



Construction of Bio Fertilizer and  
Bio-pesticide Unit

# **ENVIRONMENT AND SOCIAL MANAGEMENT PLAN**



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## Contents

|                                                                                                          |    |
|----------------------------------------------------------------------------------------------------------|----|
| 1. Executive Summary.....                                                                                | 6  |
| 1.1 Purpose of the Environmental and Social Management Plan (ESMP).....                                  | 7  |
| 1.2 Risk Categorization (Moderate Risk – Category B) .....                                               | 8  |
| Figure 1: Risk Categorization for Construction of Bio fertilizer and Bio Pesticide Unit in Wahiejar..... | 9  |
| 1.3 Summary of Key E&S Risks and Proposed Mitigation.....                                                | 10 |
| 2. Project Information.....                                                                              | 11 |
| 2.1 Background on SLM Project.....                                                                       | 11 |
| 2.1.1 Justification of the Project.....                                                                  | 11 |
| 2.1.2 Project Objectives.....                                                                            | 12 |
| 2.1.3 Project Components.....                                                                            | 12 |
| 2.1.4 Project Stakeholders.....                                                                          | 13 |
| 2.2 Sub-Project Description.....                                                                         | 13 |
| 2.2.1 Project Title and Location.....                                                                    | 13 |
| 2.2.2 Objective and Relevance .....                                                                      | 13 |
| 2.2.3 Physical Components and Construction Details.....                                                  | 13 |
| 2.2.4 Machinery and Operational Inputs.....                                                              | 14 |
| 2.2.5 Timeline and Implementing Partners.....                                                            | 14 |
| Table 1: Timeline with key activities.....                                                               | 14 |
| 2.2.6 Implementing partners include.....                                                                 | 14 |
| Table 2: Roles of Implementing Partners.....                                                             | 14 |
| 3. Implementation: Organizations, Roles and Responsibilities.....                                        | 16 |
| 3.1 Institutional Arrangement.....                                                                       | 16 |
| Figure 2: Organizational arrangement.....                                                                | 16 |
| 3.2 The PMU.....                                                                                         | 17 |
| 3.3 Contractors.....                                                                                     | 17 |
| 3.3.1 Contractors Role.....                                                                              | 17 |
| 3.3.2 Contractor Code of Conduct.....                                                                    | 18 |

|                                                                                |    |
|--------------------------------------------------------------------------------|----|
| 3.3.3 Monitoring of Contractor Compliance.....                                 | 19 |
| 3.4 Implementation Management Consultant.....                                  | 19 |
| 3.5 Non-Governmental Organizations (NGOs).....                                 | 19 |
| 3.6 Training and Capacity Building.....                                        | 19 |
| 3.7 Contractor Management .....                                                | 20 |
| 3.8 Management of Labour Influx.....                                           | 21 |
| 4. Legal and Institutional Framework.....                                      | 23 |
| 4.1 Applicable National Environmental, Labor, and Social Laws.....             | 23 |
| 4.1.1 Environmental laws.....                                                  | 23 |
| Table 3: Environmental Laws.....                                               | 23 |
| 4.1.2 Labour Codes/ Acts.....                                                  | 26 |
| Table 4: Labor Codes/ Acts.....                                                | 26 |
| 4.1.3 Social Law.....                                                          | 27 |
| Table 5: Social laws.....                                                      | 27 |
| 4.2 KfW Sustainability Guidelines and IFC Performance Standards Alignment..... | 28 |
| Table 6: KfW principles and the relevant IFC Performance Standards.....        | 28 |
| 4.2.1 Additional Compliance with IFC PS5 and PS8.....                          | 29 |
| 4.3 Other International Conventions and Frameworks.....                        | 29 |
| Table 7: International conventions relevant to the project.....                | 29 |
| 5. Baseline Environmental and Social Conditions.....                           | 31 |
| 5.1 Land Use and Ownership.....                                                | 31 |
| 5.2 Hydrology and Water Use.....                                               | 31 |
| 5.3 Biodiversity and Vegetation.....                                           | 32 |
| 5.3.1 Baseline Biodiversity Record (Indicative).....                           | 33 |
| Table 8: Baseline biodiversity record .....                                    | 33 |
| 5.4 Local Demographics and Livelihoods.....                                    | 33 |
| 5.5 Cultural and Tribal Context.....                                           | 34 |
| 6. Risk Categorization and Rationale.....                                      | 36 |

|                                                               |    |
|---------------------------------------------------------------|----|
| 6.1 Risk Category: B – Moderate Risk.....                     | 36 |
| 6.2 Justification for Moderate Risk Classification.....       | 36 |
| Table 9: Risk factor classification.....                      | 36 |
| 6.3 Climate Change and Vulnerability Considerations.....      | 37 |
| 6.3.1 GHG Estimation and Climate Co-Benefits.....             | 37 |
| 6.4 Cumulative Impact Assessment (CIA).....                   | 38 |
| Table 10: Environment and social observation summary .....    | 39 |
| 7. Stakeholder Engagement and FPIC.....                       | 41 |
| 7.1 Introduction.....                                         | 41 |
| 7.2 Stakeholder Engagement Objectives.....                    | 41 |
| 7.3 Stakeholder Mapping.....                                  | 41 |
| Table 11: Stakeholder Mapping.....                            | 41 |
| 7.4 Stakeholder Engagement Activities.....                    | 42 |
| Table 12: Stakeholder engagement activities.....              | 42 |
| 7.5 Information Disclosure Platforms.....                     | 42 |
| 7.6 Stakeholder Feedback and Monitoring Plan.....             | 43 |
| Table 13: Stakeholder feedback and monitoring plan.....       | 43 |
| 7.7 Gender Action Plan (GAP).....                             | 43 |
| Table 14: Key actions under GAP.....                          | 44 |
| 7.7.1 Community Outreach and Sensitization.....               | 44 |
| 7.7.2 Linkage with Livelihood Promotion.....                  | 44 |
| 8. Identified Environmental and Social Risks and Impacts..... | 45 |
| 9. Environmental and Social Management Plan Matrix.....       | 47 |
| Table 15: ESMP Matrix.....                                    | 47 |
| 10. Budget for ESMP Implementation.....                       | 49 |
| Table 16: Budget for ESMP activities.....                     | 49 |
| 11. ESMP Implementation and Responsibilities.....             | 50 |
| Table 17: ESMP Implementation and responsibilities.....       | 50 |

|                                                                         |    |
|-------------------------------------------------------------------------|----|
| 12. Grievance Redress Mechanism.....                                    | 51 |
| 12.1 Overview.....                                                      | 51 |
| 12.2 MBMA GRM Protocol.....                                             | 51 |
| 12.3 Options to File Complaints.....                                    | 52 |
| 12.4 Complaint Flow Structure.....                                      | 52 |
| 12.4 Flow of Complaint.....                                             | 53 |
| Fig 3: Flow of Complaint.....                                           | 53 |
| 13. Monitoring and Reporting Framework.....                             | 54 |
| Table 18: Monitoring framework.....                                     | 54 |
| 14. E&S Clauses in Bidding and Contractual Documents.....               | 55 |
| 14.1 Key E&S Provisions to be Included in Bidding Documents.....        | 55 |
| Annexure 1: Site images.....                                            | 57 |
| Annexure 2: Extract of Stakeholder consultation minutes.....            | 58 |
| Annexure 3: Copy of the Minutes of Meeting.....                         | 59 |
| Annexure 4: No Objection Letter from Village Head.....                  | 62 |
| Annexure 5: GRM form on MBMA website.....                               | 63 |
| Annexure 6: Environmental and Social Monitoring Checklist.....          | 64 |
| Annexure 7: Sample Environmental and Social (E&S) Contract Clauses..... | 65 |

## 1. Executive Summary

The Wahiajer Bio-Fertilizer and Bio-Pesticide Unit is a sub-project under the Sustainable Land Management (SLM) Project implemented by the Meghalaya Basin Management Agency (MBMA) with financial support from KfW Development Bank. Located at the Wahiajer PRIME Hub in West Jaintia Hills, Meghalaya, the project aims to establish a community-integrated facility for the production of liquid bio-fertilizers and bio-pesticides, promoting organic agriculture and reducing dependence on chemical inputs.

The facility is designed to support sustainable livelihoods, soil health, and climate-smart agriculture while aligning with national priorities on natural resource management and organic value chain promotion. The land for the facility is secured through community consent, with strong involvement from the Integrated Village Cooperative Society (IVCS) and local governance bodies.

In line with KfW Sustainability Guidelines (2021) and India's national environmental and social regulations, an Environmental and Social Management Plan (ESMP) has been prepared. The project is categorized as Moderate Risk (Category B) due to its site-specific and manageable environmental and social impacts. These include groundwater use, waste generation, and social inclusion concerns.

Mitigation measures include:

- Installation of water meters and rainwater harvesting systems.
- Wastewater treatment through soak pits and safe disposal of biological waste.
- Occupational health and safety protocols with PPE and training for workers.
- Inclusive community engagement with Free, Prior, and Informed Consent (FPIC) obtained.
- A Grievance Redress Mechanism (GRM) to address stakeholder concerns.

The construction and commissioning of the unit are scheduled over a 12-month timeline, with active roles played by the DPMU, IVCS, technical consultants, and local contractors. The estimated budget for ESMP implementation is ₹8 lakhs, covering training, waste management, stakeholder engagement, and monitoring.

This sub-project not only strengthens climate resilience and environmental stewardship but also contributes to India's National Mission on Sustainable Agriculture and aligns with the Paris Agreement, CBD, and UNDRIP. With strong community ownership and integrated safeguards, the Wahiajer Bio-Fertilizer and Bio-Pesticide Unit is poised to become a replicable model of sustainable rural enterprise in Meghalaya.

## 1.1 Purpose of the Environmental and Social Management Plan (ESMP)

The Environmental and Social Management Plan (ESMP) is a foundational document that provides a systematic approach to identifying, mitigating, and managing the environmental, social, and climate-related risks associated with the Wahiajer Bio-Fertilizer and Bio-Pesticide Unit. Developed in alignment with the KfW Sustainability Guideline: Assessment and Management of Environmental, Social, and Climate Aspects (2021), this ESMP ensures that the project not only achieves its development objectives but does so in a way that is environmentally sound, socially responsible, and climate-sensitive.

The ESMP plays several critical roles, including:

### 1. Risk Identification and Impact Assessment

The ESMP provides a structured process to screen and assess potential risks and impacts across the project lifecycle, covering pre-construction, construction, and operational phases. These include risks such as groundwater overuse, bio-waste management, occupational safety hazards, and community health concerns. The assessment draws on baseline environmental data, stakeholder consultations, and site-specific information to ensure that all significant E&S risks are considered.

### 2. Mitigation and Management Planning

The plan defines specific mitigation measures tailored to each identified risk and links these to implementation responsibilities, performance indicators, and timelines. It ensures that environmental safeguards—such as waste sterilization, pollution prevention, and biodiversity protection—and social safeguards—such as labor standards, stakeholder inclusion, and grievance mechanisms—are practically integrated into the project design and execution.

### 3. Institutional Roles and Responsibilities

The ESMP clearly delineates institutional arrangements, specifying the roles of the PMU (MBMA), DPMU, contractors, IVCS, and field-level supervisors in ensuring safeguard compliance. It outlines the need for E&S focal points, HSE officers, and trained staff at various levels to carry out monitoring, reporting, and capacity-building functions.

### 4. Compliance with Safeguard Frameworks

The plan ensures alignment with:

- National environmental and labor laws (e.g., Water Act, OSH Code, Forest Rights Act),
- KfW Sustainability Guidelines, which emphasize climate mitigation, biodiversity conservation, human rights, and gender equity, and

- IFC Performance Standards, particularly in areas like stakeholder engagement, labor conditions, and community safety.

This alignment not only facilitates donor compliance but also promotes international best practices in development cooperation.

## 5. Transparency, Engagement, and Grievance Redress

The ESMP integrates a Stakeholder Engagement Plan (SEP) and a Grievance Redress Mechanism (GRM) to ensure that community voices—especially of indigenous groups, women, and youth—are heard and addressed throughout the project. These tools enhance local ownership, social acceptance, and accountability, making the project more responsive and equitable.

### 1.2 Risk Categorization (Moderate Risk – Category B)

As per the KfW Sustainability Guideline – Assessment and Management of Environmental, Social, and Climate Aspects (2021), all projects are screened and categorized based on the significance of their environmental, social, and climate-related risks and impacts. The Wahiajer Bio-Fertilizer and Bio-Pesticide Unit has been assigned a Category B – Moderate Risk classification. This reflects the presence of limited but manageable risks that are site-specific, non-cumulative, and reversible, and for which mitigation measures can be clearly defined and implemented.

The basis for this classification is as follows:

#### 1. Medium-Scale Construction Activities

The infrastructure involves the construction of a single reinforced concrete laboratory and processing unit, situated within the existing Wahiajer PRIME Hub compound, which minimizes disturbance to natural ecosystems. There are no large-scale excavations, heavy industrial processes, or major road diversions involved. Hence, the physical footprint and associated construction risks are considered moderate.

