews
22	Force Majeure Risks	Unexpected E&S consequences	Plan for fire/flood/drowning; establish response protocols.	Contractor	Preparedness plan; contact lists	MPWD/ PMC / CSC	Plan once; annual reviews; post-event assessments
23	Site Hygiene	Health risks from poor conditions	Supply water, drainage and toilets; provide preventive care; enforce standards.	Contractor	Inspection/ hygiene logs	MPWD/ PMC / CSC	Daily checks; quarterly medical reviews
24	Traffic Management	Disruptions and safety issues	Develop and approve TMP; coordinate with police; install signage/barricades; maintain diversions year-round.	Contractor	Approved TMP; checklists; incident photos	MPWD/ PMC / CSC	Approval before works; daily checks
25	GBV-SEAH Risks	Violence /exploitation from influx	Site camps remotely; enforce signed Code of Conduct; deliver awareness; establish confidential GRM and ICC per POSH Act.	Contractor	CoC/training/complaint records; ICC minutes	MPWD/ PMC / CSC	CoC on mobilization; periodic training; monthly ICC; 24-hr complaint response
26	Chance Archaeological Finds	Loss of cultural heritage	Halt work; notify authorities; follow ESMF Chance Find Procedures.	Contractor	Notification /report records	MPWD/ PMC / CSC	Immediate per discovery
27	Labour	Unsafe	Establish	Contractor	Compliance	MPWD/	Ongoing

	Welfare Law Compliance	work and low morale	policies; train on rights; provide reporting channels; investigate violations.		/training/incident records	PMC / CSC	register; per-incident reporting
28	Labour Influx Management	Strain on local resources	Upgrade infrastructure; regulate influx; prioritize local hiring.	Contractor	License; local hiring percentages	MPWD/ PMC / CSC	Valid license; monthly local hire reports
29	Grievance Redress Mechanism	Unresolved conflicts eroding trust	Set up impartial, accessible GRM; publicize and support complainants.	Contractor	GRM register; resolution records	MPWD/ PMC / CSC	Active throughout; regular log reviews
30	Monitoring & Reporting	Undetected non-compliance	Follow detailed monitoring plan; submit regular CESMP compliance reports with certified data.	Contractor	Monthly/quarterly reports; certified data	MPWD/ PMC / CSC	Per scheduled reporting cycle
Operation Phase							
1	Debris and waste from site closure, camps, disposal, and borrow areas	Soil contamination, visual degradation, and health risks	Develop and implement a Site Restoration Plan: remove temporary structures and waste; fill and seal pits/trenches; respread topsoil; plant native species for stabilization	Contractor	Site clearance records; closure No Objection Certificate (NOC); geotagged photos	MPWD	Once at closure, with verification during defects liability period
2	Soil	Loss of	Regularly	Contractor	Erosion	MPWD	Quarterly

	erosion from runoff on slopes and embankments	topsoil, siltation, and slope instability	inspect slopes; apply bioengineering techniques (turfing, hydroseeding), stone pitching, or retaining walls/gabions as needed; maintain proper drainage		inspection reports; records of measures implemented; drainage maintenance logs		inspections; monthly drainage maintenance and pre-monsoon checks
3	Water pollution from road runoff and drainage	Degradation of surface and groundwater; sediment and oil spills	Conduct regular water quality monitoring; install silt traps or sedimentation chambers if required; routinely clean roadside drains; raise public awareness against dumping	Contractor	Water quality test results; drain cleaning records	MPWD	Water quality monitoring twice yearly; monthly drain cleaning and pre-monsoon
4	Dust from vehicular movement	Air quality degradation and public nuisance	Sustain roadside plantations as natural dust barriers; keep road surfaces smooth; install signage to prevent speeding	Contractor	Air quality monitoring results; plantation survival records	MPWD	Air monitoring twice yearly; quarterly plantation checks; monthly road surface inspections
5	Air pollution from vehicle emissions	Elevated levels of NOx, SO_2, CO, and	Monitor ambient air at sensitive locations; preserve	Contractor	Air quality results; plantation survival records;	MPWD	Air monitoring twice yearly; quarterly

		particulate matter; health risks	green buffers; educate drivers on emission controls and vehicle maintenance		awareness program documentation		plantation inspections; annual awareness programs
6	Noise pollution from increased traffic	Disturbance to residents, schools, hospitals, and wildlife	Perform periodic noise monitoring; erect noise barriers and dense plantations near sensitive areas; enforce no-horn zones; maintain smooth road surfaces	Contractor	Noise monitoring results; road maintenance records	MPWD	Noise monitoring twice yearly; monthly road surface maintenance
7	Road safety and accident risks	Traffic congestion, accidents, and pedestrian hazards	Install and maintain signage, reflectors, markings, lighting, speed controls, and pedestrian crossings; conduct community road safety awareness programs	Contractor	Accident records; safety audit reports; awareness program documentation	MPWD	Annual safety audits; quarterly signage/lighting checks; annual awareness programs
8	Waste from roadside maintenance, drain cleaning, and repairs	Soil/water contamination, visual pollution, and drain blockages	Collect and dispose of waste at approved sites; ban dumping in drains or low areas; reuse or recycle materials like	Contractor	Waste disposal logbook; certified disposal records	MPWD	During every maintenance activity; monthly and pre-monsoon drain waste

			asphalt, concrete, and metal				disposal

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 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 in line with the MLCIP Gender Action Plan (GAP). It will combine gender-disaggregated quantitative indicators (e.g., access to employment, resources, services) with qualitative methods (FGDs, key-informant interviews) using primary gender questions and relevant secondary sources. Results will drive site-specific mitigation and inclusion measures, capacity building, grievance-redress provisions, and measurable monitoring indicators reported to project management.

The Gender Action Plan will enable systematic collection and analysis of sex-disaggregated data to identify gender-specific disparities, needs, constraints, and priorities. This analysis will assess potential gender-based inequities in project risks, benefit access, and economic and social opportunities. Informed by these findings, targeted gender interventions will be developed and integrated into the Detailed Project Report (DPR) to promote inclusive design, equitable benefit sharing, and gender-responsive implementation.

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 has prepared a SEA/SH Action and Response Plan which includes mandatory codes of conduct for workers, periodic awareness and training sessions, a confidential and survivor-centered grievance redress mechanism, and clearly defined referral pathways to service providers.

6.2 Rational

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 are lower 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 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.).

6.3 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.

6.4 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 before 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 wings 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.

6.5 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.

6.6 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 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 about 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.

Table 6-1: 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.
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 were 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

Procedure / Steps	Process	Expected Outcome / Indicator
		adjustments made.

Table 6-2.Summary of the Gender Action Plan for MLCIP Project

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, and location
Integrate gender considerations into project design- Conduct joint walk-throughs with PWD representatives and community organizations before finalizing structural designs, TORs, and ESIA	PWD, Consultants	Feasibility & design phase	(i) % of participation of women community members; and (ii) no. of participation of women-focused/women-led organizations in joint walk throughs. Gender-sensitive project design approved; TORs include gender requirements
Develop an employment plan targeting women, SHGs 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	Gender Specialist, NGOs, CBOs	Planning & pre-construction phase	Number of consultations held; % of participants who are women; documented FPIC outcomes
Provide gender-sensitive training, mentorship, and capacity-building programs	PWD, Consultants	Throughout the 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	PWD, Consultants	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

Action	Responsible Entity	Timeline	Monitoring Indicators
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
Conduct social audits on all project sites.	PWD, Social/Gender Specialist, Consultants	Ongoing	% participation of women community members; no. of women-focused/women-led organizations, including SHGs, CBOs, NGOs participated.

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.

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 Specialist 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.

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.

Table 6-3: Indicators, frequency, and agency recommended for monitoring

Aspects	Monitoring Indicators (Process and Outcome)	Frequency	Monitoring Responsibility
Economic	• Percentage of women among total project workforce, disaggregated by skilled, semi-skilled, and unskilled categories; • Data of average daily wages paid to women and men for comparable work (wage parity index) • Number of days women are engaged compared to men in similar roles. • Growth in women's income due to project participation.	Planning Stage: Baseline data collection Half-Yearly Monitoring Mid-Term Review (MTR) Final Impact Assessment	Contractors; CSC; PMC; MPWD

Aspects	Monitoring Indicators (Process and Outcome)	Frequency	Monitoring Responsibility
	• 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). • Percentage of women trained under the project, disaggregated by road safety training, livelihood enhancement training, and project-related technical or non-technical skills.		
Social	• Percentage of women participants in stakeholder consultations, including consultations with Indigenous Peoples and FPIC processes where applicable under ESS7; • Percentage of women beneficiaries reporting improved mobility, perceived safety, and access to essential services, measured through periodic beneficiary feedback surveys; • Number and percentage of GBV/SEA/SH-related grievances received, resolved, and resolved within the stipulated timeframe, disaggregated by complainant gender and grievance type; • 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 for Implementation

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.

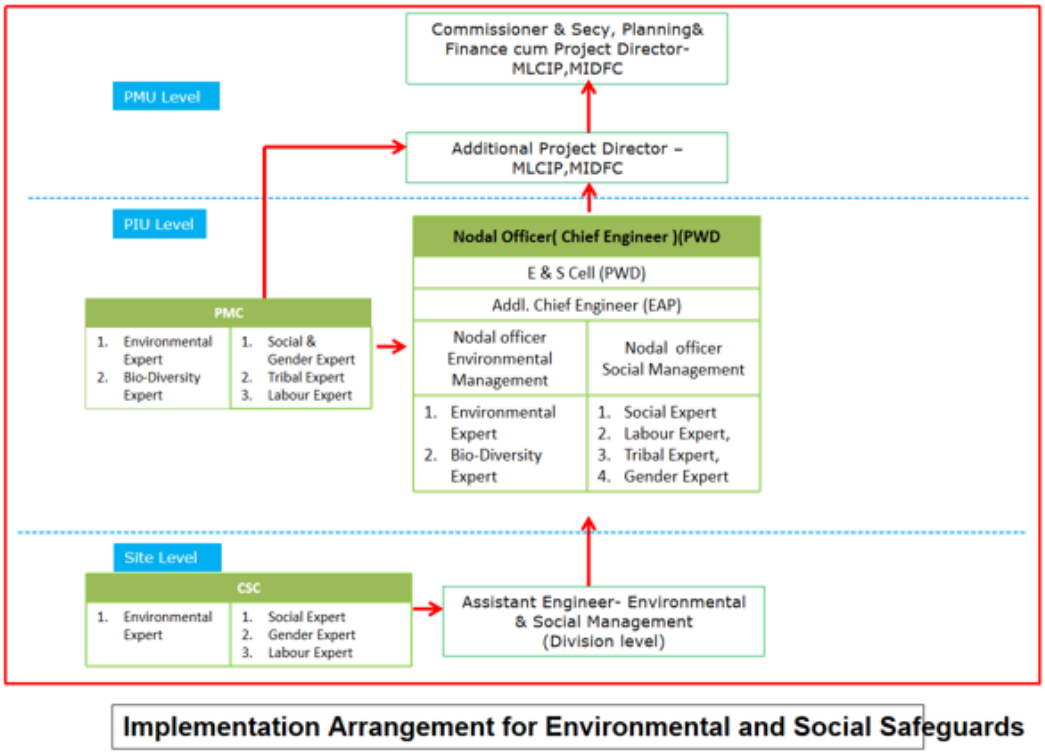
The Project Management Unit (PMU) under MIDFC serves as the central coordinating body providing strategic direction, policy alignment, and oversight for the project's implementation. It manages planning, budgeting, and inter-agency coordination between PWD and other departments, ensuring compliance with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

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

E&S project staff in PIU PWD, will manage safeguards as per Project's ESMF and other safeguard instruments. especially in managing complex issues on resettlement, tribal land rights, biodiversity in hilly terrains, and engagement with Sixth Schedule institutions. 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 the implementation agency. The MPWD will oversee civil works (roads, bridges). The MIDFC-PMU will oversee overall project management and coordination across other departments of the state. . 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



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 Divisions 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.

Site level Implementation Unit

Each Division of PWD acts as the field-level unit implementing infrastructure works through contractors 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, PIU, and designated officers at the division level 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.