#### 2. No Involuntary Resettlement or Critical Habitat Disturbance

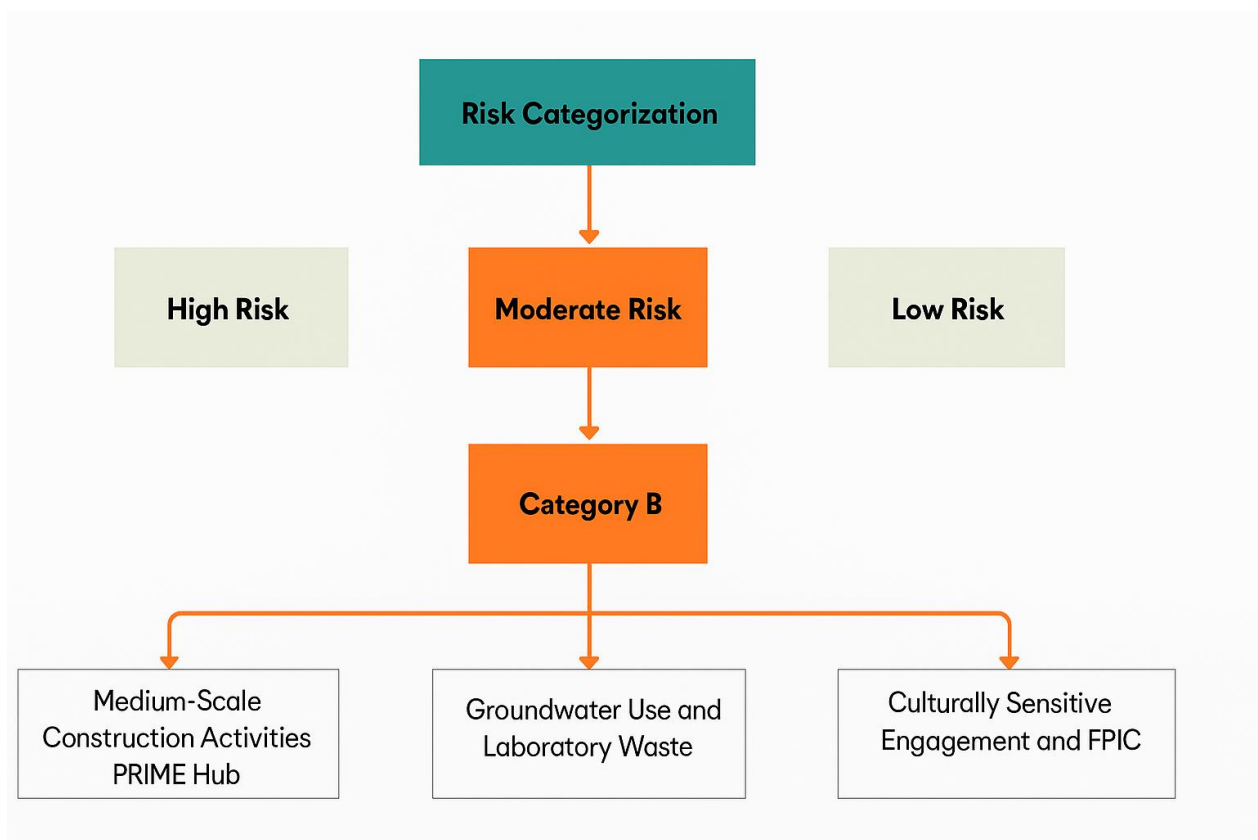
The land for the project has been voluntarily contributed by the community through a participatory and transparent process. There are no cases of physical or economic displacement, and the site does not lie within or near any ecologically sensitive areas, protected forests, or wildlife corridors. Therefore, the project avoids key triggers that would otherwise raise the risk classification to Category A.

#### 3. Groundwater Use and Laboratory Waste Generation

The facility will require groundwater for cleaning, culture processing, and equipment sterilization, which introduces a moderate environmental concern regarding water availability and responsible usage. Moreover, the project will generate biological and chemical waste, including expired cultures and used growth media, which must be sterilized and disposed of properly to avoid contamination. Although these risks are manageable through proper infrastructure and protocols (e.g., autoclaving, soak pits, licensed disposal), they require active operational oversight.

#### 4. Tribal Area and Sociocultural Sensitivity

The project is located in a Scheduled Tribe-dominated region where customary governance systems, community consent, and cultural norms play a vital role in project acceptance. This requires adherence to principles of Free, Prior and Informed Consent (FPIC), culturally appropriate engagement, and inclusion of women, youth, and vulnerable groups in project benefits. While this does not represent a high risk, it necessitates sustained engagement and documentation.



*Fig 1: Risk Categorization for Construction of Bio fertilizer and Bio Pesticide Unit in Wahiejar*

### **1.3 Summary of Key E&S Risks and Proposed Mitigation**

The Wahiajer Bio-Fertilizer and Bio-Pesticide Unit has been classified as a moderate-risk (Category B) project due to its scale, resource demands, and location within a tribal community. Key concerns include groundwater use, generation of wastewater and bio-waste, occupational health and safety, and the potential exclusion of vulnerable groups. The ESMP proposes targeted measures such as water use monitoring, waste treatment, provision of protective gear, inclusive hiring practices, and regular community consultations. A Grievance Redress Mechanism (GRM) will further ensure transparency and accountability. These steps are in line with KfW Sustainability Guidelines and national regulatory requirements.

## **2. Project Information**

### **2.1 Background on SLM Project**

Nature and environment protection, as an overall objective of the state, has a common social value, which will reflect in a relatively well-preserved and diverse environment, favorable species, habitat status, and environmental conditions for eco-friendly farming. Organic farming measures are designed to encourage farmers to protect and enhance the sustainability of their farmland. The project aims to balance agricultural production and the protection of the environment. To minimize the adverse impacts of modern agricultural practices dominated by inorganic fertilizers and pesticides, there is a need to address such diverse problems as pollution and degradation of agricultural land and soil, water pollution, and excessive use of pesticides and fertilizers.

Organic farming has the potential to address most of the issues described above relating to agriculture, environment, and land management. Besides reducing environmental pollution, impeding loss of agro-diversity, and improving farm and ground water quality, it reduces emission of ammonia and greenhouse gases such as methane, thus mitigating climate change and contributing towards sustainable land management.

#### **2.1.1 Justification of the Project**

Agriculture is crucial to Meghalaya's development as two-thirds of the working population in the state is employed in agriculture. Yet, the sector is beset by low productivity and income. Raising agricultural productivity and income from agriculture through effective market linkage are critical to poverty reduction and advancing the state's economic transformation.

Organic farming is the traditional way of farming in Meghalaya. This creates opportunities for local farmers, cooperatives, and other stakeholders along the value chain to come together to promote healthy, pesticide-free, sustainable organic agriculture to meet growing demand for safe food. However, the current practice of shifting cultivation or slash-and-burn agriculture in many parts of Meghalaya has become unsustainable due to ever-increasing population pressure on land, causing a decline in crop yield, soil fertility, biodiversity, and environmental degradation. In most urban and sub-urban areas of the state, the farmers have adopted modern agricultural practices and are applying excessive amounts of inorganic NPK fertilizers and pesticides, causing extensive environmental and health hazards. This emphasizes the need to facilitate a shift in farming practices by the farmers of the state, with a focus on small and marginal farmers, towards adopting a sustainable package of practices for natural/ organic farming.

Many farmers are heavily indebted due to low yields and low prices of the produce. They lack the money, knowledge, and training to obtain the third-party certification needed to label and market a product as officially organic. The farm households in Meghalaya have limited investment capacity and, in turn low level of risk-bearing ability. Thus, market risks associated

with organic produce such as price variability, entry of products with lower price in the market, etc. is a constraint for these farmers. Therefore, it is essential to establish an effective market linkage for the organic produces at regional (north-east India), national and global levels. All these challenges do pose problems for farmers to switch over from production of non-certified produces to certified produces.

### **2.1.2 Project Objectives**

The Meghalaya Sustainable Land Management (SLM) Project has two phases/components viz., (a) Pilot Phase (Phase I), and (b) Phase II, which includes a loan component from KfW.

The objective of Phase I is to promote agro-ecological, natural/organic farming practices among the rural farmer households and establish sustainable land management practices and value chains on a pilot basis through an efficient, functional support structure for roll-out at state level. Initiatives will include promoting organic farming, addressing certification challenges, empowering farmers through capacity building, and linking organic produce to remunerative global markets. It will also help the project's participating institutions to prepare for building a solid foundation for implementing scalable and replicable sustainable farming and value chain models, while ensuring sustainable natural resources management, productivity improvement, climate change mitigation, and creation of livelihood opportunities.

### **2.1.3 Project Components**

The SLM project has four components as listed below:

***Component 1. Organic Farming Production and Diversification:*** The focus of this component is to enhance organic farming competitiveness at the farm level by supporting access to knowledge, technology, and finance in order to increase long-term productivity and farm income.

***Component 2. Value Addition & Upgradation of Aggregation Infrastructure:*** This component will enhance market access for farmers through value addition at the farm level, through improved post-harvest handling and processing of their organic produce, to meet the demands of high value organic markets, and support increased investment in the development of value chains, processing, marketing, and other field services.

***Component 3. Establishing Effective Market Linkage:*** This component will prepare a market linkage strategy which will be designed to overcome existing constraints and increase the throughput volume of organic produce from Meghalaya that reaches wholesale markets, supermarkets, and other retailers, buyers, and distributors, and realizing better sale prices for farmers.

***Component 4. Organic Certification for Premier Organic Markets:*** The objective of this component is to enhance the institutional capacities of the executing agency and implementing

partners, and beneficiaries to facilitate the transition towards sustainable agricultural practices, ensure organic certification and the smooth delivery of the project.

#### **2.1.4 Project Stakeholders**

All the stakeholders will be involved in planning and implementation of the mitigation plan. The various stakeholders of the project include the directly affected persons and groups on the one hand and the executing agency, the line departments and the monitoring consultants on the other. The directly affected include all the affected persons and project beneficiaries; the landowners, crop and asset owners, vulnerable groups, SHGs and employees and labors of the CMCs and Hubs. The other set of stakeholders include the Meghalaya Basin Management Agency (MBMA), Directorate of Horticulture (DoH) under Department of Agriculture and Farmers' Welfare, the Bio-Resources Development Center (BRDC), and the Meghalaya State Rural Livelihoods Society (MSRLS), District Administration, Traders Associations, and the Monitoring and Supervision Consultants.

### **2.2 Sub-Project Description**

#### **2.2.1 Project Title and Location**

The sub-project is titled “Construction of the Wahiajer Bio-Fertilizer and Bio-Pesticide Unit”, situated within the premises of the Wahiajer PRIME Hub, located in Wahiajer village, West Jaintia Hills District, Meghalaya. The site is part of an established cluster hub developed under the PRIME (Promotion and Incubation of Market-driven Enterprises) initiative, aimed at enhancing rural enterprise development and market linkage.

#### **2.2.2 Objective and Relevance**

The primary objective of this sub-project is to produce eco-friendly, locally made bio-fertilizers and bio-pesticides that support sustainable and organic agriculture in Meghalaya. It aligns with the broader goals of the Sustainable Land Management (SLM) Project and the State Organic Farming Mission, promoting low-chemical, climate-resilient farming practices. The project seeks to reduce farmers' reliance on chemical inputs, improve soil health, and increase yields through cost-effective biological solutions. It also contributes to livelihood generation and value chain strengthening by involving local cooperatives in production and distribution.

#### **2.2.3 Physical Components and Construction Details**

The facility will include:

- A reinforced concrete structure (RCC) covering approximately 1200 sq. ft, roofed with PPGI sheets, to house production activities.
- Internal divisions for culture preparation, fermentation, bottling, packaging, and storage rooms.

- Installation of laboratory-grade tiling, water-resistant flooring, and ventilation systems.
- Peripheral fencing, signage, internal pathways, and access points for ease of logistics and safe operations.

The site was selected based on proximity to existing PRIME infrastructure, road access, and community willingness to support the initiative.

## 2.2.4 Machinery and Operational Inputs

Key equipment proposed includes:

- Autoclaves and Laminar Flow Chambers for sterilization and contamination control.
- Fermenters and Incubators for microbial culture development.
- Bottling, sealing, and labeling machines for packaging of finished bio-inputs.
- Storage tanks, filtration units, handwashing stations, and sterilizing soak pits.
- Inputs such as microbial strains, jaggery, molasses, and specific growth media will be used for production.

The unit will produce approximately 48,000 litres annually, equally divided between bio-fertilizers and bio-pesticides.

## 2.2.5 Timeline and Implementing Partners

The construction and commissioning of the facility are planned within a 9 to 12-month period, broken into the following phases:

| Project Phase (Months) | Key Activities                                               |
|------------------------|--------------------------------------------------------------|
| Month 1–3              | Site preparation, procurement of materials, and mobilization |
| Month 4–6              | Civil works and infrastructure installation                  |
| Month 7–9              | Equipment setup and internal finishing                       |
| Month 10–12            | Trial operations, training, and handover                     |

*Table 1: Timeline with key activities*

## 2.2.6 Implementing partners include:

| Implementing Partner                                        | Role/Responsibility                                   |
|-------------------------------------------------------------|-------------------------------------------------------|
| Meghalaya Basin Management Agency (MBMA)                    | Overall project coordination and fund management      |
| District Project Management Unit (DPMU), West Jaintia Hills | Local supervision and compliance monitoring           |
| Wahiajer Integrated Village Cooperative Society (IVCS)      | Community-based partner for operations and management |

|                                                  |                                                            |
|--------------------------------------------------|------------------------------------------------------------|
| Technical consultants and registered contractors | Civil works, equipment installation, and technical support |
|--------------------------------------------------|------------------------------------------------------------|

*Table 2: Roles of Implementing Partners*

### About Wahiajer Integrated Village Cooperative Society Ltd.

Wahiajer Integrated Village Cooperative Society (IVCS) Ltd. was officially registered under the Meghalaya Cooperative Societies Act on December 6, 2021, at the office of the Assistant Registrar of Cooperative Societies, Thadlaskein C&RD Block, West Jaintia Hills District. The society was established with the facilitation and support of the District Project Management Unit (DPMU) of the Meghalaya Basin Management Agency (MBMA) under the Meghalaya Livelihoods and Access to Markets Project (Megha-LAMP) initiative.

The operational jurisdiction of the Wahiajer IVCS spans across all nine localities of Wahiajer village. It was initially established with 15 members on its Executive Committee and aims to foster financial inclusion through thrift and credit services, while also acting as a service delivery platform for accessing government schemes and benefits offered by various line departments.

As of now, the IVCS has expanded to include:

- 165 registered members across 227 households
- A share capital base of ₹1,13,500, with each share valued at ₹500
- 32 active Producer Groups under its umbrella.

### 3. Implementation: Organizations, Roles and Responsibilities

#### 3.1 Institutional Arrangement

The Institutional arrangement for the implementation of the ESMP will rest with the PMU of MBMA, which will have a dedicated Environmental and Social Management Framework Specialist reporting to the Project Director, through the Additional Project Director. Successful implementation of the project requires strict compliance with the project ESMP and the applicable rules, regulations, Acts, and guidelines of the Government and the funding agency. Meghalaya Basin Management Agency (MBMA), a not-for-profit company under Section 8 of the Companies Act, 2013, incorporated under the Planning Department of the Government of Meghalaya, will be the project executing agency (PEA) and has the following responsibilities:

- Ensuring compliance with all relevant national legislation, as well as with the environmental controls and mitigation measures contained in this ESMP.
- Ensure that the design and planning follow national requirements and are aligned with international best practices.
- Monitoring the performance of contractors and sub-contractors used for providing workforce, supplies, and services.
- Acting as a point of contact for consultation and feedback for the stakeholders.
- Training of construction workers to raise awareness in the fields of E&S topics and in the general implementation of this ESMP.

The organizational arrangement for implementation of ESMP will be as per the chart below:

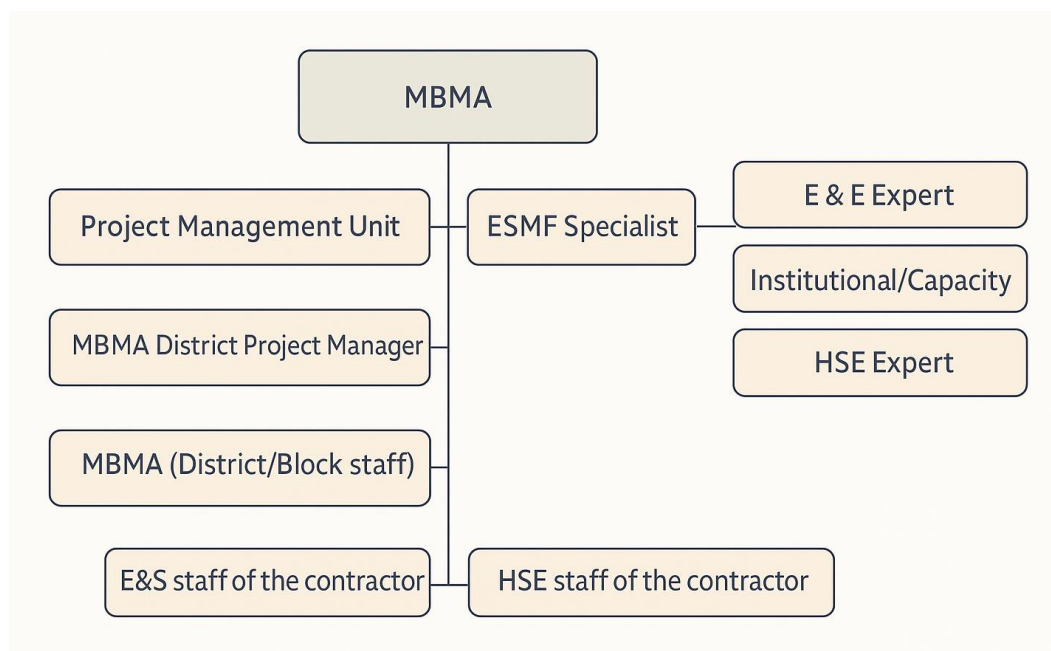


Fig 2: Organizational arrangement

### **3.2 The PMU**

The overall responsibility of implementation of the ESMP lies with the PMU which will have dedicated staff to oversee the implementation as well as monitor the progress through regular monthly reports submitted by the contractors. Accordingly, it will be provided with staff on deputation from the MBMA, DOH, MSRLS, BRDC and other government departments; requisite contractual staff will be hired by the MBMA at PMU level. For effective implementation of sub-project specific ESMPs, dedicated E&S staff will be appointed at the PMU right from the start of the project and counterpart E&S staff will be appointed by the contractors. The PMU level E&S staff will be supported by the district/Block level staff of MBMA.

An ESMF Specialist (senior level officer) from GoM will be appointed to the PMU and will have the overall responsibility of successful implementation of GESI AP, implementation and compliance monitoring of all mitigation measures suggested in the sub-project specific ESMPs and as the focal point for grievance redressal. The ESMF specialist will be assisted by one experienced Environment & Social Expert, one Institutional/Capacity Building Expert and one HSE Expert.

The role of the Environment & Social Expert will be to monitor compliance with all environmental and social laws and regulations, permits and licenses and the labour and social security codes. He will also be responsible for conducting FPIC throughout the project life cycle as per the SEP. The Institutional/Capacity building Expert will be responsible for conducting TNA, preparing the training modules and imparting capacity building trainings to the project implementation staff of MBMA, BRDC, MSRLS and the contractor. He will also be responsible for imparting training to the WUA functionaries and maintain a record of all the training sessions. Trainings will be repeated as needed during the construction activities. The HSE Expert will monitor the safety aspects at work sites and labour camps and provide HSE training to the project implementation staff of MBMA, BRDC, MSRLS and the contractor.

### **3.3 Contractors**

#### **3.3.1 Contractors Role**

The contractor is a key implementing partner responsible for the successful execution of all environmental and social safeguards during the construction phase of the Wahiajer Bio-Fertilizer and Bio-Pesticide Unit. In line with the ESMP and the KfW Sustainability Guidelines, each contractor must allocate dedicated personnel and adopt robust protocols to ensure full compliance with the mitigation measures outlined in the sub-project ESMP.

(i) Institutional Responsibility-

- A Counterpart Environment & Social Expert and an HSE (Health, Safety, and Environment) Expert shall be hired by the contractor and remain deployed at the site throughout the construction period.
- These experts will be responsible for the daily implementation of ESMP provisions, on-site risk management, and documentation.
- The contractor shall submit monthly compliance reports to the Project Management Unit (PMU) through the District Project Management Unit (DPMU)/block staff of MBMA.

(ii) Key Contractor Responsibilities Include-

- Conduct routine monitoring and on-site audits to verify ESMP implementation, and report findings to the PMU/PEA (Project Executing Agency).
- Immediately report any environmental or safety incidents to the PMU.
- Ensure that all sub-contractors and site personnel comply with the ESMP requirements.
- Provide or facilitate training and toolbox talks for construction workers on environmental and social topics, occupational health and safety, and gender-based safeguards.
- Comply with all applicable Indian labour laws, including the OSH Code (2020), Minimum Wages Act, and the Building and Other Construction Workers Act.
- Prevent the use of child labour or forced labour under any circumstances.

### 3.3.2 Contractor Code of Conduct

To formalize behavioral expectations and safeguard community interests, the contractor must adopt a Contractor Code of Conduct (CoC) for all site workers and sub-contractors.

(i) This Code is attached as Annexure 6 and must be-

- Disseminated to all workers in a language they understand.
- Signed upon induction by each employee as a condition of employment.
- Reinforced regularly through orientation sessions and refresher trainings.

(ii) The Contractor Code of Conduct covers the following areas-

- Zero tolerance for gender-based violence (GBV), sexual exploitation, and harassment
- Respect for local culture, tribal norms, and community institutions (Dorbar Shnong, IVCS)
- Non-discrimination and equal opportunity for workers regardless of gender, caste, tribe, or ability
- Prohibition of alcohol, drugs, and other disruptive behaviors at the worksite
- Mandatory use of personal protective equipment (PPE) and compliance with site safety procedures

- Whistleblower protections for any worker reporting abuse, misconduct, or unsafe conditions

Violations of the Code will result in disciplinary action, including removal from the project, reporting to authorities, and possible legal prosecution.

### **3.3.3 Monitoring of Contractor Compliance**

The PMU and DPMU will monitor contractor performance through:

- Unannounced site visits and inspections
- Worker interviews and feedback collection
- Review of monthly ESMP implementation reports, including labour logs and incident records
- Engagement with IVCS and local governance institutions to ensure community feedback is incorporated

Any non-compliance or serious breach of the Code of Conduct will trigger enforcement actions as per contract conditions, including withholding of payments or termination.

### **3.4 Implementation Management Consultant**

Shall provide support in designing all E&S related processes and documents including the ESMS and capacity building support to the PMU and beneficiaries and general operational support to the PMU vis à vis KfW, including procurement, disbursement and reporting matters, which also comprise financial and procurement audits and the verification of disbursement requests.

### **3.5 Non-Governmental Organizations (NGOs)**

The NGOs will be responsible for the promotion of the Project to the private sector, relevant business organizations and other relevant parties to develop a pipeline of potential subprojects and to ensure the maximum feasible take up of project support. NGOs will also work with potential beneficiaries to prepare/refine financing and business plans and oversee the screening and selection of beneficiaries to ensure bank compliance with project guidelines and procedures.

### **3.6 Training and Capacity Building**

Capacity building training of the project stakeholders is needed for effective implementation of ESMP. The training program will ensure that all concerned members of the team understand the following aspects:

- Purpose of management plan for the project activities

- Requirements of the management plan and specific action plans
- Understanding the sensitive environmental and social features within and surrounding the project areas, and
- Awareness about the potential risks from the Project activities.

The general environmental and social awareness will be increased, through trainings, among the project's team to encourage the implementation of environmentally and social sound practices and compliance requirements of the project activities. This will help in minimizing adverse environmental and social impacts, compliance with the applicable regulations and standards, and achieving performance beyond compliance. The same level of awareness and commitment will be imparted to the contractors and sub-contractors prior to the commencement of the project.

The PEA will provide Induction Training to all its employees and Contractor personnel working on the Project before early works start. This Induction Training shall be conducted for all new workers, as well as they who join the construction site later during construction activities.

Apart from induction training upon joining and regular project-wise trainings, the other major areas identified for training include, but are not limited to, the following:

- The mitigation measures included in this ESMP and how it will be implemented on site, including responsibilities.
- The sensitivities of the area (if any) in which the Project will be constructed and operated.
- Occupational Health and Safety (H&S) rules at the construction site (e.g. personal protective equipment, rules of conduct, first aid);
- The Project's Grievance Mechanism and the basic workers' rights.
- How to deal with enquiries/ questions/ grievances by the public/ local stakeholders.
- Interaction rules with the people living close to the construction site (Code of Conduct, including GBV) and how to deal with unauthorized visitors to the site.
- How to deal with unforeseen incidents/ emergency situations.
- The roles and responsibilities within the PEA, the Contractors, sub-Contractors, and workers with respect to environmental and social issues.

### **3.7 Contractor Management**

The respective state and district-level project management and coordination committees will ensure that the ESMP is implemented by its contractors through contractual arrangements. General environmental and social awareness will be increased among the project's team through orientation training to encourage the implementation of environmentally and socially sound practices and compliance requirements of the project activities. The same level of

awareness and commitment will be imparted to the contractors and sub-contractors prior to the commencement of the project. The project proponent will ensure that the job-specific training and EHS and Social Induction Training needs are identified based on the specific requirements of ESMP and the existing capacity of site and project personnel (including the Contractors and Sub-contractors) to undertake the required actions and monitoring activities. An environmental and social management training program will be conducted to ensure effective implementation of the management and control measures during construction and operation of the project.

The training program will ensure that all concerned members of the team understand the following aspects:

- Purpose of action plan for the project activities
- Requirements of the specific Action Plans
- Understanding of the sensitive environmental and social features within and surrounding the project areas; and
- Awareness of the potential risks from the project activities.

Occupational and health training program and specialty courses will be provided, as needed, to ensure that workers are oriented to the specific hazards of individual work assignments. Training to be provided to management, supervisors, workers, and occasional visitors to areas of risks and hazards. Workers with rescue and first-aid duties to receive dedicated training so as not to inadvertently aggravate exposures and health hazards to themselves or their co-workers. Through appropriate contract specifications and monitoring, the employer to ensure that the service providers, as well as contracted and subcontracted labour, are trained adequately before assignments begin.

### **3.8 Management of Labour Influx**

Within 30 days from the appointed date, the Concessionaire/Contractor shall prepare and submit 4 hard copies and 1 soft copy of Labour Influx and Worker's Camp Management Plan to [Executing Agency] that addresses specific activities that will be undertaken to minimize the impact on the local community, including elements such as worker codes of conduct, training programs on HIV/AIDS, etc. A Workers' Camp Management Plan addresses specific aspects of the establishment and operation of workers' camps.

The Labour Influx and Worker's Camp Management Plan will include:

- (i) Mandatory and repeated training and awareness raising for the workforce about refraining from unacceptable conduct toward local community members, specifically women.
- (ii) Informing workers about national laws that make sexual harassment and gender-based violence a punishable offence which is prosecuted.

- (iii) Introducing a Worker Code of Conduct as part of the employment contract, and including sanctions for non-compliance (e.g., suspension and/or termination)
- (iv) Contractors adopting a policy to cooperate with law enforcement agencies in investigating complaints about gender-based violence.
- (v) Training programs on HIV/AIDS and other communicable diseases,
- (vi) Workers' Camp Management Plan addressing specific aspects of the establishment and operation of workers' camps, and
- (vii) Establishing a Complaint and Grievance Handling Mechanism at the project level.