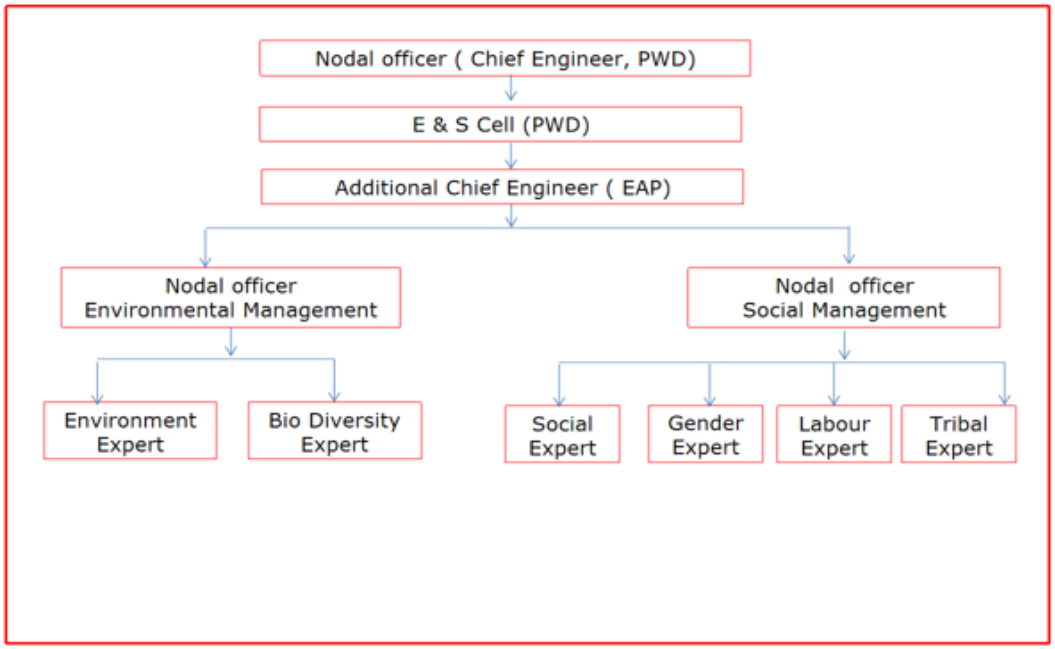
7.1 Institutional Arrangement for E&S Management

- **Project Management Unit (PMU):** MIDFC will constitute a PMU and will be responsible for the management and coordination of project implementation.
- **Project Implementation Unit (PIU):** MIDFC will be supported by PIU in the Public Works Department (Roads & Bridges). The PIU will have Nodal Officers with assigned charge for E&S. They will oversee the implementation of Environmental and Social safeguard instruments during the construction. Currently, there is limited E&S staff in the PIU.
- **Environment and Social (E&S) Cell:** Established within PWD, headed by the Additional Chief Engineer (EAP), and supported by two Executive Engineers, Environmental Expert, Social Expert, Labour Expert , Gender Expert, Tribal Expert, Biodiversity Expert. The E&S Cell will provide support to MIDFC and PIU 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 the 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 Expert, Labour and Tribal specialists 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, and Labour 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, planned infrastructure under this project. The PMU, PIU, 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 the implementation of the Environmental and Social Safeguard is presented in **Figure 7-2**

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



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

7.2 Roles and Responsibilities of Key Staff and Entities

The implementation of the Environmental and Social Management Framework (ESMF) under the Meghalaya Logistics and Connectivity Improvement Project (MLCIP) will be supported by a multi-disciplinary team across the Project Management Unit (PMU), Project Implementation Unit (PIU), 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 & Responsibilities	Environmental & Social Responsibilities (ESF-linked)	Reporting / Coordination Line
Commissioner-cum-Project Director (PMU)	MIDFC / Government of Meghalaya	Provides overall leadership, strategic direction, resource allocation and governance for the Project; chairs the Project Steering Committee and ensures interdepartmental alignment.	Accountable for overall ESF compliance; approves ESMPs, RAPs and IPPs; oversees land acquisition, labour management, stakeholder engagement, disclosure and sanctioning measures where required; signs off on World Bank reporting.	Reports to Chief Secretary, Government of Meghalaya; coordinates with PWD, PMU/PIU and the World Bank.
Additional Project Director (PMU)	MIDFC	Manages day-to-day project implementation, budgeting and coordination across PIUs and consultants; ensures timely delivery of outputs.	Supervises deployment of ESMF/ESMPs, disclosure processes, GRM follow-up and periodic safeguard reporting.	Reports to Commissioner-cum-Project Director; coordinates with PIU, PMC and PMU specialists.
Nodal Officer (Chief Engineer)	Public Works Department (PWD)	Leads technical design, engineering standards and construction quality assurance for connectivity works.	Ensures incorporation of environmental safeguards in designs (slope protection, drainage), OHS features, and contractor technical specifications consistent with ESF.	Reports to Commissioner (PMU); coordinates with PIU engineers, E&S Cell and Supervision Consultant.
Additional Chief Engineer (EAP)	PWD	Oversees contract administration, schedule and budget adherence for externally funded components;	Monitors contractor compliance with ESMPs and OHS requirements; conducts technical audits and enforces corrective actions.	Reports to Chief Engineer; liaises with PMU and Supervision Consultant.

Designation	Institution / Entity	Core Roles & Responsibilities	Environmental & Social Responsibilities (ESF-linked)	Reporting / Coordination Line
		provides technical oversight.		
Nodal Officer (Environmental Management)	PIU / PWD	Coordinates environmental planning across PIU, ensures environmental staff resourcing and supervises implementation of environmental monitoring systems.	Oversees environmental screening, ESMP adoption at the sub-project level, pollution control compliance and reporting in line with WB ESF.	Reports to Chief Engineer; coordinates with PMU Environmental Expert and Supervision Consultant.
Nodal Officer (Social Management)	PIU / PWD	Coordinates social safeguards across the PIU, manages social staff deployment and ensures integration of social measures in planning and contracts.	Oversees social screening, RAP/IPDP implementation, GRM functioning and disclosure consistent with WB ESF.	Reports to Chief Engineer; coordinates with PMU Social Expert and PMC Social Specialist.
Environmental Expert	E&S Cell, PIU (PWD)	Leads environmental screening, impact scoping, mitigation design and routine monitoring of sub-projects.	Implements and enforces ESMP measures conducts site inspections, pollution control checks and contractor environmental performance reviews; prepares reports.	Reports to Additional Chief Engineer (EAP) and Nodal Officer (Environmental); coordinates with PMU Environmental Expert and PMC.
Social Expert	E&S Cell, PIU (PWD)	Conducts social screening, stakeholder engagement, preparation/implementation of RAPs/IPDPs and GRM management; supervises livelihood restoration.	Ensures compliance with WB ESF.; manages GRM intake, case tracking, disclosure and social audit preparation.	Reports to Additional Chief Engineer (EAP) and Nodal Officer (Social); coordinates with PMC Social Specialist and PMU.
Gender Expert	E&S Cell, PIU (PWD)	Designs and mainstreams the Gender Action Plan (GAP); integrates gender	Operationalizes gender-sensitive indicators, women's employment targets, GBV/SEA risk mitigation and referral	Reports to E&S Cell Lead; provides inputs to PMU/PIU and PMC.

Designation	Institution / Entity	Core Roles & Responsibilities	Environmental & Social Responsibilities (ESF-linked)	Reporting / Coordination Line
		considerations into consultations and livelihood activities.	pathways per WB ESF.	
Labour Expert	E&S Cell, PIU (PWD)	Advises on labour management, recruitment practices, worker welfare and OHS systems.	Ensures implementation of WB ESF. and national labour codes (including BOCW where applicable); conducts labour audits and manages worker grievance handling.	Reports to E&S Cell Lead; liaises with Contractor EHS teams and Supervision Consultant.
Tribal Expert	E&S Cell, PIU (PWD)	Advises on Indigenous Peoples screening, culturally appropriate consultation and FPIC-compatible approaches.	Ensures WB ESF. / IPPF compliance; prepares IPPs, supports culturally appropriate mitigation and coordinates benefit-sharing and institutional arrangements.	Reports to E&S Cell Lead; liaises with State Tribal Affairs, community leaders and PMC.
Biodiversity Expert	E&S Cell, PIU (PWD)	Advises on ecological sensitivity, biodiversity risk screening and mitigation measures for sub-projects.	Implements WB ESF. requirements; prepares biodiversity management plans, coordinates with Forest Department and supervises restoration/afforestation actions.	Reports to E&S Cell Lead; coordinates with Forest Department, PMC and contractors.
Environmental Expert	Project Management Consultant (PMC)	Reviews environmental documentation, supports ESMP implementation and conducts independent environmental audits and trainings.	Verifies compliance with WB ESF. and national environmental laws; provides QA inputs and capacity building to PIU and contractors.	Reports to PMC Team Leader and PIU; coordinates with PMU Environmental Lead.
Social Expert	Project Management Consultant (PMC)	Advises on RAP/IPDP implementation, stakeholder engagement and social monitoring; prepares review reports.	Verifies WB ESF. compliance; assesses GRM effectiveness and assists in corrective actions and social audits.	Reports to PMC Team Leader and PIU; coordinates with PMU Social Lead.

Designation	Institution / Entity	Core Roles & Responsibilities	Environmental & Social Responsibilities (ESF-linked)	Reporting / Coordination Line
Labour Expert	Project Management Consultant (PMC)	Supports labour management planning, OHS systems review and contractor labour audits.	Validates contractor compliance with WB ESF.; advises on corrective measures and labour grievance procedures.	Reports to PMC Team Leader and PIU.
Tribal Expert	Project Management Consultant (PMC)	Provides technical support on Indigenous Peoples' issues, FPIC implementation and IPP preparation.	Assists PIU with IPDP compliance verification, culturally appropriate monitoring and documentation.	Reports to the PMC Team Leader and PIU.
Gender Expert	Project Management Consultant (PMC)	Provides external gender expertise, supports GAP implementation, training and monitoring.	Verifies gender indicators, assesses GBV/SEA mitigation measures and supports gender audits and reporting.	Reports to the PMC Team Leader and PIU.
Environmental & Social Expert	Site / Division, PWD	Conducts day-to-day field monitoring, maintains safeguard records and updates progress logs for site activities.	Implements site ESMP measures, logs and tracks GRM cases, conducts verification visits and prepares periodic compliance reports.	Reports to DPIU Project Director and PIU E&S Cell; liaises with Supervision Consultant.
Environmental Expert	Supervision Consultant	Performs routine site inspections, documents environmental performance and recommends corrective actions.	Ensures mitigation measures are implemented on site, enforces ESMP and OHS requirements, and issues non-compliance notices as needed.	Reports to PIU and PMC; liaises with Contractor EHS team and PIU E&S Cell.
Social Expert	Supervision Consultant	Monitors social safeguards at the site level, supports community liaison and documents RAP/IPDP compliance.	Ensures adherence to livelihood restoration commitments, social mitigation measures and WB ESF. requirements; assists in GRM resolution.	Reports to PIU and PMC; liaises with Contractor and PIU Social Expert.
Contractor EHS Team	Contractor	Executes construction works per technical specifications, contract terms and	Prepares and implements Contractor ESMP (C-ESMP); ensures compliance with WB ESF.; maintains	Reports to DPIU/PIU; supervised by Supervision Consultant and

Designation	Institution / Entity	Core Roles & Responsibilities	Environmental & Social Responsibilities (ESF-linked)	Reporting / Coordination Line
		site schedules; implements contractor-led EHS systems.	OHS systems, hazardous materials controls and worker welfare measures.	subject to audits by PMU/PMC.

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.

7.3 Grievance Redressal Mechanism

A Grievance Mechanism is a system that allows not only grievances, but also queries, suggestions, positive feedback, and concerns of project-affected parties related to the environmental and social performance of a project to be submitted and responded to in a timely manner.

Description of Grievance Mechanism (GM)

Table 2: Table on the GM Steps

[Step	Description of process (e.g.)	Timeframe	Responsibility
GM implementation structure	*At the project level, the PWD has the following two-tiered structure for grievance management:* **Tier I: Project/Site-Level Grievance Redress** The Tier I Grievance Redress Cell (GRC) shall function at the project or site level and shall be chaired by the Village Head or a representative nominated by the Village Council. The GRC shall include the Resident Engineer of the Construction Supervision Consultant (CSC), Environmental and Social Experts of the CSC, a representative of the Contractor, and Environmental and		