## 4. Legal and Institutional Framework

This sub-project is guided by a combination of national legal provisions, KfW Sustainability Guidelines, and IFC Performance Standards on Environmental and Social Sustainability. Together, these frameworks ensure that project planning and implementation are environmentally sound, socially inclusive, and aligned with international best practices.

### 4.1 Applicable National Environmental, Labor, and Social Laws

The project must comply with a wide range of Indian laws and Meghalaya-specific regulations, including:

#### 4.1.1 Environmental laws:

Listed below are the central government Acts and Regulations applicable to the project and their key features.

| S.No | Relevant Act/ Rule                         | Key features                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Environmental Protection Act (EPA), 1986   | The EPA empowers the Centre to “take all such measures as it deems necessary” in the domain of environmental protection. Under the law, it can coordinate and execute nationwide programmes and plans to further environmental protection. It can mandate environmental quality standards, particularly those concerning the emission or discharge of environmental pollutants. This law can impose restrictions on the location of industries.                                                                                                                                                                                                                 |
| 2    | The Biological Diversity Act 2002          | The Biological Diversity Act is the Act to preserve the biological diversity of India and provides for suitable mechanism for equitable sharing of benefits arising out of the use of traditional biological resources and knowledge. The Act’s main objective is to ensure the conservation of biological diversity, sustainable use of its components and fair usage of its resources in order to prevent overuse or eventual destruction of biodiversity.                                                                                                                                                                                                    |
| 3    | Food Safety and Standards Act, 2006 (FSSA) | The Food Safety and Standards Act, 2006 (FSSA) is a comprehensive legislation that regulates the manufacture, storage, distribution, sale, and import of food products to ensure they are safe and suitable for human consumption. It mandates that any premises or facility involved in food-related activities, including storage units, cold chains, warehouses, or processing centers, must comply with specific hygiene and safety standards, obtain FSSAI registration or license, and follow protocols for cleanliness, pest control, temperature regulation, and staff hygiene. <i>This Act replaced the Prevention of Food Adulteration Act, 1954.</i> |

|    |                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4  | Hazardous and Other Waste (Management Handling and Transboundary Movement) Rules 2016 | The Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 apply to any facility generating hazardous waste—such as used oil, paints, or chemical containers—by mandating proper storage, labeling, record-keeping, and disposal through authorized handlers to ensure environmental and human safety.                                                                                                                                                                         |
| 5  | Solid Waste Management Rules, 2016                                                    | Solid Waste Management Rules, 2016 govern the segregation, collection, storage, and disposal of solid waste generated during both construction and operational phases, including organic waste, packaging materials, domestic waste from workers, and dry recyclables, requiring compliance with proper waste segregation, scientific disposal, and involvement of authorized waste handlers.                                                                                                          |
| 6  | Air (Prevention and Control of Pollution) Act, 1981                                   | The Air (Prevention and Control of Pollution) Act, 1981 empowers authorities to regulate and control air pollution by setting emission standards for industries, vehicles, and construction activities to ensure the maintenance of air quality. Encourage the use of Diesel Generator (DG) sets, and movement of vehicles at the site do not cause harmful air pollution, and by mandating measures like dust suppression, PUC-certified vehicles, and emission control to protect local air quality. |
| 7  | Water (Prevention and Control of Pollution) Act, 1974                                 | The Water (Prevention and Control of Pollution) Act, 1974 regulates that any wastewater generated during construction or cleaning activities is properly treated or contained and not discharged untreated into nearby water bodies, thereby ensuring the protection of local water sources and compliance with environmental regulations.                                                                                                                                                             |
| 8  | Noise Pollution Rules, 2000                                                           | The Noise Pollution (Regulation and Control) Rules, 2000 are minimally relevant to the Wahiajer Bio-Fertilizer and Bio-Pesticide Unit, as the project does not involve high-noise activities, but compliance is still required to ensure permissible noise levels during construction and operation phases.                                                                                                                                                                                            |
| 9  | Forest Rights Act, 2006                                                               | The Forest Rights Act, 2006 recognizes and secures the traditional rights of Scheduled Tribes and other forest-dwelling communities over forest land and resources, allowing them to live in, manage, and conserve these areas while protecting their livelihoods and cultural practices.                                                                                                                                                                                                              |
| 10 | Construction and Demolition Waste Management Rules, 2016                              | The Construction and Demolition Waste Management Rules, 2016 apply to all construction activities by requiring the segregation, safe storage, reuse, and scientific disposal of waste materials like debris, bricks, concrete, and metal to prevent environmental pollution and promote recycling.                                                                                                                                                                                                     |

|    |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11 | Agricultural Produce (Grading and Marking) Act, 1937                                 | The Agricultural Produce (Grading and Marking) Act, 1937 provides for the grading and marking of agricultural and other allied commodities with the objectives of making available quality agricultural produce, including horticulture and livestock produce, to the consumers.                                                                                                                                                                                                                                                                                                                                                                                 |
| 12 | Rural Producers Companies Act, 2002                                                  | The Producer Companies provisions under the Companies Act, 2002 enable groups of farmers and rural producers to form a registered company that combines the benefits of a cooperative model with corporate governance, allowing them to collectively manage production, processing, storage, and marketing of agricultural produce while sharing profits among members.                                                                                                                                                                                                                                                                                          |
| 13 | Agriculture Produce and livestock Marketing (Promotion & Facilitation) APML Act 2017 | The Agriculture Produce and Livestock Marketing (Promotion & Facilitation) Act, 2017 promotes transparent and efficient marketing of agricultural and livestock products by enabling direct farmer-to-buyer transactions, encouraging private investment in infrastructure like warehouses and storage centers, and integrating digital platforms for fair price discovery.                                                                                                                                                                                                                                                                                      |
| 14 | Panchayati Raj Act 1992                                                              | The Panchayati Raj Act, 1992 establishes a decentralized governance framework that empowers elected rural local bodies to oversee and participate in the planning, implementation, and monitoring of development projects, thereby making it applicable to initiatives like storage centers through their role in local land use approvals, community engagement, and participatory decision-making processes.                                                                                                                                                                                                                                                   |
| 15 | Panchayats (Extension to the Scheduled Areas) Act, 1996                              | In the context of Meghalaya, which is governed under the Sixth Schedule of the Constitution rather than the Fifth Schedule, the Panchayats (Extension to the Scheduled Areas) Act, 1996 (PESA Act) does not formally apply. However, the spirit of PESA—particularly its emphasis on community participation, local consent, and traditional governance structures—is relevant in areas like Wahiajer, where tribal communities are predominant and local institutions such as the Village Dorbar or traditional councils play a vital role in approving and monitoring rural development activities, including infrastructure projects like the storage center. |
| 16 | Right to Fair Compensation and Transparency in Land Acquisition Act, 2013            | The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 ensures that land acquisition for public or private projects is carried out with the informed consent of affected families, and provides for fair compensation, rehabilitation, and resettlement to safeguard the rights of landowners and vulnerable communities.                                                                                                                                                                                                                                                                                |

Table 3: Environmental Laws

#### 4.1.2 Labour Codes/Acts:

All the workers are governed by the relevant Indian labour laws as stated below. The Developer shall undertake the requisite license from Labour Commissioner prior to the initiation of any works onsite.

| Sl. No. | New Labour Codes                                  | Key features                                                                                                                                                                                                                                                                                                                                                                   |
|---------|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | Labour Codes, 2020                                | The Labour Codes, 2020 consolidate 29 existing labour laws into four unified codes—covering wages, social security, occupational safety, and industrial relations—to streamline compliance, enhance worker welfare, and ensure safer, fairer working conditions across all sectors, including construction and infrastructure projects.                                        |
| 2       | Code on Social Security 2020                      | The Code on Social Security, 2020 consolidates and streamlines multiple social welfare laws to extend social protection benefits—such as health insurance, maternity benefits, provident fund, pension, and gratuity—to all workers, including those in the unorganized and construction sectors, ensuring inclusive and equitable labor welfare.                              |
| 3       | Minimum Wages Act, 1948                           | The Minimum Wages Act, 1948 mandates that employers pay workers at least the government-prescribed minimum wage rates for their specific type of work and region, ensuring fair compensation and preventing exploitation, particularly in labor-intensive sectors like construction.                                                                                           |
| 4       | Sexual Harassment of Women at Workplace Act, 2013 | The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 mandates that all workplaces, including construction sites and project offices, provide a safe, respectful, and harassment-free environment for women by establishing an Internal Complaints Committee (ICC), conducting awareness, and ensuring prompt redressal of complaints. |
| 5       | Building and Other Construction Workers Act, 1996 | The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 aims to safeguard the rights and welfare of construction workers by ensuring their registration, safety, health, and access to welfare benefits such as housing, insurance, and maternity support during construction activities.                                   |

|   |                                                                            |                                                                                                                                                                                                                                                                                                                                         |
|---|----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6 | OSH Code (Occupational, Safety, Health and Working Conditions Code) - 2020 | The Occupational Safety, Health and Working Conditions (OSH) Code, 2020 aims to ensure safe and healthy working environments by setting uniform standards for occupational safety, working conditions, welfare facilities, and employee rights across establishments, including construction sites and storage infrastructure projects. |
| 7 | Industrial Relations (IR) Code, 2020                                       | By amalgamating 3 Labour Laws into the Industrial Relations Code the Central Government has taken steps for safeguarding the interests of Trade Unions as well as the workers. In this Code, all possible steps have been taken for industrial units and workers so that disputes do not arise in future.                               |

*Table 4: Labor Codes/ Acts*

#### 4.1.3 Social Law:

This table outlines key local and national social laws applicable to the Wahiajer project. It highlights legal provisions that ensure community rights, workplace safety, and inclusive development.

| Sl No. | Social Law/Act                                                                                                 | Relevance to Project                                                                                                                   |
|--------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| 1      | The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006            | Recognizes the rights of tribal communities over land and resources, important for ensuring Free, Prior, and Informed Consent (FPIC).  |
| 2      | The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 | Guides fair compensation and rehabilitation if land acquisition becomes necessary, even though no involuntary resettlement is planned. |
| 3      | The Protection of Women from Domestic Violence Act, 2005                                                       | Provides safeguards against domestic violence, ensuring a secure environment for female staff and community members.                   |
| 4      | The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013                  | Mandates the establishment of mechanisms to prevent and address workplace sexual harassment, promoting a safe and inclusive workspace. |
| 5      | The Rights of Persons with Disabilities Act, 2016                                                              | Ensures accessibility, equal opportunity, and non-discrimination for persons with disabilities involved in project activities.         |

|   |                                                |                                                                                                                        |
|---|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| 6 | The Meghalaya Societies Registration Act, 1983 | Relevant for registration and legal recognition of community-based organizations like IVCS involved in implementation. |
|---|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|

Table 5: Social Laws

## 4.2 KfW Sustainability Guidelines and IFC Performance Standards Alignment

The Wahiajer Bio-Fertilizer and Bio-Pesticide Unit adheres to the KfW Sustainability Guideline (2021), which provides a robust framework for identifying, assessing, and managing environmental, social, and climate-related risks in development projects. The following key principles of KfW guide the project's environmental and social due diligence:

- **Assessment and Management of Environmental, Social, and Climate Aspects:** Ensures that all risks are screened, categorized, and addressed through mitigation measures in a structured Environmental and Social Management Plan (ESMP).
- **Gender Strategy:** Promotes equal participation, benefits, and safeguards for women and marginalized genders across all stages of the project.
- **Human Rights Compliance:** Upholds the protection of fundamental rights, especially for indigenous and vulnerable populations, in line with international standards.

While KfW has its own guidelines, it is broadly aligned with the International Finance Corporation (IFC) Performance Standards, which are widely recognized as a benchmark for environmental and social sustainability, particularly in private sector and blended finance operations. Both frameworks emphasize risk-based management, stakeholder engagement, climate resilience, and inclusivity. However, KfW places additional focus on climate action, human rights due diligence, and compliance with Germany's development cooperation goals.

To ensure consistency and harmonization, the Wahiajer ESMP draws from both frameworks. The table below outlines the alignment between KfW principles and the relevant IFC Performance Standards (PS):

| KfW Principle                     | Corresponding IFC Performance Standard (PS)                                            |
|-----------------------------------|----------------------------------------------------------------------------------------|
| Environmental & Social Assessment | PS 1: Assessment and Management of E&S Risks and Impacts                               |
| Community Engagement & FPIC       | PS 1 & PS 7: Stakeholder Engagement and Indigenous Peoples                             |
| Labor and Working Conditions      | PS 2: Labor and Working Conditions                                                     |
| Pollution Prevention              | PS 3: Resource Efficiency and Pollution Prevention                                     |
| Health, Safety, and Security      | PS 4: Community Health, Safety and Security                                            |
| Land and Biodiversity             | PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources |

Table 6: KfW principles and corresponding IFC performance standards

By referencing both KfW and IFC standards, the ESMP ensures that the sub-project not only meets donor compliance requirements but also upholds international best practices for sustainable, inclusive, and accountable development.

#### 4.2.1 Additional Compliance with IFC PS5 and PS8

In alignment with IFC Performance Standard 5 (Land Acquisition and Involuntary Resettlement), the project site was secured through Voluntary Land Donation (VLD) by the Wahiajer community. This included public consultations, documentation of free, prior, and informed consent, verification of land boundaries, and witnessed VLD forms. Supporting visual documentation has been included in Annexure 4.

In line with IFC Performance Standard 8 (Cultural Heritage), a site screening confirmed the absence of cultural heritage features. However, a Chance Find Procedure has been instituted to safeguard any unexpected discoveries. This includes immediate cessation of work, site protection, and notification to the local Dorbar and State Archaeology Department. Work may resume only after official clearance.

#### 4.3 Other International Conventions and Frameworks

The Wahiajer Bio-Fertilizer and Bio-Pesticide Unit, supported under the KfW-funded Sustainable Land Management (SLM) Project, is implemented in alignment with India's commitments to various international environmental and human rights frameworks. These frameworks provide an ethical and legal foundation for inclusive, sustainable, and climate-resilient development. KfW's safeguard system also incorporates these global mandates, reinforcing the project's accountability to both national and international standards.

The following key international conventions are particularly relevant to the project:

| International Instrument                                           | Relevance to Project                                                                                                                                                                                     |
|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>UN Declaration on the Rights of Indigenous Peoples (UNDRIP)</b> | Upholds the principle of <i>Free, Prior and Informed Consent (FPIC)</i> , critical in tribal-majority areas like Wahiajer. Ensures meaningful community participation and protection of cultural rights. |
| <b>ILO Conventions (especially Convention No. 169)</b>             | Establish standards for decent work, fair labor practices, non-discrimination, and active consultation with indigenous peoples, contributing to socially responsible project implementation.             |
| <b>Paris Agreement (2015)</b>                                      | Reinforces commitments to climate-smart interventions. The project supports organic agriculture and reduced chemical dependency, contributing to emission reduction and climate adaptation.              |
| <b>Convention on Biological Diversity (CBD)</b>                    | Promotes sustainable use of microbial resources and safeguards local biodiversity, both of which are integral to the production of bio-inputs at the facility.                                           |

*Table 7: International conventions relevant to the project*

By recognizing and adhering to these international instruments, the project ensures that its operations are not only legally compliant but also ethically grounded. This alignment strengthens the credibility and social acceptability of the project, particularly among indigenous communities and environmental stakeholders.

## **5. Baseline Environmental and Social Conditions**

A clear understanding of the existing environmental and social setting at the sub-project site is essential to assess potential risks, ensure community ownership, and plan effective mitigation measures. The following provides a summary of baseline conditions relevant to the Wahiajer PRIME Hub and its surrounding area:

### **5.1 Land Use and Ownership**

The proposed Wahiajer Bio-Fertilizer and Bio-Pesticide Unit will be constructed within the premises of the Wahiajer PRIME Hub, a designated site developed under Meghalaya's rural enterprise framework. The land is held under customary community ownership, administered by the Dorbar Shnong (village council), which plays a central role in land governance and development approvals in tribal areas of Meghalaya.

The site is non-forest, non-agricultural, and free from encroachments or habitation, ensuring that the project does not trigger concerns related to land acquisition, resettlement, or livelihood disruption. As per tribal land practices, formal ownership may not lie with individuals or state departments but with the community as a collective entity. This arrangement aligns with the provisions of the Sixth Schedule of the Indian Constitution, which grants autonomy to tribal communities in Meghalaya to manage land and local governance.

Community endorsement for the project has been secured through formal consultation with the Dorbar, reflecting a high degree of social license and local participation. The land has been voluntarily allocated for the purpose of establishing the bio-input facility, demonstrating the village's active support and co-ownership of the initiative.

This institutional and cultural context ensures that the project respects indigenous rights, requires no formal acquisition, and benefits from a strong foundation of local trust, transparency, and cooperation.

### **5.2 Hydrology and Water Use**

The Wahiajer area is characterized by shallow aquifers that supply water for both domestic consumption and small-scale agriculture. The region receives high annual rainfall, typical of Meghalaya's climatic pattern, contributing to seasonal replenishment of groundwater levels. However, water availability can fluctuate during dry spells, making efficient usage and conservation critical for any infrastructure development.

For the bio-fertilizer and bio-pesticide facility, water will be sourced from an existing community-managed well located within the PRIME Hub campus. The expected water demand is moderate, primarily for cleaning, sterilization of equipment, and limited processing activities. To minimize pressure on groundwater resources, the ESMP proposes the

installation of water meters to monitor usage, along with local regulatory approval to ensure compliance with water withdrawal norms.

Given the high rainfall, the project also plans to incorporate rainwater harvesting structures, such as catchment tanks or rooftop collection systems, to supplement water needs and reduce dependency on groundwater. The site's topography and drainage will be evaluated to avoid any water stagnation or contamination risk.

There are no major rivers, lakes, or ecologically sensitive wetlands in close proximity to the site. Hence, no surface water ecosystems are expected to be impacted by the facility's operations. Nevertheless, wastewater management systems such as soak pits and sterilization tanks are included in the design to prevent groundwater contamination.

Overall, the water use strategy emphasizes sustainable resource management, aligned with KfW's environmental safeguards and national groundwater guidelines.

### **5.3 Biodiversity and Vegetation**

The proposed project site lies within a semi-rural landscape in Wahiajer, characterized by a mix of community land, homestead vegetation, and smallholder agriculture. The area is not designated as forest land, nor is it located within or adjacent to any eco-sensitive zones, wildlife corridors, or legally protected areas as defined under the Wildlife Protection Act, 1972 or the Forest (Conservation) Act, 1980.

The surrounding vegetation is representative of rural Meghalaya, comprising native grasses, shrubs, fruit-bearing trees, and patches of cultivated crops such as paddy and vegetables. Biodiversity levels are moderate, with occasional presence of domesticated livestock and common bird and insect species. There is no recorded presence of endangered or threatened flora and fauna within the immediate project footprint.

Given the limited spatial scale and non-intrusive nature of the construction, the project is not expected to cause habitat loss, fragmentation, or ecological disruption. However, the ESMP includes a series of precautionary measures to ensure environmental safeguards:

- Controlled site clearance to retain existing vegetation where feasible
- Safe disposal of bio-waste to avoid attracting pests or polluting soil and water
- Use of eco-friendly disinfectants and inputs during operations
- Awareness and training for staff on biodiversity conservation principles

Additionally, the facility design avoids the use of hazardous chemicals and promotes organic bio-input production, which indirectly supports soil biodiversity and pollinator health in the long term.

Overall, the project's siting and operational practices are aligned with KfW's biodiversity conservation principles and pose negligible risks to local ecosystems, ensuring the maintenance of ecological balance in the area.

### 5.3.1 Baseline Biodiversity Record (Indicative)

| Category     | Species/Type                       | Status                 | Remarks                              |
|--------------|------------------------------------|------------------------|--------------------------------------|
| Tree Species | Schima wallichii, Alnus nepalensis | Native                 | Sparse occurrence, outside core area |
| Shrubs       | Thysanolaena maxima (Broom Grass)  | Locally cultivated     | Along pathways and bunds             |
| Ground Flora | Ferns, wild turmeric               | Native herbaceous      | Low ground cover                     |
| Birds        | Drongo, Bulbul, House Sparrow      | Common, non-threatened | No known nesting sites               |
| Insects      | Bees, Dragonflies, Butterflies     | Common pollinators     | Likely to benefit from project site  |

*Table 8: Baseline biodiversity record*

#### (i) No Invasive Species Protocol

To prevent ecological disturbance, the project enforces a No-Invasive Species Policy, which includes:

- Avoidance of known invasive alien species
- Use of locally adapted species for any landscaping or greenbelt purposes
- Ban on chemical herbicides that could affect local fauna and flora
- Promotion of biodiversity-positive practices through organic input production

#### (ii) Construction Phase Mitigation

- Vegetation clearance is limited to the defined project boundary
- Topsoil is preserved for reuse in greening efforts post-construction
- Any accidental encounter with nests, beehives, or burrowing species will trigger a temporary halt and consultation with the Forest Department.

## 5.4 Local Demographics and Livelihoods

Wahiajer village, located in the West Jaintia Hills district of Meghalaya, is predominantly inhabited by the Jaintia tribal community, one of the three major indigenous groups in the state. The social structure is matrilineal, with women playing a central role in household economy, inheritance, and decision-making. The population is composed of smallholder farmers, daily wage workers, women-led households, and rural youth, many of whom are engaged in subsistence farming and allied rural livelihoods.

Agriculture is the primary economic activity, with most households cultivating paddy, seasonal vegetables, turmeric, and broom grass on small plots of land. Livestock rearing, poultry farming, and piggery are also common, forming an essential component of food security and supplementary income. Additionally, handicrafts, weaving, and small retail trades contribute to household earnings.

The community has actively participated in development programs promoted by the Meghalaya Basin Management Agency (MBMA) including collectivization through Integrated Village Cooperative Societies (IVCS) and enterprise support through the PRIME Hub initiative. This has led to increased awareness around topics such as organic farming, climate-resilient agriculture, and income diversification.

Importantly, there is strong community interest in reducing chemical dependency in farming and improving soil fertility through sustainable bio-inputs. The Wahiajer Bio-Fertilizer and Bio-Pesticide Unit is therefore well-aligned with the community's livelihood needs and aspirations. It holds the potential to:

- Reduce input costs and improve yields
- Create local employment, especially for youth and women
- Strengthen agro-ecological practices and value addition
- Foster local ownership through training and enterprise engagement

Overall, the project builds on a socially aware and engaged community, providing a meaningful opportunity to enhance sustainable livelihoods and rural entrepreneurship in a culturally sensitive and inclusive manner.

## **5.5 Cultural and Tribal Context**

Wahiajer village is rooted in the Jaintia tribal cultural system, one of the matrilineal societies of North-East India. Social life, land governance, and conflict resolution are primarily overseen by the Dorbar Shnong—the village council comprising elected elders and traditional leaders. This institution plays a pivotal role in community decisions, managing common resources, granting permission for development activities, and ensuring that customary norms are upheld.

Tribal identity in Wahiajer is closely tied to community autonomy, land rights, and cultural heritage. Customary practices are embedded in day-to-day governance, and traditional values guide the behavior and responsibilities of individuals, especially in matters related to land, gender, and inter-family relations. Importantly, the community bodies like Jaintia Hills Autonomous District Council (JHADC) also play a role in recognizing and protecting these customs under the Sixth Schedule of the Indian Constitution.

Given this socio-cultural setting, the project has followed a Free, Prior, and Informed Consent (FPIC) process before initiation. Consultations were conducted with the Dorbar Shnong and wider community members to ensure transparency, acceptance, and shared ownership of the Wahiajer Bio-Fertilizer and Bio-Pesticide Unit. This aligns with the KfW Sustainability Guidelines and international frameworks such as UNDRIP (United Nations Declaration on the Rights of Indigenous Peoples) and ILO Convention No. 169.

The Environmental and Social Management Plan (ESMP) integrates:

- Respect for traditional governance structures
- Culturally appropriate consultation mechanisms
- Inclusion of indigenous knowledge systems in operations and training
- Community-led grievance redress systems

By embedding these elements, the project ensures it remains socially inclusive, culturally sensitive, and locally legitimate, strengthening both the effectiveness and sustainability of its interventions.

## 6. Risk Categorization and Rationale

### 6.1 Risk Category: B – Moderate Risk

As per the KfW Sustainability Guideline – Assessment and Management of Environmental, Social, and Climate Aspects (2021), the Wahiajer Bio-Fertilizer and Bio-Pesticide Unit is categorized as a Category B (Moderate Risk) sub-project. This classification indicates that while the project may involve environmental and social risks, these are:

- Site-specific in nature, confined to the immediate project footprint
- Reversible and do not lead to long-term or large-scale degradation
- Predictable and assessable through environmental and social screening
- Mitigable using standard environmental management practices and local safeguards

The project does not involve significant adverse impacts on biodiversity, involuntary resettlement, or large-scale pollution, and it avoids legally protected or sensitive ecological zones. The risks identified—such as groundwater usage, bio-waste handling, and occupational safety—can be effectively managed through appropriate planning, community engagement, and operational controls.

In tribal regions like Wahiajer, cultural sensitivity and free, prior, and informed consent (FPIC) are critical. These have been addressed early in the project through community consultations and the active involvement of the village Dorbar and Integrated Village Cooperative Society (IVCS).

The Category B classification helps ensure that the project is subjected to a proportionate level of environmental and social due diligence, without triggering high-risk (Category A) procedures, while still maintaining full compliance with KfW’s sustainability safeguards and internationally accepted standards such as the IFC Performance Standards.

### 6.2 Justification for Moderate Risk Classification

The categorization is based on a detailed screening of environmental and social variables, including the following factors:

| Risk Factor                    | Details                                                                                                  |
|--------------------------------|----------------------------------------------------------------------------------------------------------|
| Scale and Type of Construction | Medium-scale infrastructure development within an existing community asset (PRIME Hub campus).           |
| Land Use and Displacement      | No land acquisition or displacement involved; land is community-held and allocated with FPIC.            |
| Resource Use                   | Dependence on shallow groundwater for sterilization and cleaning processes, requiring active monitoring. |

|                                      |                                                                                                       |
|--------------------------------------|-------------------------------------------------------------------------------------------------------|
| <b>Waste Generation</b>              | Generation of limited quantities of biological and laboratory waste, which can be safely managed.     |
| <b>Social Context</b>                | Implementation in a tribal-majority region, requiring culturally sensitive engagement and safeguards. |
| <b>Labor and Occupational Safety</b> | Involves use of microbial cultures and machinery, necessitating PPE and safety training for workers.  |

*Table 9: Risk factor classification*

### 6.3 Climate Change and Vulnerability Considerations

The Wahiajer Bio-Fertilizer and Bio-Pesticide Unit has been designed with a strong emphasis on climate resilience, environmental sustainability, and emission mitigation. This is in direct alignment with the KfW Sustainability Guideline (2021) and India’s commitments under the Paris Agreement. The project recognizes Meghalaya’s ecological sensitivity—marked by intense rainfall, hilly terrain, and climate-dependent farming—and integrates both adaptive and mitigative strategies to enhance long-term sustainability and reduce climate vulnerability.