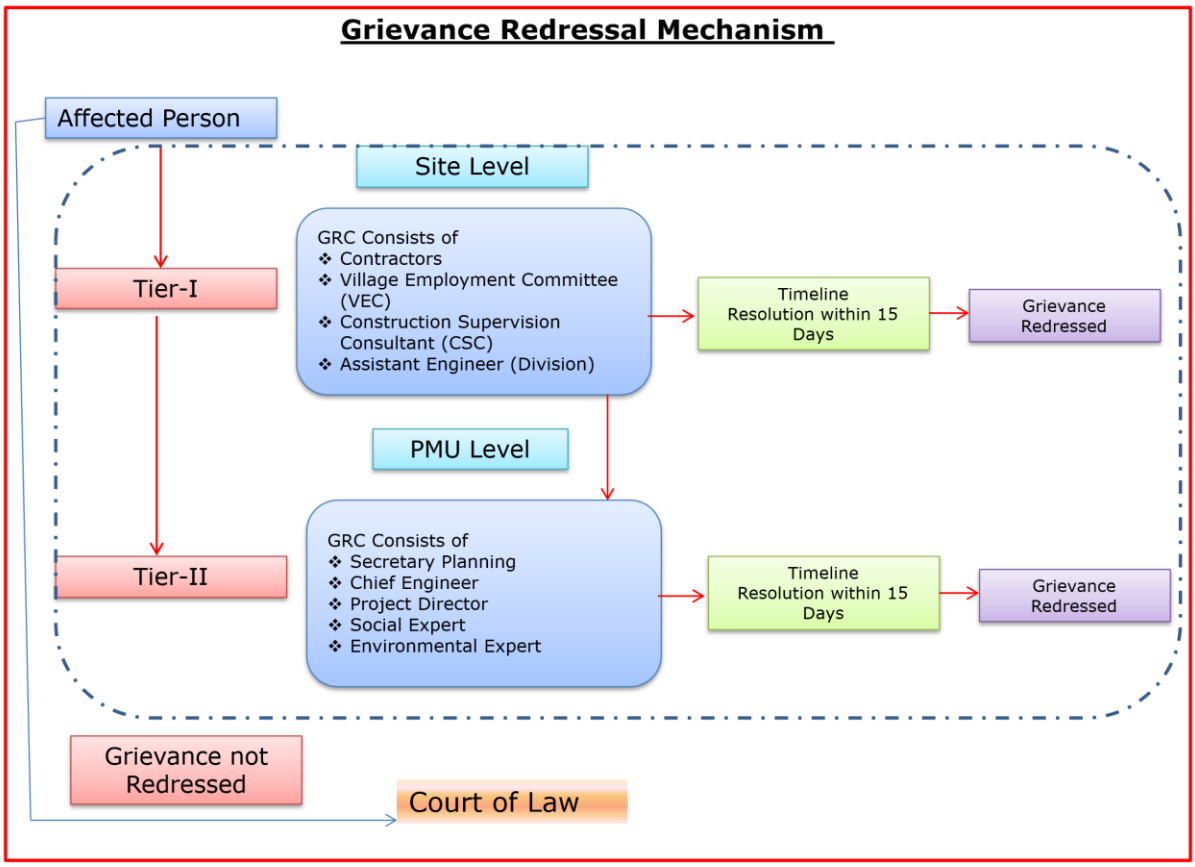
[Step	Description of process (e.g.)	Timeframe	Responsibility
	Social Officers from the Division offi e Upon receipt of a grievance, the Tier I GRC shall review the complaint, conduct consultations with the complainant and relevant stakeholders as necessary, and propose appropriate corrective or remedial actions. The Tier I GRC shall endeavour to resolve the grievance within fifteen (15) days from the date of registration. If the grievance is resolved to the satisfaction of the complainant, the case shall be closed and documented accordingly. **Tier II: State/PMU-Level Grievance Redress** If a grievance cannot be resolved at the project/site level within the stipulated timeframe, or if the complainant is not satisfied with the proposed resolution, the grievance shall be escalated to the Tier II State/PMU-Level Grievance Redress Cell. The Tier II GRC shall be chaired by the Secretary, Department of Planning, and shall include the Chief Engineer, the Project Director (PMU), the Social Development Expert and the Environmental Expert of the PIU/PMU as members. The Tier II GRC shall review the grievance, seek additional information or conduct hearings as required, and issue its decision or recommendations within		

[Step	Description of process (e.g.)	Timeframe	Responsibility
	fifteen (15) days of receiving the escalated grievance. The outcome shall be communicated formally to the complainant. Complaints can also be filed through the CM Connect Centre's Toll-Free Helpline, WhatsApp Helpline and Email, wherein complaints are re-directed to the concerned officials in the PWD (Grievance officer in PMU, GRC Tier I and II) for redressal. Additionally, a toll-free no. will be set up for the PWD.		
Grievance uptake	Grievances can be submitted via the following channels • Toll-free telephone hotline: 1971/ 1800-345-651 operated by Meghalaya CM Connect Centre • WhatsApp helpline: 94363-94363 operated by Meghalaya CM Connect Centre • PWD telephone helpline: 0364-3572466 • E-mail to **esmlcip@gmail.com** and **cmconnect1971@outlook.com** operated by Meghalaya CM Connect Centre • MIDFC website: **http://megpwd.gov.in/contacts.html** • In-person at project sites, DPIU offices, or the PMU • Grievance Redress Cell (GRC) at the site/project and state level • Grievance or suggestion boxes located at the construction sites • Social media (Facebook) • Toll-free no. to be setup for PWD		
Sorting,	Any complaint related to the project	Upon receipt	Designated GRM officer

[Step	Description of process (e.g.)	Timeframe	Responsibility
processing	received through the Meghalaya CM Connect Centre (Helpline, WhatsApp or email) is forwarded to the concerned department— in this case the PWD (designated GRM officer at the PMU, Tier I and II GRC); logged in the Public Grievance Redressal and Monitoring System; the complaints are categorized based on the intent: (a) grievance/complaint- service delivery failure; delay, denial or poor quality (b) service request- request for repair, inspection or action (c) information/query- clarification on the project/scheme, eligibility, procedures (d) suggestion/ feedback. PWD complaints can be related to road damages, poor construction quality, construction delays, safety hazards, drainage issues, land/ RoW related, drainage issues, contractor behaviour, etc.	of complaint	at the PMU, GRC- Tier I and II
Acknowledgement and follow-up	Receipt of the grievance by the Meghalaya CM Connect Centre (Helpline, WhatsApp or email) is acknowledged to the complainant by assigning a unique reference number. Similarly, for grievances received directly by GRC- Tier I and II, the GRC will formally acknowledge to the complainant through SMS or a letter.	Within 2 days of receipt	Designated GRM officer at the PMU, GRC- Tier I and II
Verification, investigation, action	Investigation of the complaint is led by the GRC/ officials of the PWD. A proposed resolution is formulated by Tier 1 GRC/ officials of the PWD and communicated to the complainant by Meghalaya CM Connect Centre (Helpline, WhatsApp or email).	Within 15 working days	GRC Tier I composed of Village Head or representative nominated by the Village Council (chairperson), Resident Engineer of CSC, Environmental and Social Experts of CSC, Contractor, and Environmental and Social Officers from the

[Step	Description of process (e.g.)	Timeframe	Responsibility
			Divisional Project Implementation Unit (DPIU) GRC Tier II composed of Secretary, Department of Planning, Chief Engineer, the Project Director (PMU), the Social Development Expert and the Environmental Expert of the PIU/PMU as members.
Monitoring and evaluation	Data on project-related complaints received and resolved through multiple channels will be collated in the project MIS/ GRM register and reported to the World Bank every quarter through the quarterly progress report (QPR).		
Provision of feedback	Feedback from complainants regarding their satisfaction with complaint resolution is collected by the Tier I and II GRCs and the Meghalaya CM Connect Centre (Helpline, WhatsApp or email), respectively after resolution of the complaints.		
Training	Training needs for staff/consultants in the PIU, Contractors and Supervision Consultants are: - Grievance management and documentation - Stakeholder engagement and documentation - Gender sensitization and handling of grievances related to SEA/SH	Every 6 months	PMU
If relevant, payment of reparations following	Payment of reparations following complaint resolution will be documented and signed by both parties on receipt of the amount.		PMU

[Step	Description of process (e.g.)	Timeframe	Responsibility
complaint resolution	[Note: Payment of reparation related to employee accidents and fatalities will be undertaken as per the requirements of the Employee Compensation Act, 1923/ Labor Code.]		
Appeals process	If the complainants are not satisfied with the proposed resolution of the complaint, they can escalate the complaint to the Tier II GRC. The complainants are also free to approach the court of law at any time of their own will at any stage, and accessing the country's legal system can run parallel to accessing the GM and is not dependent on the negative outcome of the GM. Once all possible means to resolve the complaint have been proposed and if the complainant is still not satisfied, then they should be advised of their right to legal recourse.		



To ensure that affected tribal communities can voice concerns and grievances and have them addressed taking into consideration their socio-economic and cultural attributes, a member of the ST community will be represented in the GRC at Tier 1 (Project sites) and 2 level (PMU). Further, the Meghalaya CM Connect Centre Helpline no. provides multi-lingual support (English, Khasi, Garo, Pnar, and Hindi) and is supported by 470 village volunteers to ensure last-mile connectivity. The call centre providing backend support to Meghalaya CM Connect Centre has 25 trained agents and operates from 8 AM to 8 PM.

The grievance mechanism for workers will be setup by the contractors prior to convening of civil works. The grievance mechanism process has been described in detail in the Labor Management Procedures.

Recourse for Sexual Exploitation Abuse/ Sexual Harassment (SEA/SH): The PWD has setup an Internal Complaints Committee (ICC) for addressing any SEA/SH-related complaints at the workplace. The committee is constituted as per the requirements of the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 (POSH Act). The PWD has in place necessary mechanisms and procedures following a survivor-centered approach that prioritizes survivors' dignity, confidential reporting with safe and ethical documentation of SEA/SH issues. The ICC is also mandated to handle SEA/SH related complaints from community members. Additionally, SEA/SH referral pathways will be established (details specified in the Project level SEA/SH Prevention and Response Plan) and communicated to all the staff, supervision consultants, including contractors. Further, all contractors will

be mandated to setup an Internal Complaints Committee as per the POSH Act. The contractors will also prepare and implement the workers' code of conduct to be always adhered by the workers.

The Grievance Submission Form is provided in Annexure VII.

8 Capacity Development and Training

Training and capacity building on environmental and social (E&S) issues under the Meghalaya Logistics and Connectivity Improvement Project (MLCIP) will be undertaken by the implementing agency, the Meghalaya Public Works Department (MPWD). MPWD has prior experience implementing World Bank–supported projects, including the Meghalaya Integrated Transport Project (MITP), which provides a foundational understanding of Bank safeguard requirements. However, as MITP was implemented under the earlier Safeguards Policies, targeted reorientation and capacity building on the World Bank's Environmental and Social Framework (ESF) and its operational requirements will be required.

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 training of officials of MPWD, MIDFC, on the ESMF, the E&S documents prepared and their implementation responsibilities.
- Training of implementing agencies on monitoring and reporting responsibilities.
- Training 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
- Land Acquisition including compensation, resettlement and rehabilitation process
- 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 Expert and the Social Expert 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 Divisional staff (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 Experts 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 development, financial literacy related to project participation and employment opportunities within the project, grievance redressal mechanisms, and the use of digital monitoring tools. Training will include role-playing for effective stakeholder engagement, bylaw drafting for equitable access, and community-based monitoring of connectivity improvements. These sessions will be facilitated by NGOs with proven SHG experience in Meghalaya, such as Pla Tangka Cooperative Society (PTCS), the Meghalaya Institute of Governance (MIG), or other reputed organizations, to empower women-led SHGs as active stakeholders 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)
Pre-planning	Social mobilization through Dorbar Shnong, Nokmas, VCs Understanding project objectives & benefits Inclusion of women, IPs, and vulnerable households Awareness on GRM design & access mechanisms	ESMF orientation & participatory planning approach Data collection & simplifying logistics info for community use GRM support at the village/district level	ESMF roles and responsibilities Screening of E&S risks & sensitivities Introduction to E&S instruments (ESCP, SEP, RPF, LMP, BMP etc.)
Planning & Design	Engagement in Village and Inter-Village Plans Dissemination of logistics connectivity improvements SEA/SH prevention & escalation guidance GRM linkage with State-level GRC	Support in preparing gender-responsive byelaws for market/ logistics use Facilitation of equitable inclusion in planning.	ESIA support and documentation SEA/SH protocols and ICC formation (POSH Act compliance) RAP implementation roles and relocation of assistance Biodiversity & hill-ecosystem considerations in design
Construction	Conduct stakeholder	OHS, CHS & compliance	ESMP implementation

Project Stage	Community Representatives	Staff of Support Organizations (NGOs/CSOs)	Project Functionaries (MPWD)
& Implementation	meetings, ensuring full participation Support for conflict resolution and inter-village coordination Community-based monitoring of works Reporting safety and E&S issues to authorities	monitoring Support in community consultations during construction	oversight Contractor compliance (labour, OHS, CoC, waste mgmt. etc.) Road safety risk mitigation GRM case resolution & documentation
Monitoring	Community performance tracking & social audits Documentation of benefits, issues, and lessons	Support digital MIS reporting & transparency in results	Monitoring & reporting through app-based tools Closure audits and knowledge transfer to GoM institutions

E&S capacity development calendar is prepared below:

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)	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

Training Themes & Core Focus Areas	Target Stakeholders	Delivery Mode	Responsible Agencies
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
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
Conflict Resolution & Community Monitoring	Community Reps, NGOs	Training and demonstration	MIG / CEE
Refresher: 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.

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
   Meghalaya Institute of Governance (MIG), Meghalaya – Stakeholder Engagement and gender training.