#### Key Climate-Related Considerations Embedded in Project Design

- **Water Efficiency and Seasonal Adaptability**  
The facility includes groundwater metering systems to regulate usage and proposes rainwater harvesting structures to reduce dependence on aquifers. These measures are intended to ensure sustainable water management during dry periods and account for seasonal rainfall variability associated with climate change.
- **Promotion of Climate-Smart Agriculture**  
By producing and supplying organic bio-fertilizers and bio-pesticides, the facility directly supports a transition to low-emission, resilient agricultural practices. Organic inputs help reduce the use of energy-intensive synthetic agrochemicals, improving soil fertility, farmer health, and ecosystem resilience.
- **Infrastructure Resilience in a Vulnerable Terrain**  
Considering Meghalaya’s high rainfall, landslide risk, and unstable slopes, the facility is designed with elevated platforms, proper stormwater drainage, and slope stabilization features. These infrastructural safeguards reduce exposure to extreme weather events and help ensure continuous operations during climate shocks.

#### 6.3.1 GHG Estimation and Climate Co-Benefits

In addition to adaptation strategies, the project also contributes to climate mitigation by reducing greenhouse gas (GHG) emissions through organic input production and use.

##### (a) Avoided Emissions from Fertilizer Substitution

Synthetic nitrogen-based fertilizers are a major source of nitrous oxide (N<sub>2</sub>O) emissions. Replacing them with bio-fertilizers leads to measurable GHG reduction. Based on projected annual output of 24,000 liters of bio-fertilizer:

- Assumed substitution: 0.5 kg urea per liter
- Estimated avoidance:
  - 24,000 L × 0.5 kg = 12,000 kg urea/year
  - Emission factor: ~1.4 kg CO<sub>2</sub>-e per kg urea
  - Total reduction = 16.8 metric tons CO<sub>2</sub>-e/year

#### (b) Avoided Emissions from Pesticide Replacement

Chemical pesticides have high embedded emissions from production and transport. The bio-pesticide output (24,000 liters/year) can avoid approximately 48 metric tons CO<sub>2</sub>-e/year, based on standard emission factors (2 kg CO<sub>2</sub>-e/liter).

#### (c) Soil Carbon Sequestration Benefits

Application of bio-fertilizers promotes microbial activity and organic matter accumulation, enhancing soil carbon storage and long-term climate resilience. Though harder to quantify, this represents a meaningful carbon sink co-benefit over time.

#### (d) Alignment with Donor Frameworks

These contributions align with:

- KfW's climate finance eligibility under mitigation co-benefits
- IFC Performance Standard 3 on Resource Efficiency and Pollution Prevention
- India's Nationally Determined Contributions (NDCs) and State Action Plan on Climate Change (SAPCC)

While the Wahiajer Bio-Fertilizer and Bio-Pesticide Unit is categorized as Moderate Risk (Category B) under KfW guidelines, it integrates substantial climate-smart features that reduce both direct environmental risks and indirect GHG emissions.

### 6.4 Cumulative Impact Assessment (CIA)

In accordance with the KfW Sustainability Guideline (2021) and IFC Performance Standard 1, this section evaluates whether the Wahiajer Bio-Fertilizer and Bio-Pesticide Unit could, when considered together with other existing or foreseeable developments in the surrounding area, result in cumulative environmental or social impacts.

#### (a) Methodology and Scope

The cumulative impact assessment considered:

- A 2 km buffer zone around the project site (Wahiajer PRIME Hub)
- Physical inspection and consultation with local institutions (e.g., Dorbar Shnong, IVCS, DPMU)
- Review of village-level development plans and DPMU records

#### (b) Findings on Nearby Activities

Based on field observations and community validation, no significant infrastructure projects, commercial activities, or public utilities exist or are planned within a 2 km radius that would interact with the proposed bio-fertilizer unit in a way that causes cumulative environmental or social risks. The project is standalone in nature, located within a designated cluster space under the Wahiajer PRIME Hub, and does not overlap with any large-scale rural infrastructure or industrial initiative.

#### (c) Environmental and Social Assessment Summary

| Aspect                        | Observations                                                                                             | Cumulative Risk Level |
|-------------------------------|----------------------------------------------------------------------------------------------------------|-----------------------|
| Groundwater Use               | No competing water-extractive facilities nearby. Community well used only by project.                    | Negligible            |
| Air/Dust Pollution            | No concurrent construction, mining, or vehicular-heavy activity in vicinity.                             | Negligible            |
| Waste Generation              | No other waste-generating installations. Waste managed onsite via soak pits and sterilization.           | Negligible            |
| Traffic or Logistics Pressure | No industrial or agricultural aggregation centers nearby. Movement limited to project-related transport. | Negligible            |
| Social/Community Pressure     | No large in-migration, institutional competition, or resource conflict identified.                       | Negligible            |

*Table 10: Environment and social observation summary*

#### (d) Recommendations

The Wahiajer Bio-Fertilizer and Bio-Pesticide Unit is not part of a cumulative impact landscape at this stage. It is a self-contained, community-supported sub-project with no interactional stressors in the local area.

However, it is recommended that:

- The PMU and IVCS periodically re-validate this finding through stakeholder consultations and review of new development proposals.
- Future cumulative risk assessments be updated if other sub-projects are introduced in the Wahiajer PRIME Hub or surrounding region (e.g., Farmer's Market, storage units, roads).

This proactive review ensures continued compliance with moderate risk (Category B) classification and helps manage potential risks under evolving rural development scenarios.

## 7. Stakeholder Engagement and FPIC

### 7.1 Introduction

The Stakeholder Engagement Plan (SEP) is a structured strategy designed to ensure that all relevant stakeholders are meaningfully involved in the Wahiajer Bio-Fertilizer and Bio-Pesticide Unit sub-project throughout its lifecycle. The SEP emphasizes inclusive, transparent, and culturally appropriate engagement, particularly among indigenous and tribal communities of Wahiajer.

Given the tribal-majority context, the project adhered to the principle of Free, Prior and Informed Consent (FPIC). Community engagement began during the pre-construction phase, with full disclosure of project objectives, impacts, and benefits in local language. Community consent was formally obtained through a participatory process led by the Dorbar Shnong, with representation from women, youth, landowners, and IVCS members.

### 7.2 Stakeholder Engagement Objectives

The project adopts a participatory approach to foster inclusive and transparent engagement with all stakeholders. This ensures alignment with KfW and IFC standards while promoting community ownership and responsiveness.

The main objective of stakeholder engagement for the project is –

- To strengthen collaboration and mutual trust between the MBMA and local stakeholders.
- To maintain a two-way flow of information on project benefits, risks, and timelines.
- To support community feedback and grievance redress throughout implementation.
- To promote gender equity and inclusion of marginalized groups.
- To uphold transparency in decision-making and monitoring in line with KfW Sustainability Guidelines and IFC Performance Standards.

### 7.3 Stakeholder Mapping

| Stakeholder Category                  | Group/Agency                                                                                                        | Role in Project                                            |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| Primary (Directly Affected)           | IVCS Members, Landowners, SHGs, Youth Groups, Laborers, Vulnerable Households                                       | Project beneficiaries, local implementers, affected groups |
| Secondary (Supportive/ Institutional) | MBMA, DPMU, Department of Horticulture, MSRLS, BRDC, Pollution Control Board, Contractors, Market Linkages Partners | Technical, financial, regulatory, and support roles        |

*Table 11: Stakeholder Mapping*

## 7.4 Stakeholder Engagement Activities

Inclusive and phased consultations ensured community participation and support throughout the project.

| Project Phase    | Engagement Activity                    | Target Stakeholders               | Tools/Methods                        | Frequency        |
|------------------|----------------------------------------|-----------------------------------|--------------------------------------|------------------|
| Pre-Construction | Stakeholder Mapping & FPIC (completed) | Dorbar Shnong, IVCS, Women, Youth | Meetings, signed documentation       | One-time         |
|                  | Orientation & Awareness                | IVCS, SHGs, Community             | Posters, oral sessions, IEC          | Once + as needed |
| Construction     | ESMP Monitoring & Feedback             | Community, Contractors, DPMU      | Joint visits, community updates      | Monthly          |
|                  | Grievance Awareness                    | All stakeholders                  | Posters, meetings, contact lists     | Ongoing          |
|                  | Inclusion & Gender Sessions            | SHGs, Women, Youth                | FGDs, capacity-building              | Quarterly        |
| Operations       | Product Awareness & Use                | Farmers, SHGs, IVCS               | Demonstrations, field sessions       | Bi-annually      |
|                  | Market Linkage Dialogues               | Producers, Traders                | Consultative workshops               | Quarterly        |
|                  | Satisfaction Surveys                   | All end users                     | Forms, interviews, IVCS facilitation | Half-yearly      |

*Table 12: Stakeholder engagement activities*

## 7.5 Information Disclosure Platforms

To uphold transparency and promote continuous stakeholder awareness, the project has established multiple culturally appropriate and accessible information-sharing channels. These platforms ensure that all community members, including marginalized and vulnerable groups, receive timely updates about project objectives, risks, activities, and grievance mechanisms.

Key Disclosure Platforms Include:

- Notice Boards at IVCS Office and Community Halls:  
Regular updates on construction timelines, employment opportunities, ESMP highlights, and contact points for grievances are displayed in the local language at central community locations.
- Community Meetings Led by IVCS and DPMU Staff:  
Periodic village-level consultations serve as primary platforms for two-way

- communication, allowing participants to receive updates and voice feedback directly.
- Social Media & WhatsApp Updates by Field Teams:  
Where feasible, digital platforms such as WhatsApp groups, Facebook, or Instagram managed by MBMA field staff are used to disseminate visual content, alerts, and community engagement highlights.
- MBMA Website:  
Key project documents such as the Stakeholder Engagement Plan (SEP), Environmental and Social Management Plan (ESMP), and Grievance Redress Mechanism (GRM) procedures are published on the MBMA website for broader access and reference.

These platforms reinforce MBMA's commitment to proactive engagement, accountability, and rights-based project implementation.

## 7.6 Stakeholder Feedback and Monitoring Plan

| Activity                 | Description                                     | Responsible Entity       | Frequency    |
|--------------------------|-------------------------------------------------|--------------------------|--------------|
| Feedback Collection      | Consultations, meetings, grievance record, FGDs | IVCS, Site Supervisor    | Ongoing      |
| Documentation            | Register of feedback, meeting minutes           | IVCS Secretary           | Post-meeting |
| Review & Action          | Assess relevance and decide action plans        | PMU, DPMU                | Monthly      |
| Project Updates          | Inform stakeholders about changes, resolutions  | PMU, IVCS                | Quarterly    |
| Effectiveness Monitoring | Review how well concerns are addressed          | External/Monitoring Team | Bi-annually  |

*Table 13: Stakeholder feedback and monitoring plan*

## 7.7 Gender Action Plan (GAP)

The Wahiajer Bio-Fertilizer and Bio-Pesticide Unit integrates a Gender Action Plan (GAP) to ensure that women and marginalized genders are actively involved and equitably benefit from the project's implementation and outcomes. The GAP is designed in alignment with the KfW Gender Strategy, IFC Performance Standards 1 and 2, and national guidelines on inclusive rural livelihoods.

### Objectives of the Gender Action Plan

- Promote gender equity in employment, training, and decision-making across project activities.

- Ensure safe and inclusive workspaces that are free from discrimination and harassment.
- Increase women's participation in community engagement, operational roles, and monitoring.
- Address gender-specific constraints such as time poverty, safety, and cultural mobility restrictions.

Key Commitments and Strategies:

| Component                 | Actions and Targets                                                                                     |
|---------------------------|---------------------------------------------------------------------------------------------------------|
| Recruitment               | At least 30% of non-technical positions to be offered to women from the local area.                     |
| Capacity Building         | Conduct tailored training for women in areas like lab handling, packaging, composting.                  |
| Safe Work Environment     | Provide separate sanitation facilities, PPE for women, and grievance redress channels sensitive to GBV. |
| Leadership and Voices     | Ensure women representation in IVCS coordination and site-level decision-making.                        |
| Information Access        | Disseminate project updates in Khasi or Pnar languages via women's groups, SHGs.                        |
| Monitoring and Evaluation | Include gender-disaggregated data in ESMP monitoring and beneficiary tracking.                          |

*Table 14: Key actions under GAP*

### 7.7.1 Community Outreach and Sensitization

The project will actively mobilize women through existing Self-Help Groups (SHGs), the women's wings of Integrated Village Cooperative Societies (IVCS), and influential women leaders at the village level. Awareness sessions focusing on health, safety, and gender rights will be organized in collaboration with local NGOs. To ensure inclusive communication, the project will utilize visual Information, Education, and Communication (IEC) materials such as posters, videos, and WhatsApp messages, specifically tailored for semi-literate rural women.

### 7.7.2 Linkage with Livelihood Promotion

The project will also explore opportunities for women-led micro-enterprises connected to the Bio-Fertilizer Unit, such as eco-friendly packaging, compost marketing, or seed nursery operations. In addition, the IVCS will facilitate access to credit and financial services for women who wish to engage in organic farming or establish small-scale agri-business ventures.

## 8. Identified Environmental and Social Risks and Impacts

The Wahiajer Bio-Fertilizer Unit is classified as a Category B (Moderate Risk) project under the KfW Sustainability Guidelines. It presents moderate environmental risks, primarily related to groundwater extraction for cleaning and processing, which, if unregulated, may result in localized water stress. Additional environmental concerns include the management of laboratory waste and bio-waste, which pose potential contamination risks to soil and water. These impacts are considered reversible and can be effectively mitigated through routine monitoring, soak pit systems, and disposal via authorized waste channels, in line with KfW's principles on pollution prevention and resource efficiency.

On the social front, the key risks pertain to Occupational Health and Safety (OHS), the equitable inclusion of women and youth in employment, and cultural sensitivity in a tribal setting.