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:

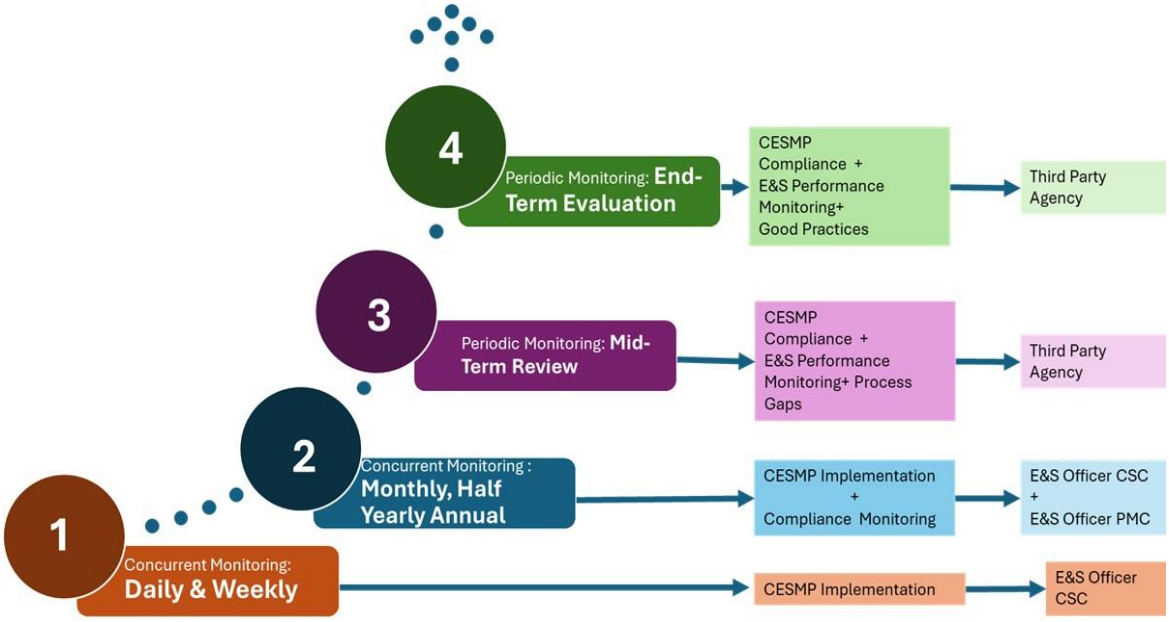
- The project Environmental and Social Commitment Plan (ESCP) will provide all the categories, timelines and responsibilities of reporting.
- As per Environmental and Social Incident Response Toolkit (ESIRT) guidelines of the World Bank, within 24 hours of incident reporting followed by a root cause 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 needs to be flagged and followed up on regularly 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 specialised 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 Expert 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 Expert 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, 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 help monitor 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, in 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 is 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 **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's 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 and bridges components will be monitored periodically internally by the PMU and PIU. It will help the project identify compliance with 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 Camps	OHS risk, CHS risk	ESMP violations, OHS and CHS violations, Labour Working conditions Violations	OHS and CHS risks
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	

Type of Monitoring	Contractor's Monitoring	District level Monitoring	PIU/PMU Monitoring
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 the site regularly, 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 16,80,57,976** 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 agrologists 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 budget covers six major categories: (i) Human Resources for the Environmental and Social (E&S) Cell and specialized staff; (ii) Capacity Development and Training programs for project staff, contractors, and communities; (iii) Information, Education, and Communication (IEC) materials; (iv) Implementation costs for safeguard instruments including the Resettlement Action Plan (RAP), Stakeholder Engagement Plan (SEP), and Indigenous Peoples Planning Framework (IPPF); (v) Monitoring, Reporting, and Compliance Audits; and (vi) Contingency provisions for unforeseen circumstances.

Table 10.1 below provides a summary of budget allocations by major head. The detailed line-item budget, including unit costs, quantities, cost assumptions, and ESS requirements, is provided in Annexures VI -A, B, C, D and E.

Table 10-1: ESMF Budget

Budget Head	Total Amount in INR
HR	43,520,000
Trainings	17,161,240
IEC and training material cost	11,630,000
Monitoring & Reporting	13,056,000
SEP	2,32,00,000
IPPF	15,290,000
IPDP	2,78,30,000
RAP	8,367,975
Total Budget	16,00,55,215
Contingency (5% of Total Budget)	80,02,760.75
Grand Total (INR)	**16,80,57,976**

ANNEXURES

ANNEXURE I: 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 - Mooriap upto Semmasi Road including Construction of Bridge	20
3	Sohra	Upgradation of Umtyngar - Sohra Road upto 8th Km of Mawsmai-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-Maweit 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

S. No.	Division	Name of Road	Length (Km)
11	Mawshynrut	Construction of Umdang-Amarsang-Maheshkola Road	65
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	38

S. No.	Division	Name of Road	Length (Km)
		(Greenfield)	
	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

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**

ANNEXURES I- a: Environmental and Social Safeguards Requirements Across Sub-Project Development Cycle

Sl no	Project cycle	E&S requirements	Responsibilities
1	Concept stage	Defines broad scope of E&S Finalizes Terms of Reference for E&S Assessments and mobilizes independent consultants Free Prior Informed Consent – step 1 Output – Inception report (methodology, secondary data analysis, workplan, mobilization of resources, timeline)	Govt of Meghalaya
2	Feasibility – Financial, Technical, Economic analysis	Screening and Scoping use standardized checklists and GIS-based to identify ecological sensitivity, physical cultural resources, land availability and tenure issues, involuntary resettlement triggers, indigenous peoples, and climate vulnerability. Free Prior Informed Consent – step 2 and 3 Establish level of risks Map and quantify physical and social parameters Map stakeholders Analysis of Alternative Identify and summaries applicable laws and policies and World Bank's ESF Cost estimates of the adverse impacts and mitigation measures Output – Screening and scoping report.	PWD/Consultants
3	Detailed Project Report	Free Prior Informed Consent – Step 4, 5 and 6 E&S assessment to inform the technical design Finalize applicable Laws and policies and World Bank's ESS standards and develop project level Frameworks (ESMF/RPF/IPPF/SEP/LMP) including budget and disclose Stakeholder Consultation Sub-project level outputs – ESIA/ESMPs/Critical Habitat Plans/RAPs/IPDPs/EHS plans	PWD
4	Implementation	Free Prior Informed Consent – continuous through the implementation period Prior to mobilization of contractors, implement RAP/IPDP and certify availability of encumbrance free land Prepare site specific ESMP/CHS/EHS/Chance find plans and implement them. Stakeholder Engagement Monitoring and supervising	PWD/Contractors

		Output – monthly progress report	

ANNEXURE II: 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 Village Council	Yes /No
12	Highest Flood Level (HFL)	
13	Provide rational for selecting the proposed location	
14	Provide summary of alternate location	

	considered	

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, biodiversity 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 Border areas (international) Tiger reserves/Elephant reserve Habitat for migratory birds Lakes, Reservoirs, Dams Streams/Rivers/

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			
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			
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/ Church 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?			
Labour requirement and facilities			
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)		

ANNEXURE III: Environment and Social risk categorization to determine detailed impact assessment and identify mitigation plans.

Project Category	□ Low □ Moderate □ Substantial □ High (assign weights to all the parameters to arrive at a weighted 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	Low, Moderate, Substantial or High

Labour/Community	

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 a 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 IV: Biodiversity Management Framework (BMF) — MLCIP

1. Introduction

This BMF sets out the screening, avoidance, mitigation, monitoring and institutional arrangements required to manage biodiversity risks for the Meghalaya Logistics & Corridor Improvement Project (MLCIP), with special attention to sites identified as Important Bird & Biodiversity Areas (IBAs) in Meghalaya. It aligns with national/state biodiversity strategies and World Bank environmental & social requirements for the project.

2. Purpose and scope

Purpose: Prevent/avoid irreversible biodiversity loss, minimize and mitigate impacts where avoidance is impossible, and ensure monitoring and adaptive management across MLCIP works.

Scope: All Project-financed activities (road upgrades, bridge works, including direct, indirect impacts within the project corridor and relevant catchments/landscapes, with a focus on IBAs and adjacent habitats.

3. Legal, Policy & Data basis

Key references:

- ✧ World Bank Project documents and E&S requirements for MLCIP (ESMF/ESIA/ESMP obligations).
- ✧ Meghalaya State Biodiversity Strategy & Action Plan (MBSAP) and state IBA inventory.
- ✧ Bird Life/Bird Life Data Zone and BNHS national IBA catalogue (methodology and IBA criteria).

4. Screening & Spatial Risk Mapping (steps)

4.1 Build an IBA baseline

Compile an authoritative IBA layer for Meghalaya (official state list + Bird Life Data Zone / BNHS IBA dataset). Include site boundaries, qualifying species/habitats, threats, seasonality, and existing protection status. Use the Meghalaya biodiversity website + Bird Life fact sheets as primary local sources.

4.2 GIS spatial overlay & buffer analysis

- ✧ Overlay proposed project alignments, access routes, quarries, camps, storage and agro-logistics sites on the IBA layer.
- ✧ Apply standard buffers (initially 500–2000 m depending on species/habitat sensitivity and road type) to identify direct and indirect influence zones. Where IBAs contain sensitive breeding/roosting sites, extend buffers and apply seasonal constraints.

4.3 Rapid screening classification

Use a simple three-tier screening result per proposed activity/location:

- ✧ **High Risk: i**nside or within the defined influence zone of an IBA, or area with known globally threatened or restricted-range species. Requires full field biodiversity assessment and avoidance unless no feasible alternative.
- ✧ **Moderate Risk :** adjacent to IBA or contains important habitat patches. Requires targeted surveys and strict mitigation measures.
- ✧ **Low Risk :** > buffer distance, limited habitat connectivity. Standard mitigation and monitoring.

5. Detailed impact assessment & conditional decision matrix

For High Risk sites:

Conduct ESIA-level biological surveys (breeding/seasonal bird surveys, vegetation, mammals, herpetofauna, freshwater ecology) and cumulative impact assessment. Draft site-specific Biodiversity Management Plans (BMPs) or Biodiversity Action Plans (BAPs) that include avoidance-first measures.

Decision matrix: if significant adverse impacts to globally threatened species, critical habitat, or irreplaceable IBA features are predicted and cannot be avoided/mitigated, the activity must be redesigned or relocated. Offsets only as last resort and subject to Bank policy and government approvals.

6. Mitigation hierarchy

- ✧ Avoidance — first priority (reroute roads, shift storage sites away from IBAs and core habitats).
- ✧ Minimization — if avoidance is impossible: reduce footprint, restrict timings (avoid breeding seasons), implement erosion/sediment controls to protect aquatic habitats.
- ✧ Restoration — restore disturbed areas with native species (use local provenance).
- ✧ Offsets/Compensatory measures — only when unavoidable, measurable, and with clear additionality; prioritize in-kind local habitat restoration, protection of nearby degraded IBA habitat, community-conserved areas and long-term funding mechanisms. Offsets must follow Bank guidance and be subject to independent verification.

7. Typical mitigation measures (by impact type)

- ✧ Habitat loss/fragmentation: micro-routing, elevated crossings/culverts to maintain connectivity, wildlife underpasses/overpasses at identified movement corridors, re-vegetation with native species.
- ✧ Species disturbance: seasonal work restrictions for breeding/roosting times, noise and light controls, speed reduction zones for vehicles in sensitive stretches.
- ✧ Hydrology & aquatic impacts: silt fences, sediment traps, turbidity monitoring, fish-friendly culvert design.

- ✧ Invasive species: hygiene protocols (clean machinery), monitoring and rapid response removal plans.
- ✧ Quarrying & borrow areas: avoid established IBAs, restore borrow sites with native species and erosion control.
- ✧ Construction camps: Construction camps shall be sited beyond the prescribed buffer distances from Important Bird Areas (IBAs) and other ecologically sensitive habitats. Camps will be provided with adequate wastewater treatment and solid waste management facilities to prevent contamination of surrounding ecosystems. Strict prohibitions on hunting, poaching, logging, and collection of forest produce by project personnel will be enforced through the Contractor's Code of Conduct

8. Surveys, monitoring & adaptive management

8.1 Survey requirements

Baseline surveys before final design in any Amber/Red area: detailed bird point counts, transects, breeding/roost monitoring, camera trapping for mammals where relevant, freshwater sampling in aquatic IBAs. Use BNHS / Bird Life methods for comparability.

8.2 Monitoring plan (core indicators)

- ✧ Status of qualifying IBA species (counts/occupancy) — annual breeding season surveys for key species.
- ✧ Habitat extent and quality (ha restored/protected).
- ✧ Roadkill/incidents per km per year on project roads in IBA influence zones.
- ✧ Water quality (turbidity, suspended solids) at key cross-sections upstream/downstream of works.
- ✧ Compliance indicators: implementation of avoidance measures, environmental incidents, corrective actions closed.

8.3 Adaptive management

Bi-annual biodiversity review meetings (Contractor E&S + PIU + independent ecology advisor).
Adjust mitigation if monitoring shows adverse trends.

9. Institutional arrangements, roles & capacity

- ✧ Project Implementing Unit (PIU) — E&S Cell (PWD): overall responsibility for BMF implementation, budget allocation, reporting to the Bank.
- ✧ Project Environmental Specialist (PIU): day-to-day oversight, ensures screening is done, approves site-specific BMPs, coordinates surveys.

- ✧ Biodiversity Specialist: retained for screening verification, impact assessment review, and audits (required for High-Risk sites).
- ✧ Construction Supervision Consultant (CSC): ensure the contractor implements BMPs, conduct regular site inspections.
- ✧ Contractor: prepare and implement site-level BMPs, monitor, and submit monthly compliance reports.
- ✧ Local forest/biodiversity authorities & communities: participate in screening, monitoring and grievance redress; integrate local knowledge, particularly about sacred groves and community conserved areas.
- ✧ Staffing & capacity building: PIU must have at least one full-time biodiversity/Environmental Expert during construction plus access to specialist consultants for IBAs and threatened species.

10. Stakeholder engagement & grievance redress

Integrate IBA stakeholders (forest departments, Bird Life/BNHS contacts, local biodiversity management committees, community leaders) into the SEP and consult before works.
Use culturally appropriate consultation approaches for sacred groves (e.g., Mawphlang).
Include a wildlife incident reporting mechanism and a GRS route for biodiversity complaints; maintain transparent incident logs.

11. Emergency response & incident management

- ✧ Rapid response protocol for wildlife strikes or discovery of nests/roosts during works: stop work, notify PIU and biodiversity specialist, safe relocation/temporary exclusion (as per specialist advice), documentation and remedial plan.
- ✧ Oil/fuel/chemical spill plan for work sites near waterways: containment booms, neutralizers, emergency contacts.

12. Reporting, documentation & disclosure

- ✧ Monthly contractor E&S reports with the biodiversity section.
- ✧ Quarterly consolidated PIU biodiversity performance report.
- ✧ Annual biodiversity monitoring report publicly disclosed (redacting sensitive location data only when necessary to protect species).
- ✧ All ESIA/BMP documents for IBA-adjacent sites to be disclosed on the PWD/PIU and World Bank project pages per Bank disclosure timelines.

13. Budgeting and financing (guidance)

Include line items in the construction & supervision budget for: biodiversity baseline surveys, independent specialist reviews, monitoring (field teams + lab), mitigation works (crossing structures,

fencing, revegetation), community engagement and offsets (if required).
For planning, estimate these costs during procurement/financial closure; exact amounts depend on the number of Red/Amber sites and scale of mitigation.

ANNEXURES IV- a: List of Important Bird & Biodiversity Areas (IBAs) in Meghalaya and Sensitivity Classification for MLCIP

Sensitivity is assessed in context of logistics corridor development (MLCIP) considering: presence of threatened/endemic species, habitat irreplaceability, breeding/roosting importance, forest integrity, and disturbance vulnerability.

Sl. No	IBA Site Name	Location / District(s)	Approx. Coordinates (Lat, Long)	Qualifying Species / Key Biodiversity Value	Primary Habitat Type	Sensitivity for MLCIP	Major Risks from Corridor/Logistics Works	Recommended Design Constraint
1	Upper Shillong Plateau	East Khasi Hills	25.55, 91.89	White-cheeked Hill Partridge (VU), Himalayan Griffon, Speckled Wood Pigeon, high-altitude avifauna assemblage	Sub-tropical pine forest, secondary forest, scrub plateau	High	Noise, vehicle movement, light pollution, worker influx, habitat degradation, roadkill of ground birds	No ancillary facilities within 2 km; night movement restrictions
2	Cherrapunjee Cliffs & Surrounds	East Khasi Hills	25.27, 91.73	Amur Falcon (migratory passage), Peregrine	Steep gorge/cliff ecosystems,	High	Quarrying impacts, dust deposition, vibration on cliffs,	Blasting/vibration restrictions; no quarry/stone

Sl. No	IBA Site Name	Location / District (s)	Approx. Coordinates (Lat, Long)	Qualifying Species / Key Biodiversity Value	Primary Habitat Type	Sensitivity for MLCIP	Major Risks from Corridor/Logistics Works	Recommended Design Constraint
				Falcon, Cliff nesting raptors, limestone-sensitive bird communities	riparian forest		hydrology change affecting gorges, bird collision zones	crushing within 5 km
3	Nongkhyllem Wildlife Sanctuary	Ri-Bhoi	25.94, 91.83	Rufous-necked Hornbill (VU), Great Hornbill, Asian Barred Owlet, and intact forest indicator species	Dense broadleaf evergreen forest	Very High (Critical Habitat)	Tree loss, wildlife disturbance, hunting risk, invasive species introduction, hydrology disruption to streams	Avoid footprint inside sanctuary and 3 km buffer
4	Balpakram National Park & Buffer Landscape	South Garo Hills	25.20, 90.80	Blyth's Tragopan (NT), Great Indian Hornbill, and landscape supporting Hoolock Gibbon, clouded	Tropical evergreen and moist broadleaf forest, canyon systems	Critical / Very High	Cumulative fragmentation, transport-induced disturbance, illegal resource extraction, wildlife trafficking	No road/ropeway goods stations within 5 km; strict patrolling coordination

Sl. No	IBA Site Name	Location / District (s)	Approx. Coordinates (Lat, Long)	Qualifying Species / Key Biodiversity Value	Primary Habitat Type	Sensitivity for MLCIP	Major Risks from Corridor/Logistics Works	Recommended Design Constraint
				leopard overlap areas			risk	
5	Nokrek Biosphere Reserve (Core + Vicinity)	West Garo Hills	25.47, 90.33	Asian Elephant landscape, Great Hornbill, Orange-breasted Green Pigeon, and high plant endemism	Semi-evergreen & evergreen forest	Critical / Very High	Logistics traffic disturbing elephant routes, ropeway tower erection impacts, habitat loss, and human-wildlife conflict increase	Avoid elephant corridors; no camps within 3 km
6	Baghmara Pitcher Plant Sanctuary Landscape	South Garo Hills	25.10, 90.62	Limestone-endemic ecosystem, insectivorous plant habitat that supports specialized insect and bird communities	Limestone forest, moist tropical forest pockets	High	Dust & pollution deposition, quarrying pressure, hydrology alteration, invasive risk	No polluted discharge upstream; quarry ban in the influence zone
7	Mawphla	East	25.45,	Community	Old-	High	Tree cutting	Reroute or

Sl. No	IBA Site Name	Location / District (s)	Approx. Coordinates (Lat, Long)	Qualifying Species / Key Biodiversity Value	Primary Habitat Type	Sensitivity for MLCIP	Major Risks from Corridor/Logistics Works	Recommended Design Constraint
	ng Sacred Grove Landscape	Khasi Hills	91.79	-protected climax forest, high micro-biodiversity, forest understory bird guilds, rare orchid/epiphyte sites	growth sub-tropical evergreen forest		for widening, worker access disturbance, waste dumping risk	elevate if unavoidable; zero tree felling policy
8	Siju Bird Habitat Complex	South Garo Hills	25.30, 90.70	Riverine bird communities, cave-related roosting ecology, includes owls, swifts, bat-bird interaction systems	Riparian forest, karst caves, river flood plains	Moderate–High	Collision at bridges, disturbance at cave roosts, sedimentation in rivers	Bridge design must be fish & bird friendly, seasonal river protection plan
9	Baghmara Reserve Forest Landscape	South Garo Hills	25.12, 90.60	Lowland dense forest, woodpeckers, hornbills, forest	Tropical moist deciduous to semi-evergree	Moderate–High	Borrow pits, camp pressure, illegal timber/fuelwood extraction,	No borrow/camp inside RF; mandatory restoration

Sl. No	IBA Site Name	Location / District (s)	Approx. Coordinates (Lat, Long)	Qualifying Species / Key Biodiversity Value	Primary Habitat Type	Sensitivity for MLCIP	Major Risks from Corridor/Logistics Works	Recommended Design Constraint
				specialist indicator taxa	n		edge disturbance	

Sensitivity Classification Key

V**ery High / Critical Habitat**

- Legally protected and/or contains globally threatened or range-restricted species where disturbance may cause population-level irreversible impacts. Avoidance mandatory; offsets not acceptable without redesign.

High

- Core habitat for threatened/indicator species, or irreplaceable community-protected forests. Footprint modification, timing and buffer management are essential.

Moderate–High

- Important habitats with ecological connectivity value; impacts are manageable with strict engineered & operational mitigation.

ANNEXURES IV- b: BIODIVERSITY MANAGEMENT PLAN (BMP) – TERMS OF REFERENCE

Project: Meghalaya Logistic & Connectivity Improvement Project (MLCIP)

Components: Roads, Bridges, Agro-Logistics Infrastructure (Warehouse), Ropeway Systems

1. OBJECTIVE

The objective of the Biodiversity Management Plan (BMP) is to ensure that all project activities avoid, minimize, or mitigate adverse impacts on natural habitats, key biodiversity areas (including Important Bird and Biodiversity Areas IBAs), forests, wetlands, species of conservation concern, and ecosystem services along the project corridors in Meghalaya.

The BMP will operationalize requirements under:

- ✧ World Bank ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- ✧ Government of India & Meghalaya Biodiversity, Forest and Wildlife Regulations
- ✧ IBAT / Bird Life International data on Key Biodiversity Areas & IBAs
- ✧ Project ESIA/ESMP and Corridor-specific Biodiversity Screening Report

2. SCOPE OF WORK

The Contractor / Consultant shall prepare, implement, and monitor a BMP covering the following:

2.1 Baseline Biodiversity Screening

Using IBAT/BirdLife IBA dataset, Forest Department data and primary field verification, the Contractor shall:

Identify the presence and proximity of:

- ✧ IBAs, KBAs, Protected Areas, community forests, sacred groves
- ✧ Elephant corridors, wildlife movement routes
- ✧ Riparian habitats, wetlands, and springs
- ✧ Rare, threatened, endangered (RTE) flora and fauna
- ✧ Map ecologically sensitive receptors within:
- ✧ 500 m of open road works

2.2 Impact Assessment

The ESIA Consultant shall evaluate potential impacts from:

- ✧ Earthworks, quarrying, spoil disposal, and vegetation clearance
- ✧ Bridge foundation, river training
- ✧ Worker camps, traffic movement, noise, and lighting
- ✧ Access road creation and vehicle-wash wastewater discharge

2.3 Mitigation & Management Measures

The BMP shall include:

- ✧ Habitat Avoidance Plan
- ✧ Vegetation Clearance Register & Permit Compliance
- ✧ Species Protection Measures (nesting birds, herpetofauna, pollinators)
- ✧ Elephant Corridor Protocol
- ✧ River/stream protection and turbidity control
- ✧ No-go periods during bird breeding seasons (site-specific)
- ✧ Bird flight diverters and anti-collision markers
- ✧ Emergency rescue protocol

2.4 Restoration & Offset Planning

The BMP shall include:

- ✧ Re-vegetation using native species
- ✧ Riverbank stabilization
- ✧ Assisted natural regeneration near community forests
- ✧ Offsets (only if residual impact remains)

2.5 Monitoring Plan

The BMP shall include:

- ✧ Vegetation clearance monitoring
- ✧ Bird and wildlife sightings log
- ✧ Water quality monitoring at bridge sites
- ✧ Contractor monthly compliance reporting

3. DELIVERABLES

The ESIA Consultant shall provide the following:

- ✓ D1. Biodiversity Screening Report (BSR)
- ✓ D2. Detailed Biodiversity Management Plan (BMP)
- ✓ D3. Biodiversity Restoration Plan (BRP)
- ✓ D4. Site-specific Checklists before each construction stage
- ✓ D5. Monthly Biodiversity Compliance Reports
- ✓ D6. Training Plan & Records for all workers

This BMP must be approved by the Supervision Consultant & PIU Environmental Specialist prior to commencement of site works.

Biodiversity Management Plan (BMP) (Table of Contents)
(Roads & Bridges)

Executive Summary

1. Introduction
2. Policy, Legal and Institutional Framework
3. Project Description
4. Ecological Baseline
5. Biodiversity Screening and Risk Categorization
6. Critical Habitat Assessment (ESS6)
7. Elephant Corridor Assessment
8. Impact Assessment
9. Mitigation Strategy
10. Elephant Corridor Management Plan
11. Restoration and Habitat Enhancement
12. Monitoring, Evaluation and Adaptive Management
13. Institutional Capacity and Training
14. Stakeholder Engagement and Disclosure
15. Budget and Resource Allocation
16. Compliance, Enforcement and Reporting
17. Conclusions and Commitments

Annexures

ANNEXURES IV- c: BIODIVERSITY PROTECTION MEASURES TO BE INCLUDED IN THE CONTRACT

1 Prohibited Activities

- ✧ Clearing vegetation beyond demarcated limits
- ✧ Extraction of fuelwood, hunting, trapping, and fishing
- ✧ Damage to nests, burrows, beehives, and roosting sites
- ✧ Disposal of spoil in forest areas or water bodies

2 Mandatory Requirements

- ✧ Use of native species for all plantations
- ✧ Wildlife-friendly worksite management
- ✧ Noise restrictions near IBAs/elephant routes
- ✧ Work-hour restrictions: 6 AM–6 PM near sensitive forest edges
- ✧ Dust suppression near forest patches
- ✧ Spill prevention plans

3. REPORTING AND AUDIT REQUIREMENTS

- ✧ Weekly internal monitoring by Contractor
- ✧ Monthly compliance reports
- ✧ Quarterly biodiversity audits by the Supervision Consultant
- ✧ Six-monthly reports to PIU/World Bank
- ✧ Serious non-compliance may result in:
- ✧ Suspension of works
- ✧ Withholding of payments
- ✧ Replacement of Contractor's Biodiversity Officer

4. TRAINING & CAPACITY BUILDING

The Contractor shall conduct mandatory training for:

- ✧ Wildlife interaction protocols
- ✧ Elephant encounter safety
- ✧ Vegetation clearance methods

- ✧ Spill and waste management
- ✧ Minimum training frequency: quarterly.

ANNEXURES IV- d: CONTRACT CLAUSES (TO BE DIRECTLY INSERTED INTO BID DOCUMENTS)

Clause 1: Preparation of BMP

"The Contractor shall prepare and implement a site-specific Biodiversity Management Plan (BMP) in accordance with this ToR, ESS6, ESMP and statutory requirements. No mobilization or site clearing shall commence until the BMP is approved by the Engineer."