The OHS risks are significant due to the handling of microbial inputs, operation of specialized lab equipment (e.g., autoclaves, fermenters), and exposure to biological agents and sterilization chemicals. Inadequate use of Personal Protective Equipment (PPE), insufficient safety training, and absence of emergency response preparedness could lead to physical injuries, health issues, or accidents during construction and operations. To mitigate these risks, the ESMP includes provisions for:

- Mandatory PPE usage
- OHS training and induction for workers
- Deployment of a designated Safety Officer
- Maintenance of first-aid kits, fire safety systems, and spill response equipment
- Regular incident reporting and inspections
- 

These protocols are aligned with KfW's Sustainability Guideline, which emphasizes compliance with ILO Core Labour Standards, national safety regulations, and best practices in occupational health. The contractor's obligations toward OHS are integrated into the bidding documents and contractual clauses to ensure enforceability and accountability.

In addition, social inclusion risks have been addressed through the successful implementation of Free, Prior, and Informed Consent (FPIC), adoption of gender-sensitive hiring practices, and ongoing community consultations to ensure culturally appropriate project design and operation. These actions fulfill KfW's safeguards related to human rights, labour conditions, and inclusive development.

In terms of climate risks, the project presents indirect vulnerabilities such as greenhouse gas (GHG) emissions from energy use, heightened water demand during dry periods, and the energy footprint of sterilization processes. However, the project also contributes positively by

promoting organic farming, reducing dependence on synthetic fertilizers, and enhancing soil health and carbon retention. These climate co-benefits align with KfW's climate strategy, and the ESMP integrates climate-smart practices to enhance resilience and sustainability.

## 9. Environmental and Social Management Plan Matrix

| Project Phase    | E&S Risk / Impact                               | Mitigation Measure                                                                   | Responsibility             | Monitoring Indicator                            | Frequency |
|------------------|-------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------|-------------------------------------------------|-----------|
| Pre-Construction | Lack of Free, Prior and Informed Consent (FPIC) | Community-level FPIC consultations with documentation                                | PMU / DPMU / IVCS          | FPIC minutes, signed endorsement                | One-time  |
|                  | Inadequate site screening                       | Environmental and social screening using standard forms                              | PMU / Technical Consultant | Screening reports, risk categorization          | One-time  |
|                  | Vulnerable group exclusion                      | Conduct inclusive mapping and consultations                                          | PMU / IVCS                 | Inclusion checklist, gender & social mapping    | One-time  |
|                  | Disruption of traditional governance            | Coordinate with Dorbar Shnong and respect customary practices                        | DPMU / IVCS                | Meeting minutes with Dorbar Shnong              | Ongoing   |
| Construction     | Worker health and safety                        | PPE provision, safety training, site supervision, emergency preparedness plan        | Contractor / DPMU          | Safety logs, training records, incident reports | Monthly   |
|                  | Unsafe work environment and accident risks      | Appoint safety officer, conduct regular inspections, maintain first aid & spill kits | Contractor / PMU           | OHS officer reports, safety audits              | Monthly   |
|                  | Improper solid and liquid waste disposal        | Segregation, soak pits for lab water, tie-up with certified disposal agencies        | Contractor / PMU           | Waste records, pit inspection reports           | Bi-weekly |
|                  | Dust and noise pollution                        | Use of dust suppression (e.g., water spraying), noise-reducing machinery             | Contractor                 | Air/noise quality check reports                 | Monthly   |
|                  | Labor rights violation                          | Adherence to OSH Code and local labor laws; no child labor                           | Contractor / DPMU          | Labor compliance reports, grievance log         | Monthly   |
| Operation        | Groundwater over-extraction                     | Metering, usage limits, rainwater harvesting system                                  | Lab staff / IVCS           | Water usage logs, RWHS maintenance report       | Monthly   |
|                  | Unsafe handling of microbial agents             | Training, SOPs, secure storage, periodic audits                                      | PMU / Lab-in-charge        | Biohazard training records, incident reports    | Quarterly |

|               |                                                     |                                                                          |                           |                                                  |                      |
|---------------|-----------------------------------------------------|--------------------------------------------------------------------------|---------------------------|--------------------------------------------------|----------------------|
|               | Occupational exposure to biological/chemical agents | Install ventilation, emergency response plan, PPE policy for lab staff   | IVCS / PMU / Contractor   | Ventilation checklists, PPE logs                 | Monthly              |
|               | Exclusion of women / youth from benefits            | Gender-sensitive recruitment, local IEC campaigns                        | IVCS / DPMU               | Gender-disaggregated employment records          | Quarterly            |
|               | Community distrust / misinformation                 | Continued IVCS outreach, public disclosures, community feedback sessions | IVCS / PMU                | Meeting logs, IEC records, feedback summary      | Quarterly            |
|               | Cultural insensitivity in operation                 | Ongoing engagement with Dorbar Shnong                                    | IVCS / PMU                | Minutes from traditional authority meetings      | Quarterly            |
|               | Waste of expired cultures                           | Designated bio-waste disposal process                                    | Lab staff / Contractor    | Disposal records, tie-up with authorized vendors | Monthly              |
| Cross-cutting | Inadequate grievance redress                        | Active GRM, complaint boxes, contact details published                   | DPMU / IVCS / PMU         | GRM register, resolution status reports          | Ongoing              |
|               | Non-disclosure of ESMP and SEP                      | Publish on MBMA website, IVCS notice boards                              | PMU                       | Website link, photos of posted documents         | One-time + Quarterly |
|               | Weak monitoring and documentation                   | Third-party audits, internal review templates                            | PMU / External Consultant | Monitoring reports, audit checklists             | Quarterly            |

Table 15: ESMP Matrix

## 10. Budget for ESMP Implementation

To ensure effective implementation of the Environmental and Social Management Plan (ESMP) for the Wahiajer Bio-Fertilizer and Bio-Pesticide Unit, an estimated ₹5.25 lakhs has been allocated. This budget accounts for all essential safeguards-related activities, from training and monitoring to community engagement and risk mitigation.

The allocation is designed to mainstream environmental and social safeguards across all phases of the project—pre-construction, construction, and operational—while aligning with KfW Sustainability Guidelines and national standards. It also includes provision for flexibility to address unforeseen risks or evolving needs through a contingency component.

Details of the budget allocation for various activities-

| Sl. No. | Budget Component                           | Description                                                                     | Estimated Cost (INR) |
|---------|--------------------------------------------|---------------------------------------------------------------------------------|----------------------|
| 1       | Training & Awareness                       | Capacity building for staff, IVCS, and community on E&S compliance              | ₹ 75,000             |
| 2       | Monitoring & Compliance                    | Regular monitoring of water use, waste disposal, safety standards               | ₹ 75,000             |
| 3       | Personal Protective Equipment (PPE)        | Safety gear for workers (gloves, masks, coats, goggles, etc.)                   | ₹75,000              |
| 4       | Waste Management Infrastructure            | Soak pit, bio-waste bins, sterilization tools, signage                          | ₹ 1,00,000           |
| 5       | Grievance Redress & Stakeholder Engagement | GRM setup, awareness materials, community consultations                         | ₹ 50,000             |
| 6       | Documentation & Reporting Tools            | Printing of ESMP/SEP tools, field registers, photo documentation, and reporting | ₹50,000              |
| 7       | Contingency                                | Reserve for unexpected compliance-related costs                                 | ₹1,00,000            |

Table 16: Budget for ESMP activities

## 11. ESMP Implementation and Responsibilities

| Entity                                                | Responsibility                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Meghalaya Basin Management Agency (MBMA – PMU)</b> | <ul style="list-style-type: none"> <li>- Overall coordination and oversight of ESMP implementation</li> <li>- Ensuring alignment with KfW Sustainability Guidelines and ILO Core Labour Standards</li> <li>- Review of progress reports and E&amp;S compliance documentation - Capacity building for DPMU, IVCS, and contractors on EHS and OHS standards</li> <li>- Oversight of corrective actions for serious OHS incidents, and reporting to KfW</li> </ul>                                                                                                                            |
| <b>District Project Management Unit (DPMU)</b>        | <ul style="list-style-type: none"> <li>- Day-to-day field monitoring and supervision of ESMP and OHS protocols</li> <li>- Interface with local stakeholders and village institutions</li> <li>- Support for grievance redressal, documentation, and reporting</li> <li>- Ensure compliance with labour laws, OHS Code, and contractor obligations</li> <li>- Liaison with regulatory bodies (Labour, Pollution Control, Health) where required</li> </ul>                                                                                                                                  |
| <b>Contractor</b>                                     | <ul style="list-style-type: none"> <li>- On-site implementation of mitigation measures during construction</li> <li>- Strict compliance with occupational health and safety standards and site-specific OHS plans</li> <li>- Appointment of a qualified Safety Officer and provision of PPE, sanitation, and emergency preparedness infrastructure</li> <li>- Maintenance of EHS records including accident reports, safety logs, and inspection findings</li> <li>- Immediate notification and response in case of serious incidents, and participation in root cause analysis</li> </ul> |
| <b>Integrated Village Cooperative Society (IVCS)</b>  | <ul style="list-style-type: none"> <li>- Oversight of day-to-day operations and laboratory practices post-construction</li> <li>- Ensuring compliance with bio-waste handling, microbial safety protocols, and water use monitoring</li> <li>- Implementation of OHS procedures in lab-based activities (e.g., handling autoclaves, fermenters)</li> <li>- Continued community engagement and grievance resolution</li> <li>- Monitoring inclusivity in employment and periodic staff training on safe practices</li> </ul>                                                                |

Table 17: ESMP Implementation and responsibilities

## 12. Grievance Redress Mechanism

### 12.1 Overview

The concept of a Grievance Redress Mechanism (GRM) is rooted in global development best practices and human rights frameworks that emphasize inclusive, participatory, and accountable governance. GRMs serve as structured processes to receive, evaluate, and address concerns and complaints raised by individuals or communities affected by development interventions. Their importance has been acknowledged across development agencies such as the World Bank, Asian Development Bank (ADB), International Funds for Agricultural Development (IFAD), and Kreditanstalt für Wiederaufbau (KfW), particularly for projects with potential environmental and social impacts.

At its core, the GRM aligns with the UN Guiding Principles on Business and Human Rights, which advocate for access to remedy and redress as a fundamental right. Similarly, under the Environmental and Social Safeguard Policies, multilateral institutions require a functional and culturally sensitive redress mechanism to be in place before project implementation.

Aligning with the MBMA GRM policies, the SLM Project's GRM builds upon these principles, ensuring:

- **Accessibility:** Multiple channels including phone, online, SMS, WhatsApp, in-person, and complaint boxes allow stakeholders—especially vulnerable groups such as indigenous people, women, and marginalized communities—to submit grievances in a manner convenient to them.
- **Transparency:** All grievances are registered, assigned a unique tracking number, and followed up systematically. Updates and resolutions are documented and communicated back to the complainant.
- **Inclusiveness:** The mechanism is designed to be gender responsive and socially inclusive, ensuring representation of women and IP communities in grievance committees, and safeguarding their rights and voices in decision-making processes.
- **No Obstruction to Legal Rights:** The GRM does not preclude access to judiciary or other state-level administrative redress mechanisms. Complainants may seek legal action if not satisfied at any stage of the GRM.

### 12.2 MBMA GRM Protocol:

During the implementation of the project, there are possibilities of instances where people are impacted by the project in an unwanted or undesired manner. To help resolve such grievances, SLM has created a mechanism by which aggrieved person(s) can get their concerns addressed.

If any person feels that he or she has been adversely affected by the project, they may submit their complaints or feedback by simply calling the following phone numbers. The processes of the GRM are indicated below.

### **12.3 Options to File Complaints:**

1. Telephone Hotline - Call or WhatsApp
  - Garo Hills Region: 8880643108
  - Khasi Hills, Jaintia Hills, and Ri Bhoi Region: 8880643109Available from Monday to Friday, 10:00 AM to 6:00 PM.
2. On MBMA Website - <https://www.mbma.org.in/grievance/>  
Stakeholders may also be able to submit their grievances via an online platform.
3. EMAIL (also available on MBMA website)
  - For general issues - [mbma.mbda.grievance@gmail.com](mailto:mbma.mbda.grievance@gmail.com)
  - For Procurement-related issues - [procurementcomplaints.mbma@gmail.com](mailto:procurementcomplaints.mbma@gmail.com)
4. In-Person Submission
  - Complaints can be lodged directly at district offices or project sites where officials can register grievances on behalf of the complainant. The district offices should maintain a separate GRM register to note the grievances.
  - Wherever IVCS is operational under the project, the IVCS members can also file a complaint directly with the IVCS Secretary/ Chairman. Every IVCS should have the GRM register.

### **12.4 Complaint Flow Structure:**

1. Complaints will be registered by the concerned official of the project and the complainant will be given a 'reference' number. They will be requested to keep the number safe with them for future reference.
2. Within 7 days from registration, they will be contacted by District office, who will provide a solution. If they are still not satisfied with the solution, they may inform their respective District Project Manager (DPM) or call again, and the issue will be escalated to the Project Management Unit (PMU).
3. A solution from the state level will be communicated to them within 10 days from the day of escalation of the grievance.
4. If they are still not satisfied with the solution offered, they may inform the District Project Manager or they can call again, and the issue will then be escalated to the Project Director who is the final appellate authority who will provide the final resolution within 20 working days.
5. After a resolution is provided, a closure report will be filed to document the actions taken and the outcome.