Clause 2: Appointment of Biodiversity Expert

"The Contractor shall appoint a qualified Biodiversity/Environmental Expert (minimum 5 years ecological experience) before mobilization."

Clause 3: Vegetation Clearance Restriction

"No vegetation clearance is permitted without prior written approval from the Engineer based on the certified Vegetation Clearance Register."

Clause 4: Wildlife Protection

"The Contractor shall ensure zero harm to wildlife, including birds, herpetofauna, mammals and pollinators. Workers must not disturb nests, dens, roosts, or wildlife movement."

Clause 5: Ropeway Bird Diverters

"All ropeway alignments intersecting known bird-movement paths or located within 5 km of an IBA must install bird diverters as specified."

Clause 6: Penalty for Non-Compliance

"Any breach of biodiversity safeguards shall attract penalties up to 1% of Contract Value per event, including suspension of works."

ANNEXURE V: Occupational Health & Safety Framework

1. Introduction

The Meghalaya Logistics and Corridor Improvement Project (MLCIP), located in steep, high rainfall, and geologically sensitive terrain, demands robust occupational health and safety (OHS) measures.

This OHS Framework, grounded in comprehensive Hazard Identification and Risk Assessment (HIRA), fully complies with Indian legislation, IFC EHS Guidelines, relevant IS codes, and ISO 45001:2018. It prioritizes preventive and mitigative controls, permit-to-work systems, Safe Work Method Statements, emergency preparedness, contractor management, and worker welfare to address risks in construction, ropeway operations, warehousing, traffic management, and environmental protection.

2. Key OHS Standards and Legal Applicability

2.1 Legal and Regulatory Framework

The MLCIP shall comply with all relevant provisions of the Government of India's consolidated labour codes, which subsume and modernize the following legacy enactments, alongside other applicable national regulations:

- Occupational Safety, Health and Working Conditions Code, 2020 (subsuming the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996, the Factories Act, 1948 applicable to warehouses and processing units and the Contract Labour (Regulation and Abolition) Act, 1970)
- Code on Social Security, 2020 (subsuming the Employees' Compensation Act, 1923 formerly the Workmen's Compensation Act, 1923 and the Building and Other Construction Workers' Welfare Cess Act, 1996)
- Central Motor Vehicles Rules, 1989
- Indian Electricity Rules, 1956

In eco-sensitive zones, forest and wildlife protection advisories will be observed. The framework further incorporates internationally recognized practices.

2.2 General Safety Obligations:

Contractors shall implement HIRA, JSA, SWMS, permit-to-work systems (for work at height, electrical tasks, confined spaces, hot work, etc.), lifting plans, traffic management plans, and comprehensive emergency response procedures.

All workers must receive site-specific OHS induction, appropriate PPE, task-specific training, and medical fitness certification for high-risk tasks. Dedicated safety officers shall be deployed at each site, conducting monthly audits and quarterly reviews, with enforceable contractual safety clauses. High-risk activities shall not commence without a valid permit and direct supervision.

3. MLCIP Occupational Health and Safety Policy:

The MLCIP is committed to delivering infrastructure without accidents or occupational illnesses through systematic hazard identification, risk elimination/substitution, continuous monitoring, engineered safeguards, safety-by-design principles, worker health protection, and strict contractor accountability.

3.1 Core Commitments:

- Zero fatalities, serious injuries, and occupational illnesses
- Integration of safety into engineering design
- Provision of safe, ergonomic workplaces
- Regular OHS training and medical surveillance
- Full contractor compliance and accountability
- Constant emergency preparedness across all facilities
- Cultivation of a strong safety culture and worker wellbeing

3.2 Guiding Principles

- Safety is the primary consideration in all decisions
- Every worker retains the right to refuse unsafe work
- 100 % compliance with PPE and permit requirements
- Preventive risk management through HIRA
- Transparent incident reporting and investigation
- Comprehensive protection of worker health and welfare

4. OHS Governance Structure

4.1 Responsibility Matrix

Role	OHS Responsibility
Chief Engineer cum Nodal Officer (PWD)	OHS oversight, safety budget approval, contractor safety enforcement
Environmental & Social Cell Head, PIU, PWD	Integration of OHS with environmental and community safety mechanisms
Environmental and Social Cell, PWD	HIRA implementation, permit validation, JSA reviews, incident reporting
Site Safety Supervisors (Contractor)	Daily safety monitoring, toolbox talks, PPE checks
EPC Contractors	Deploy safety teams, implement HIRA and SWMS, incident notification
Workers	Adhere to PPE, safety instructions, refuse unsafe activities

4.2 Review and Decision Forums

- Monthly Safety Compliance Review (SCR)
- Quarterly HIRA Revision
- Incident Investigation Committee (IIC) activated per incident
- Annual OHS Framework Review (OFR)

4.3 Safety Budget Lines

MLCIP ensures funding for:

- PPE kits
- Fall protection systems
- Emergency medical units
- Fire suppression in warehouses
- Structural tower safety systems
- Lifting equipment testing
- HIRA review workshops
- Weather safety systems

5. Safety Framework

5.1 Step-wise Implementation

The Hazard Identification and Risk Assessment (HIRA) methodology involves a systematic, step-wise implementation to ensure comprehensive safety management:

- Hazard Identification: Proactively identifying potential hazards across all project activities and environments.
- Risk Assessment: Evaluating the identified hazards to determine their potential severity and likelihood of occurrence.
- Control Definition: Developing and implementing appropriate control measures to eliminate or reduce risks to an acceptable level.
- Permit Linking: Associating specific high-risk activities with required permits to ensure necessary precautions are in place before work commences.
- Residual Risk Scoring: Re-evaluating the risk level after control measures have been implemented to ensure it is acceptable.
- Review and Update: Regularly reviewing and updating the HIRA process based on new information, incidents, or changes in project scope.

5.2 Risk Rating Criteria

The following criteria are used for rating Severity and Likelihood:

Severity	Description
1	Minor injury
2	Medical treatment
3	Lost time injury
4	Permanent disablement
5	Fatality

Likelihood	Frequency
1	Rare
2	Unlikely
3	Possible
4	Likely
5	Almost Certain

5.3 Risk Matrix

The Risk Score is calculated as: Risk Score = Severity × Likelihood

Risk Level	Score Range	Action
Low	1-5	Standard control
Medium	6-10	Supervisor approval
High	11-16	Permit required
Extreme	17-25	Stop work unless redesigned

6. Hazard Identification and Risk Control

6.1 Road Construction Risk

Major hazards associated with road construction include:

- Hill slope collapse
- Heavy vehicle rollover on bends
- Excavator-induced ground failure
- Blasting-induced vibration
- Worker slips due to algae/rain
- Powerline contact
- Asphalt burns
- Noise and dust exposure

Hazard Identification & Risk Analysis Table – Road Construction

Hazard	Cause	Impact	S	L	R	Controls	Permit
Slope collapse	Excavation during rain	Fatality/burial	5	4	20	Excavation bans during heavy rain, slope benching, retaining walls	Height/Excavation
Vehicle rollover	Sharp bends	Fatality/operator injury	5	3	15	Trained operators, speed limit 15–30 km/h, wheel chocks	No
Blasting	Quarry cutting	Hearing loss/injury	4	3	12	Controlled blasting, vibration monitoring, and siren alerts	Blasting
Asphalt burns	Hot mix handling	Severe burns	3	4	12	Gloves, safety boots, barricaded area	No

6.2 Bridge Construction Risk

Hazards in bridge construction include:

- Working at heights
- Girder collapse
- Crane failure

- Piling collapse
- River flash floods
- Welding hazards
- Rebar cuts
- Scaffolding failure

Hazard Identification & Risk Analysis Table – Bridge Construction

Hazard	Cause	Impact	S	L	R	Controls	Permit
Height fall	Pier work	Fatality	5	4	20	Lifeline, double-lanyard harness, netting	Height
Crane failure	Overload	Structural collapse	5	3	15	Load test, certified cranes, trained rigger	Lifting
Flood surge	Monsoon rivers	Drowning/impact	5	4	20	Early warning, evacuation routes	No
Welding sparks	Hot metal work	Burns/fire	3	4	12	Shields, fire watch, extinguishers	Hot work

- Electrical failure
- Height fall during tower assembly
- Rescue failure during emergency movement

Hazard Identification & Risk Analysis Table – Ropeway

Hazard	Cause	Impact	S	L	R	Control	Permit
Tower collapse	Poor foundation	Fatality/mass injury	5	3	15	IS compliance, geotech test	Tower Permit
Rope snap	Load > capacity	Fatality/goods impact	5	2	10	Daily rope inspection	No
Goods fall	Improper sling	Severe injury	4	3	12	Certified slings, trained loaders	Lifting
Rescue failure	No trained team	Fatality	5	3	15	Dedicated ropeway rescue team	Ropeway Rescue

6.3.2 Warehouse, Logistics Hub Risk

Hazards in warehousing operations:

- Confined space entry
- Forklift collision
- Racking collapse
- Fire risk
- Electrical shock
- Manual handling injury

Hazard Identification & Risk Analysis Table – Warehouse

Hazard	Cause	Impact	S	L	R	Controls	Permit
Confined entry	O2 drop	Asphyxiation/fatality	5	3	15	Gas monitor, ventilation	Confined Space
Fire	Stored materials	Fatality/site loss	4	3	12	Fire hydrants, smoke alarms	No
Gas leak	Ware house storage	Toxic exposure	5	2	10	Leak detection, respirators	No

7. Safe Work Method Statements (SWMS)

Mandatory SWMS shall be created for the following activities:

- Hill excavation
- Asphalt mixing
- Scaffolding erection
- Crane lifting
- Piling operations
- Ropeway tower installation
- Confined space cold chamber entry
- Material storage and racking
- Electrical installations
- Ropeway emergency rescue
- Traffic management

All SWMS must include the following components:

- Step-by-step hazards
- Required PPE
- Supervisor validation
- Weather ban rules
- Emergency actions

8. Contractor Safety Management Plan

8.1 Pre-Mobilization Compliance Checklist

Contractors must provide the following mandatory documentation before mobilization:

Requirement	Mandatory Documentation
Risk Register	Site-wise risk assessment
SWMS / JSA	Task-wise safe methods
Lifting Plans	Crane load and rigging
Permits	Height, Hot Work, Confined Space, Electrical, Ropeway rescue
Equipment certification	Crane, slings, harness, scaffolds
Insurance	Worker compensation
Medical fitness	Height/ropeway/cold storage personnel

8.2 Contractor Safety Clauses

Contractors shall ensure the following:

- Compliance with BOCW Act & IS codes
- Deployment of a qualified Safety Officer
- Incident reporting within 2 hours
- Subscription to monthly audits
- Weather ban adherence
- PPE issuance logs and wear compliance
- Annual ropeway and rack structural audit
- Fire safety equipment in warehouses

- First-Aid centre at every site
- Rescue teams for ropeway operations
- Road Traffic Marshals deployment

9. Worker Occupational Health & Well-being Plan

Meghalaya project conditions can induce health risks such as:

- Extreme cold in warehouse chambers
- High humidity
- Remote uphill fatigue
- Constant rainfall
- Dust inhalation
- Noise exposure
- Back strain

Controls for these risks are as follows:

Risk Type	Health Control Measure
Dust	N95 masks, water spraying
Noise	Ear muffs if >85 dB
Cold entry	10-min exposure limit + warm PPE
Fatigue	Rest every 2 hours
Manual handling	Lifting limits and training
Temperature shock	Staged acclimatization

Medical surveillance will be conducted every 6 months for high-risk workers.

10. Traffic Safety and OHS Plan

10.1 Hill Road Traffic Hazards

Hazards specific to hill road traffic include:

- Blind bends
- Rollover risk
- Slippery roads

- Fog
- Night driving risks
- Landslides
- Wildlife movement
- Mixing of public + project traffic

10.2 Traffic Control Measures

The following traffic control measures will be implemented:

- Speed limits are strictly enforced
- Retro-reflective signage
- One-way diversion where applicable
- No night work during fog/heavy rain
- Traffic marshals at haul points
- Convoy movement in remote hills

10.3 Vehicle Safety Standards

All vehicles must meet the following safety standards:

- Valid fitness and PUC certificates
- Trained hill-route drivers
- Anti-skid tires
- ABS preferred
- Reversing alarm mandatory
- First-aid kit and fire extinguisher onboard

11. Emergency Response Framework

11.1 Major Foreseeable Emergencies

The project must be prepared for the following major foreseeable emergencies:

Emergency	Relevance
Landslide	Road and tower erection
Flood	Bridge workers
Tower collapse	Ropeway

Emergency	Relevance
Fire	Construction Plants & Warehouses
Chemical leak	Road , Bridge and Warehouses

11.2 Emergency Controls

Effective emergency controls include:

- Site emergency route maps
- Mock drills quarterly
- Tower collapse rescue ropeway team
- River flood evacuation plans
- Warehouse fire response plan

The response time target for first-aid is under 4 minutes.

12. Incident Reporting & Investigation

All incidents will be classified as:

- Near Miss
- First-Aid
- LTI (Lost Time Injury)
- Major
- Fatal

Key reporting and investigation timelines are:

- Report within 2 hours
- Root Cause Analysis (RCA) within 5 days
- Corrective and Preventive Action (CAPA) plan within 10 days

12.1 Safety Monitoring & KPI Dashboard

Performance will be monitored using the following indicators:

Indicator	Target
Fatality	0
LTIFR (Lost Time Injury Frequency Rate)	<1.0

Indicator	Target
Permit compliance	100%
PPE compliance	>98%

14. Review & Continuous Improvement:

The Hazard Identification & Risk Analysis process under OHS Framework will be reviewed and improved through:

- Revision every 3 months or after a major incident.
- Integration of weather risk live monitoring.
- Feedback loop from contractor audits.
- Improvement suggestions logged into the Safety Register.

The OHS Framework establishes a robust, structured safety ecosystem for all MLCIP infrastructure projects, from hill roads and bridges to ropeway-based agro-logistics facilities. Built on systematic Hazard Identification and Risk Assessment, permit-to-work controls, comprehensive worker welfare measures, and emergency preparedness, the framework proactively prevents risks, enforces contractor accountability, and safeguards against occupational illnesses across Meghalaya's challenging terrain, delivering sustainable development without compromise to worker safety.

ANNEXURES V- a: Terms of Reference (TOR) Contractor Occupational Health and Safety (OHS) Plan – MLCIP

(With Integrated HIRA and Hill Logistics/Connectivity Considerations)

Objective

Develop and implement a site-specific OHS Plan for MLCIP road, bridge, and agro-logistics infrastructure to achieve zero fatalities, prevent injuries, protect health, and ensure safe operations in hilly, rain-prone terrain through HIRA-based risk controls.

Scope of Work

Prepare and maintain a comprehensive Hazard Identification & Risk Analysis register for all activities and locations, including hill roads, heavy equipment, excavations, working at heights, lifting, confined spaces, electrical works, warehouses, ropeways, and logistics hubs.

Develop a Contractor OHS Plan compliant with Indian regulations, relevant IS standards, IFC/World Bank EHS Guidelines, and Meghalaya-specific terrain risks.

Key Deliverables

- Hazard Identification & Risk Analysis Register (severity, likelihood, rating, controls, residual risk).
- Self-Work Method Statement (SWMS)/Job Safety Analysis (JSA) for all high-risk tasks.
- Permit-to-Work system (height, hot work, lifting, confined space, electrical).
- Equipment certification and inspection logs.
- Hill Route Traffic and Haul Road Safety Plan (marshalling, speed limits, weather bans).
- Ropeway OHS Plan (tower erection, rope inspection, emergency rescue).
- Warehouse Safety Plan (fire, racking, gas/oxygen monitoring, ventilation).
- Emergency Response and Evacuation Plan (landslide, flood, fire, chemical, collapse).
- OHS induction/training records.
- Medical fitness programme for high-risk workers.
- Incident/near-miss reporting with Root Cause Analysis (RCA) and Corrective & Preventing Action (CAPA).

Methodology

- Apply Hierarchy of Controls (Elimination → Substitution → Engineering → Administrative → PPE).
- Conduct baseline Hazard Identification & Risk Analysis before mobilization; update quarterly or post-incident.
- Use data-driven monitoring and periodic risk reviews.

- OHS Staffing and Responsibilities
- Deploy one Project Safety Officer and adequate Site Safety Supervisors.
- Provide 24/7 oversight during critical operations, monsoon, and ropeway works.
- Ensure subcontractor OHS compliance.

Monitoring and Reporting

- Report incidents within 2 hours; complete RCA within 5 days; implement CAPA within 10 days.
- Submit monthly Safety Performance Audit reports.
- Conduct quarterly HIRA revisions and Safety Compliance Review meetings.
- Maintain KPIs: Zero fatalities, LTIFR < 1.0, PPE/permit compliance > 98%.

Meghalaya-Specific Controls

- Weather-based shutdowns (rain, fog, landslide, flood).
- Convoy systems, reversing alarms, anti-skid tyres, trained hill drivers.
- Wildlife movement advisories at forest sites.
- Fatigue and hypothermia/heat-stress management.

Compliance and Obligations

- OHS Plan shall be contract-binding, documented, auditable, and approved by PWD/PIU.
- No high-risk work without valid permit and supervisor clearance.
- Maintain insurance and health surveillance for all workers.

Approval Process

Submission → PIU Safety Cell review → Revisions (if required) → Final approval → Implementation → Monthly/quarterly monitoring.

ANNEXURES V- b: Contractor Compliance Checklists on OHS plan — MLCIP

Pre-Mobilization Compliance Checklist

Item	Status (✓ / ✗ /N/A)	Remarks / Corrective Action
OHS Plan submitted & approved		
Hazard Identification & Risk Analysis / Risk Register submitted		
SWMS submitted for high-risk works		
Safety personnel list & qualifications		
Insurance & compensation docs		
Equipment & test certificates		
Permit templates ready		
Emergency Response Plan		
Traffic Management Plan		
Forest/Wildlife clearances		

HIRA / SWMS Compliance Checklist

Item	Status	Remarks
HIRA accessible on site		
SWMS available for excavation, lifting, height, hot work, confined space		
SWMS signed by supervisor & workers		
Residual risk recorded & controls implemented		
HIRA reviewed after changes / monthly		

Permit to Work (PTW) Checklist

Permit Type	Issued (Y/N)	Permit No.	Validity	Supervisor Approval
Height Work Permit				
Confined Space Permit				
Hot Work Permit				
Electrical Permit/LOTO				
Lifting Permit				
Excavation Permit				
Ropeway Rescue Drill Permit				

Ropeway-Specific Compliance Checklist

Item	Status	Remarks
Foundation & geotech test reports		
Tower bolts & anchor checks		
Cable NDT & inspection logs		
Manufacturer maintenance followed		
Carrier load tests		
Rescue team trained		
Exclusion zones enforced		

Warehouse Compliance Checklist

Item	Status	Remarks
Racking load labels		
Fire system tested		
Forklift operators certified		
Chamber confined-space permit system		
Gas leak detectors tested		
Electrical earthing checked		

Monthly Contractor Compliance Audit

Area of Audit	Compliant (Y/N/Partial)	Major Non-Conformances	Responsibility (Role/Agency)	Verification Evidence	Audit Remarks
Pre-mobilization documents				Approved OHS Plan, HIRA, Insurance, TMP, SWMS	
Site induction & training compliance				Attendance, inductions, medical fitness, toolbox	
HIRA & SWMS implementation				Accessible risk register, signed SWMS, residual controls	
Permit-to-Work (PTW) compliance				Height, hot work, lifting, electrical/LOTO, confined space	
PPE & worker welfare				Helmet, boots, harness, hi-vis, rest, water,	

				sanitation	
Plant & equipment safety				Certifications, brake tests, SWL tags, earthing, service logs	
Lifting & rigging controls				Approved lift plan, riggers certified, exclusion zones	
Hill road traffic management				TMP signage, marshals, speed & driver fitness	
Emergency preparedness & drills				Mock drills, rescue/first-aid readiness	
Environmental & wildlife safeguards				Erosion/dust controls, fuel bunding, wildlife signage	

Audit Conducted By: _____

Audit Month/Year: _____

Date of Audit: _____

Contractor Representative (Sign/Date)	Project Safety Officer (Sign/Date)	PWD/PIU Approval (Sign/Date)

Overall Compliance Score (%): _____

CAPA or HIRA Revision Required: Yes / No

Next Audit Cycle Date: _____

Annexure –VI-A

Sl. No	Budget Head	Budget Sub Head	Subhead Description	Reference	partici pants	Unit	Unit Cost in INR/ Unit	Unit Cost Description	Total Amount in INR
	Human Resource								
1.1	HR	PIU Specialists	Environmental Safeguards Specialist (Full-time, 48 months)	ESCP A.a		48	100,000	Monthly remuneration incl. TDS/overheads	4,800,000
1.2	HR	PIU Specialists	Social Safeguards Specialist (Full-time, 48 months)	ESCP A.a		48	100,000	Monthly remuneration incl. TDS/overheads	4,800,000
1.3	HR	Specialized Staff	Gender/GBV Specialist (Full-time, 48 months)	ESCP A.d		48	80,000	Monthly remuneration incl. TDS/overheads	3,840,000
1.4	HR	Specialized Staff	Biodiversity Specialist (Full-time, 48 months)	ESCP A.d		48	80,000	Monthly remuneration incl. TDS/overheads	3,840,000
1.5	HR	Specialized Staff	Labour Specialist (Full-time, 48 months)	ESCP A.d		48	80,000	Monthly remuneration incl. TDS/overheads	3,840,000
1.6	HR	Specialized Staff	Tribal Development Specialist (Full-time, 48 months)	ESCP A.d		48	80,000	Monthly remuneration incl. TDS/overheads	3,840,000
1.7	HR	Support Staff	E&S Field/Documentation Assistants (2 Nos, 48 months)	ESCP A.a		96	40,000	Monthly remuneration per support staff	3,840,000
1.8	HR	GRM Staff	GRM Nodal Officer (Full-time, 48 months)	ESCP B.b / ESS10		48	70,000	Monthly remuneration incl. reporting & coordination	3,360,000

Sl. No	Budget Head	Budget Sub Head	Subhead Description	Reference	partici pants	Unit	Unit Cost in INR/ Unit	Unit Cost Description	Total Amount in INR
1.9	HR	MIS / Reporting Staff	E&S MIS / Reporting Officer (Full-time, 48 months)	ESCP C&D		48	70,000	Monthly remuneration (MIS, dashboards, reporting)	3,360,000
1.1	HR	Operational support	Vehicle hire & local travel for E&S Cell (4 years)	Project admin / ESCP		4	1,000,000	Annual vehicle hire + fuel + driver + local travel	4,000,000
1.11	HR	Operational support	Field expenses for consultations/verification (4 years)	SEP/GRM /FPIC		4	1,000,000	Annual field expenses: travel, local logistics, minor hiring	4,000,000
Sub-Total (HR)									**43,520,000**
2.1	Trgs	2a General	ESF/ESMF Orientation: MPWD (HQ + 29 divisions)	ESCP B.b; ESMF 12.1	(HQ + 29 divisions) + contractors	73	3,000	Venue + kit + refreshments + setup	219,000
2.2	Trgs	2a General	Orientation of ESMF & ESMP: Division/District staff (29 EEs + 7 SEs)	ESCP B.b; ESMF 12.1		36	3,000	Venue + kit + refreshments + setup	108,000
2.3	Trgs	2a General	Orientation of ESMF & ESMP: Contractor E&S Officers	ESCP B.b; ESMF 12.1	there are 29 divisions… 7 SEs... PWD HQ(CE/ACE/ 2	60	1,000	Venue + kit + refreshments + setup	60,000

Sl. No	Budget Head	Budget Sub Head	Subhead Description	Reference	partici pants	Unit	Unit Cost in INR/ Unit	Unit Cost Description	Total Amount in INR
					NODAL/ 2 AEEs/ 6 Specialists)				
2.4	Trgs	2a General	Refresher on ESMF/ESMP (annual for 3 years)	ESCP B.b; ESMF 12.1		108	3,000	36 participants × 3 years; venue + kit + refreshments	324,000
2.5	Trgs	2a General	SEP implementation training – State level (1 day)	ESS10 / SEP; ESCP	there are 29 divisions… 7 SEs... PWD HQ(CE/ACE/ 2 NODAL/ 2 AEEs/ 6 Specialists)	1	400,000	State workshop: venue + materials + facilitation	400,000
2.6	Trgs	2a General	GRM operations training (setup, 2 days)	ESS10 / GRM; ESCP		1	800,000	SOP rollout + simulation exercises + materials	800,000

Sl. No	Budget Head	Budget Sub Head	Subhead Description	Reference	partici pants	Unit	Unit Cost in INR/ Unit	Unit Cost Description	Total Amount in INR
2.7	Trgs	2a General	GRM refresher + analytics clinic (annual, 4 years)	ESS10 / GRM; ESCP		4	300,000	Annual refresher + analytics review + reporting	1,200,000
2.8	Trgs	2b Specialized	Specialist trainings/exposure (6 events) for E&S Cell	ESCP B.b; ESMF 12.1		6	700,000	External training incl. fee + travel + stay	4,200,000
2.9	Trgs	2b Specialized	OHS training by National Safety Council (29 divisions; 2-year cycle)	ESCP 2.2; ESMF 6.3		82	3,000	Trainer fee + logistics	246,000
2.10	Trgs	2b Specialized	GBV & SEA/SH workshop (E&S officers + PWD engineers)	ESCP B.c; ESMF 12.1		96	2,440	Venue + kit + refreshments + setup	234,240
2.11	Trgs	2b Specialized	SEA/SH-sensitive grievance handling + referral training (1 day)	ESS10 / SEA-SH; ESCP		1	300,000	Facilitator fee + venue + materials	300,000
2.12	Trgs	2b Specialized	SEA/SH prevention training for contractor managers (per package)	ESS2 / SEA-SH; ESCP		23	100,000	Pre-mobilization session: CoC + sanctions + reporting	2,300,000
2.13	Trgs	2b Specialized	SHG training workshops (5 SHGs × 23 projects)	ESCP B.c; ESMF 12.1		2,500	1,008	Venue + kit + refreshments + setup	2,520,000
2.14	Trgs	2b Specialized	FPIC + Good Faith Negotiation training (2 days)	ESS7 / IPPF; ESCP		1	800,000	Facilitator fee + venue + materials + travel	800,000
2.15	Trgs	2b Specialized	Workzone traffic safety training (PWD+CSC+ PMC+contractor+police+educational institutions+community)	ESS4 / ESMP; ESCP		23	150,000	TMP + signage + diversion management + incident response	3,450,000
Sub-Total (Trainings)									**17,161,240**

Sl. No	Budget Head	Budget Sub Head	Subhead Description	Reference	partici pants	Unit	Unit Cost in INR/ Unit	Unit Cost Description	Total Amount in INR
3	IEC and training material cost	IEC	IEC materials (GBV/SEA/HIV-AIDS/EHS): posters & brochures, FGDs/consultations with communities (SEP + FPIC support), GRM Boards/Posters (sites + offices)	ESCP 6.1; ESMF 6.4, ESS10, SEP, WBG EHS/ESCP		100	10,000	Design + translation + printing (starter set)	11,630,000
Sub-Total (IEC and training material cost)									**11,630,000**
4.1	implementation	RAP implementation	RAP Implementation Agency (including RAP disclosure support)	ESCP 5.1(a),(b); ESMF Ch.9		4		Lump sum	8,367,975
4.2	implementation	SEP	SEP implementation expenditure	ESS10; ESCP C&D					2,32,00,000
4.3	implementation	IPPF	IIPF implementation expenditure	ESS-7					1,52,90,000
4.4	implementation	IPDP	IPDP Implementation Expenditure	ESS - 7					2,78,30,000
Sub total (implemenation cost)									**7,46,87,975**
5.1	Monitoring and reporting	Digital reporting	App based field reporting – App development (KoBo)	ESCP C&D; ESMF 13.3		1	500,000	One-time development	500,000
5.2	Monitoring and reporting	Digital reporting	App based field reporting – Maintenance fee	ESCP C&D; ESMF 13.3		48	22,000	Monthly maintenance (48 months)	1,056,000
5.3	Monitoring and reporting	Labour compliance	Labour Compliance Tracking (LMP MIS/inspection support)	ESCP 2.1; ESMF Ch.8		1	500,000	Lump sum	500,000

Sl. No	Budget Head	Budget Sub Head	Subhead Description	Reference	partici pants	Unit	Unit Cost in INR/ Unit	Unit Cost Description	Total Amount in INR
5.4	Monitoring and reporting	Audits	Mid Term Audit (ESMF compliance)	ESMF 13.2		1	3,000,000	Lump sum	3,000,000
5.5	Monitoring and reporting	Audits	End Term Audit (ESMF compliance)	ESMF 13.2		1	3,000,000	Lump sum	3,000,000
5.6	Monitoring and reporting	Specialised studies	Biodiversity Management Plan (as applicable)	ESCP 6.1; ESMF 6.5		1	5,000,000	Lump sum	5,000,000
Sub-Total (Monitoring & Reporting)									**13,056,000**
			Total Budget						**16,00,55,215**
			Contingency (5% of Total Budget)						**8002760.75**
			Grand Total (INR)						**16,80,57,976**

Annexure –V-B – SEP

Budget Category	Quantity	Unit Costs (INR)	Frequency	Duration	Total Costs (INR)	Remarks
1. Estimated staff salaries and related expenses						
1a. Communications consultant*	Nos	60,000	Monthly	60 months	36,00,000	Consultant engaged for SEP implementation support
1b. Travel costs for staff	Nos	20,000	Quarterly	60 months	12,00,000	For stakeholder consultations, Grievance Redressal Mechanism training, and monitoring
1c. Estimated salaries for Community Liaison Officers*	3 officers	60,000	Monthly	60 months	1,08,00,000	Responsible for village-level engagement and FPIC
2. Events						
2a. Organization of focus groups, workshops	36 events	5,000	Need basis	60 months	3,00,000	Includes venue, refreshments, logistics, and facilitation

Budget Category	Quantity	Unit Costs (INR)	Frequency	Duration	Total Costs (INR)	Remarks
3. Communication campaigns						
3a. Posters, flyers	15000 copies	100	Need basis	60 months	15,00,000	Awareness materials on project, GRM, and GBV
3b. Social media campaign	40 Campaigns	25,000	Need basis	60 months	10,00,000	Social media posts, radio jingles, short videos
4. Trainings						
4a. Training on social/ environmental issues for PIU and contractor staff	9 trainings	50,000	Need basis	60 months	4,50,000	Covers ESMP, SEP, and ESHS topics
4b. Training on gender-based violence (GBV) for Project Implementing Unit (PIU) and contractor staff	6 trainings	50,000	Need basis	60 months	3,00,000	For PIU, contractors, and workers
5. Independent Social Audit and Beneficiary Feedback						
5a. Mid-term independent social audit	5 surveys	2,50,000	Every year	Mid-term	12,50,000	Third-party verification of SEP, FPIC, GRM, inclusion outcomes
5b. End-term independent social audit	1 survey	2,50,000	Need basis	Project end	2,50,000	Validation of social

Budget Category	Quantity	Unit Costs (INR)	Frequency	Duration	Total Costs (INR)	Remarks
						outcomes and beneficiary satisfaction
6. Grievance Mechanism						
6a. [E.g., training of Grievance Redressal Mechanism committees]	10 sessions	50,000	Need basis	60 months	5,00,000	Grievance Redressal Mechanism awareness and handling capacity building
6b. [E.g., suggestion boxes in villages]	100 units	3,000	Need basis	One-time	3,00,000	Installation in community offices, markets
6c. [E.g., Grievance Redressal Mechanism communication materials]	15000 units	100	Need basis	One-time	15,00,000	Public disclosure on Grievance Redressal Mechanism and hotline info
7. Other expenses						
7a. [Miscellaneous]	Lump sum	2,50,000		One-time	2,50,000	For unforeseen communication/travel costs
GRAND TOTAL					**2,32,00,000**	

Annexure VI-C -IPPF

Sl. No.	Activity / Budget Head	Description of Cost Items	Action	Unit	Quantity	Unit Cost (INR)	Total Cost (INR)
1	HR	Engagement of a Tribal Expert / Indigenous Peoples Specialist at the PMU level to support IPPF and IPDP implementation, facilitate FPIC, coordinate with ADCs and traditional institutions, and oversee monitoring, reporting, and compliance with ESS7.	PMU	Person-Month	36	150000	5400000
2	Training	Community-level training programs for Indigenous Peoples, covering project benefits, the FPIC process, livelihood enhancement, road safety, inclusion, and grievance redress mechanisms.	PIU/DPIU with Consultants	Programs	30	200000	6000000
3	IEC, Training Materials, and Translation	Preparation and dissemination of culturally appropriate IEC materials; translation into Khasi, Garo, and Jaintia languages; and printing of brochures, posters, and training manuals.	PIU	Lump Sum	1	1000000	1000000
4	Exposure Visits / Experiential Learning	Exposure visits and cross-learning programs for tribal representatives and community leaders to explore similar projects and best practices.	PIU/ DPIU	Program	6	250000	1500000
	Subtotal (A)						13900000
5	Contingency (10%)	Provision for unforeseen costs, additional consultations, extended FPIC processes, inflation, or supplementary training needs.	PIU	Lump Sum	-	-	1390000
	Grand Total (IPPF Budget)						15290000

Annexure VI-D -IPDP

Sl No	Budget head / sub-head	Assumptions (unit cost + basis; no totals in assumptions)	Responsible entity	Units	Quantity	Cost per Sub-Project (₹)	Total for 23 projects (₹)
1.	FPIC approach paper (common)	1 common FPIC approach note applicable across all Sub-Projects (step-by-step FPIC process, roles, meeting templates, disclosure formats, documentation checklist). Budgeted as a standard reusable note.	Independent Consultant	Sub-Project	1	10,000	2,30,000[8]
2.	FPIC consultations (participant cost)	4 rounds/Sub-Project; 50 participants/round; participant support @ ₹100/person to cover refreshments/basic participation costs only (venue/logistics handled separately).	Independent Consultant /PIU Support	Participant	200	20,000	4,60,000
3.	Information disclosure	Sub-Project-wise disclosure package: translation into local language + printing of notices/handouts + placement at community locations (village office/community hall) using standard templates.	Independent Consultant / DPR Consultant / PIU Support	Sub-Project	1	30,000	6,90,000
4.	Facilitation support (Lead + Translator only)	For each FPIC meeting: Facilitation Lead ₹25,000 + Translator ₹15,000. Includes meeting preparation, facilitation, translation during meeting, and immediate post-meeting documentation support.	Independent Consultant / DPR Consultant / PIU Support	Meeting	4	1,60,000	36,80,000

Sl No	Budget head / sub-head	Assumptions (unit cost + basis; no totals in assumptions)	Responsible entity	Units	Quantity	Cost per Sub-Project (₹)	Total for 23 projects (₹)
5.	Travel (field movement)	Vehicle hire + fuel + driver + local movement for FPIC meetings and follow-ups; covers field visits linked to disclosure and documentation.	Independent Consultant / DPR Consultant	Sub-Project	1	2,00,000	46,00,000
6.	Community hall (venue)	Community hall rental @ ₹5,000 per meeting.	Independent Consultant / DPR Consultant / PIU Support	Meeting	4	20,000	4,60,000
7.	Power backup + basic equipment	Power backup/basic equipment @ ₹5,000 per meeting (e.g., small generator/backup, PA/basic setup, stationery for the meeting).	Independent Consultant / DPR Consultant/	Meeting	4	20,000	4,60,000
8.	FPIC documentation	Sub-Project-wise documentation pack: ₹10,000/Sub-Project for MoM, attendance, photo/video, filing + ₹5,000/Sub-Project share for consolidated compilation/reporting (indexing, annexures, standard formatting).	Independent Consultant	Sub-Project	1	15,000	3,45,000
9.	Capacity building -	Common modules/handouts + translation + printing (checklists, GRM note, FPIC do's/don'ts).	Independent Consultant /	Sub-Project	1	5,000	1,15,000

Sl No	Budget head / sub-head	Assumptions (unit cost + basis; no totals in assumptions)	Responsible entity	Units	Quantity	Cost per Sub-Project (₹)	Total for 23 projects (₹)
	training materials	Budgeted at ₹5,000/Sub-Project as standard distribution material.	DPR Consultant/ PMC/ CSC				
10.	IPP implementation (provision)	Minimal provision per Sub-Project for micro-measures emerging from FPIC outcomes (small inclusion/support actions)	Independent Consultant / DPR Consultant / PMC/ CSC	Sub-Project	1	5,00,000	1,15,00,000
11.	Monitoring & Evaluation	Quarterly PIU travel: 4 trips/Sub-Project/year @ ₹20,000/trip to enable field verification, compliance checks, and closure documentation; includes basic reporting.	PMU/ PIU/ PMC	Sub-Project	1	1,20,000	27,60,000
12.	Sub-Total					11,00,000	2,53,00,000
	Contingency (10%)	Fixed at 10% of the per-Sub-Project subtotal (excluding contingency) to cover additional follow-ups, extra translation/printing, weather delays, and unplanned stakeholder meetings.	PMU/PIU	%	10%	1,10,000	25,30,000
	GRAND TOTAL					**12,10,000**	**2,78,30,000**

Annexure VI-E -RAP

SECTION A: REMUNERATION

Sl. No.	Position	Required months	Remuneration rate in Rs	Amount in Rs	Remarks
1	Team Leader	18	60,000.00	1080000	Monthly Salary
2	Gender Expert	18	50,000.00	900000	Monthly Salary
3	Livelihood Expert	18	50,000.00	900000	Monthly Salary
4	Community Expert	18	30,000.00	540000	Monthly Salary
5	Office Staff (2 Nos)	18	30,000.00	1080000	Monthly Salary
	Total Estimated Remuneration Budget			**4500000**	

SECTION B: REIMBURSABLE EXPENSES						
Sl. No.	**Type of Reimbursable Expenses**	**Unit**	**Unit Cost (In Rs)**	**Total No of People (Approx)**	**Total No of Days / Kilometers / Workshops (Approx)**	**Indian Rupee (INR)**
1	Field Allowance for Officials	Day	2,000.00	6	240	480000
2	Accommodation	Day	1,500.00	4	80	120000
3	Report Printing	No.	5,000.00	-	30	150000
4	Vehicle Local Transport & POL (Garo Hills)	Per Trip	12,000.00	-	80	960000
5	Vehicle Local Transport & POL (Ri-Bhoi, Khasi, Jaintia Hills)	Per Trip	12,000.00	-	45	540000
6	Field Visits / Data Collection / Reconnaissance Survey	Per Kilometer	250	-	650	162500
7	Public Consultation	Per Project	10,000.00	-	60	600000
8	Miscellaneous	Lumpsum	1	-	457000	457000
	Total					**3469500**
	Sum of Section A and Section B					7969500
					contingency 5%	398475
					Grand total	**8367975**