### 12.5 Flow of Complaint:

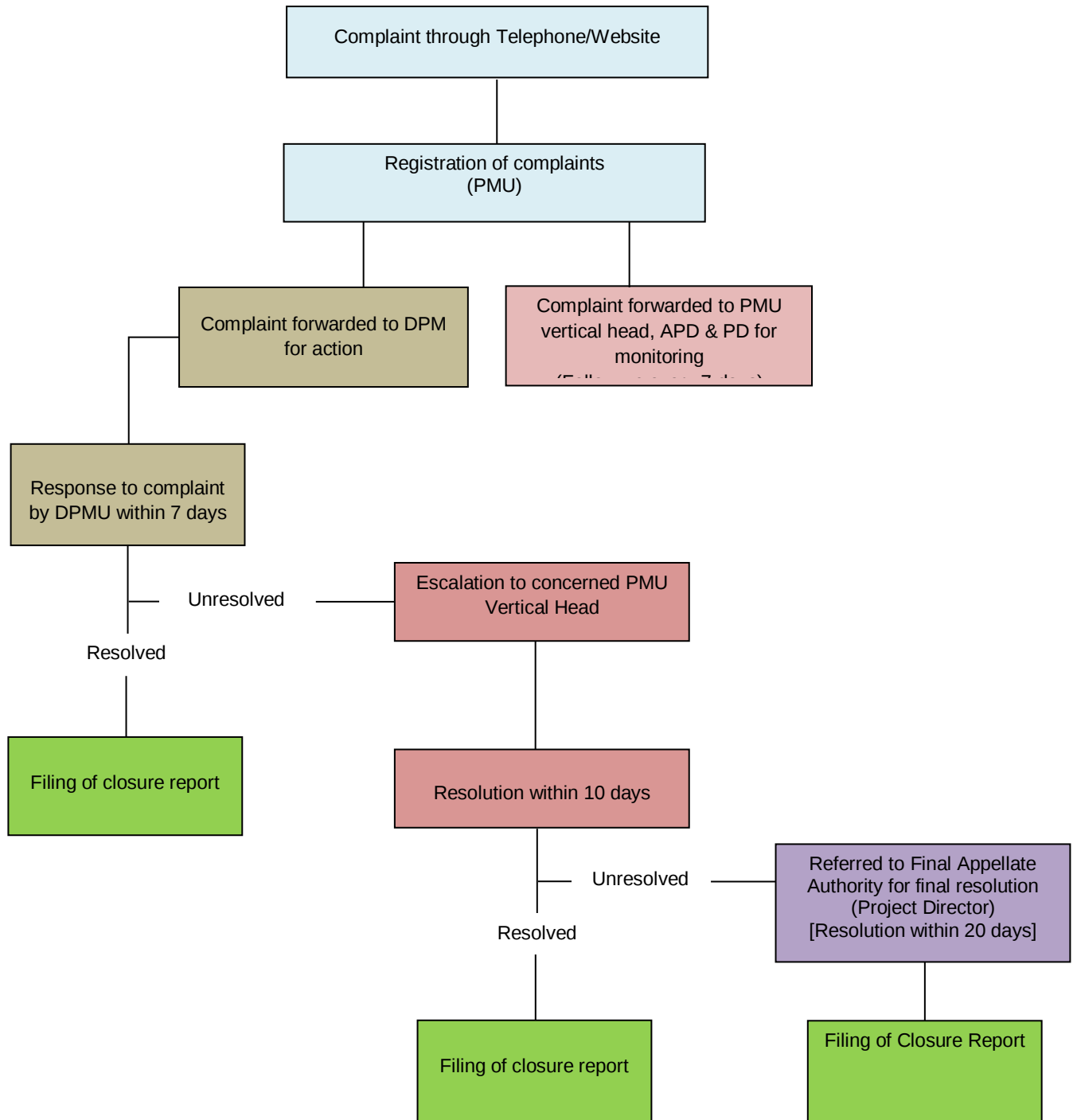


Fig 3: Flow of Complaint

### 13. Monitoring and Reporting Framework

To ensure effective implementation of the Environmental and Social Management Plan (ESMP) for the Wahiajer Bio-Fertilizer Unit, a comprehensive Monitoring and Reporting Framework has been established. This framework ensures that all mitigation measures are adhered to and that any emerging issues are promptly addressed.

The KfW Sustainability Guideline (2021) mandates regular monitoring of key E&S indicators, stakeholder engagement, and climate adaptation measures. This framework promotes participatory monitoring involving local institutions such as the Integrated Village Cooperative Society (IVCS), along with field-level oversight from the District Project Management Unit (DPMU) and central review by the Project Management Unit (PMU) at MBMA.

The following aspects will be monitored:

| <b>Monitoring Aspect</b>    | <b>Method</b>                                                                                                                       | <b>Frequency</b> | <b>Responsible Entity</b> |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------|
| <b>Water Usage</b>          | Monthly meter readings to track consumption and detect overuse; promote rainwater harvesting if usage exceeds thresholds.           | Monthly          | Lab/IVCS                  |
| <b>Solid Waste Disposal</b> | Visual inspections, waste logs, and tie-ups with authorized waste handlers to verify proper bio-waste and hazardous waste disposal. | Bi-weekly        | Contractor/DPMU           |
| <b>Worker Safety</b>        | Routine site safety audits, PPE compliance checks, and incident reporting to ensure safe working conditions.                        | Monthly          | Contractor/PMU            |
| <b>Stakeholder Feedback</b> | Quarterly feedback sessions, satisfaction surveys, and community discussions to identify concerns or areas of improvement.          | Quarterly        | DPMU/IVCS                 |
| <b>GRM Resolution Rate</b>  | Analysis of grievance logbooks and response records to evaluate how effectively issues are addressed.                               | Bi-annually      | PMU                       |

*Table 18: Monitoring framework*

## **14. E&S Clauses in Bidding and Contractual Documents**

To ensure that contractors and vendors fully comply with the Environmental and Social Management Plan (ESMP) during project execution, the bidding documents for the Wahiajer Bio-Fertilizer Unit include specific Environmental and Social Clauses. These clauses are legally binding and form part of the contractual obligations of the selected contractor.

The inclusion of these clauses is in accordance with the KfW Sustainability Guideline (2021), which mandates that environmental and social safeguards be integrated into procurement and contracting processes. The clauses also reflect the requirements of IFC Performance Standards, particularly those relating to labor conditions, community health and safety, and grievance redress.

### **14.1 Key E&S Provisions to be Included in Bidding Documents**

#### **1. Contractor Responsibilities under ESMP**

- Full compliance with the project-specific ESMP and associated mitigation measures
- Appointment of an Environment & Social (E&S) and Health, Safety and Environment (HSE) Officer
- Implementation of pollution control measures, OHS protocols, and waste management systems

#### **2. Labor and Working Conditions**

- Prohibition of child labor, forced labor, and discriminatory practices
- Provision of fair wages, working hours, and grievance channels for all workers
- Assurance of safety equipment, training, and gender-sensitive sanitation facilities

#### **3. Cultural Sensitivity and Non-Discrimination**

- Respect for indigenous customs, community institutions, and cultural heritage
- Engagement with local stakeholders and employment preference for local labor

#### **4. Code of Conduct and GBV Prevention**

- Mandatory signing of a Contractor Code of Conduct covering behavior standards, anti-harassment policies, and prevention of Gender-Based Violence (GBV)
- Training and awareness sessions for all site staff on acceptable conduct

#### **5. Monitoring and Reporting**

- Submission of monthly E&S compliance reports including site photos, training logs, and worker records
- Participation in joint inspections with DPMU and PMU staff

#### 6. Enforcement and Penalties

- Penalties for non-compliance with E&S provisions, including financial deductions and termination clauses
- Remediation obligations for any environmental or social harm caused during implementation

#### 7. Grievance Redress Mechanism (GRM)

- Establishment of a contractor-level grievance redress process aligned with the project's overall GRM
- Display of grievance contact details on-site in the local language

Annexure 1: Site images



*Fig 4: Structure of Wahiajer PRIME Hub, West Jaintia Hills*



*Fig 5: Site for construction of Bio Fertilizer & Bio Pesticide Unit*

## Annexure 2: Extract of Stakeholder consultation minutes

The following consultations have been carried out during Project design and preparation:

| Stakeholders met                                                                                                 | Date      | Topics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A community awareness meeting was organized that included stakeholders from MBMA and the community village head. | 7-05-2025 | <ul style="list-style-type: none"> <li>The village community had no objection to the construction of the Biocontrol Lab at Wahiajer PRIME Hub.</li> <li>The community agreed to support tree clearance at the proposed site.</li> <li>As borewell construction is not permitted, an open well was suggested for water supply.</li> <li>The community will assist in obtaining necessary permissions for electricity and transformer installation.</li> <li>The Village Headman will be informed of the tender process to allow eligible local contractors to participate.</li> <li>Preference in recruitment will be given to qualified community members.</li> <li>MBMA will prepare the MoA with the community, and the signing process will commence shortly.</li> </ul> |

Table 16: Extract from the stakeholder consultation meeting

The following concerns and suggestions were identified during stakeholder engagement and will be considered by the implementation partner and/or its contractor(s):

| Concern/Suggestion | Stakeholder                   | Responses by the Project/Community                               |
|--------------------|-------------------------------|------------------------------------------------------------------|
| Electricity        | IVCS, MBMA, Village Community | Village Headman to assist in the application of the transformer. |
| Water              |                               | Construction of an open well.                                    |
| Land preparation   |                               | Community to assist in land preparation.                         |
| Sewage & Pollution |                               | Consent, clearances from the Pollution Control Board             |

Table 17: Concerns noted from stakeholder meeting

### Annexure 3: Copy of the Minutes of Meeting

#### **MINUTES OF THE MEETING WITH THE COMMUNITY LEADERS OF WAHIAJER ON SETTING UP OF BIO-CONTROL LAB AT WAHIAJER PRIME HUB**

**Date:** 7-05-2025

**Venue:** Wahiajer Dorbar Hall

**Time:** 2:30 pm

A total of 18 members attended the meeting, which included Mrs. M. Syngkon (DPM, WJH), Shri D. Lamar (Adviser CDP), Shri B. Nongrum (SPM MBMA), Smt. B. K. Shylla (DM, Laskein), Shri W. Khongriah (Manager, Agronomist), Smt. M. Ramsdam (AM MBMA), Shri J. Umdor (PA, MBMA), Shri S. Laloo (Village Headman), Shri F. Shylla (Asst. Headman), Shri A. Sari (Genl Secy), Smt. M. Phawa (Secy IVCS), Shri B. Pawa (Chairman IVCS) along with 5 members of IVCS.

The meeting was chaired by Smt. M. Syngkon (DPM, WJH). A brief introduction about the Project and the objectives and advantages of biocontrol Lab was given by Mr. B. Nongrum (SPM).

The following discussions were made and the decisions were made accordingly:

1. The village community had no objections on the construction of the Biocontrol Lab at Wahiajer Prime Hub.
2. Deforestation will be required prior construction and it was decided that the Community will take this responsibility for clearance of trees at the site of construction.
3. The village Dorbar mentioned that construction of borewell is not permitted in the village and therefore it was suggested that for water supply to the facility construction of Open well can be made.
4. It was decided that the community will support MBMA for obtaining permission for Installation of Transformer, Electricity connection etc.
5. It was also mentioned that for the construction of the lab, the village Dorbar will be informed of the tender floated by MBMA for the project, and any eligible contractor from the village can participate.
6. The village Dorbar has suggested that recruitment of staffs, laborers etc. to be given preference to the members of the community, only if they attain the desired qualifications and experience.
7. MoA with the community, will be prepared by MBMA and signing of agreement will soon be initiated.
8. The meeting was concluded by a vote of thanks from Mrs. M. Syngkon (DPM, WJH)

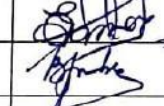
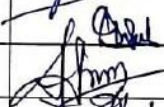
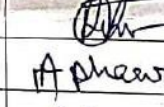
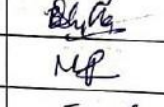
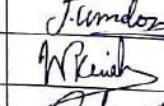
# MEGHALAYA BASIN MANAGEMENT AGENCY

Name of the Meeting: Meeting with community leaders of Wahaia on setting up of Biocontrol Lab

Date: 7<sup>th</sup> May, 2025

Venue: Wahaia Dohbar Hall, Wahaia

Time: 2:30 pm

| Sl. No. | Name                   | Designation              | Signature                                                                             |
|---------|------------------------|--------------------------|---------------------------------------------------------------------------------------|
| 1.      | M. Syngdon             | DPM i/c                  |    |
| 2.      | Shri. D. Lama          | Advisor                  |    |
| 3.      | Shri. Banfubi L. Nong  | SPM MBMA                 |    |
| 4.      | Shri. D. H. Pale       | Village member           |   |
| 5.      | Shri. S. Kaler         | Headman                  |  |
| 6.      | Shri. Francis Shyle    | Asst. Headman            |  |
| 7.      | Shri. Andrew Sari      | Gen Secy Shing           |  |
| 8.      | Smt. Monica Phawa      | Secretary IVCS           |  |
| 9.      | Mr. Bhalingki Phawa    | Chairman IVCS            |  |
| 10.     | Smt. Pinangroi Dha     | Gf                       |  |
| 11.     | Smt. Amrita Phawa      | MC Member                | A Phawa                                                                               |
| 12.     | Smt. Arjoni's pala     | MC Member                | Aala                                                                                  |
| 13.     | Mr. Kirelin Bateh      | MC Member                |  |
| 14.     | Smt. Berniki K. Shylla | DM, Kaskin<br>ETC        |  |
| 15.     | Mayandi Lamsden        | DM, LDP, MBMA            | MF                                                                                    |
| 16.     | John. V. Umador        | PA, KM, MBMA             | J. Umador                                                                             |
| 17.     | Welfareson Khonguah    | Manager (Agronomist)     | W. Khonguah                                                                           |
| 18.     | Matilde Shadap         | Agriculturer (Pine Hall) |  |



Meeting at Wahiajer Dorbar Hall, Wahiajer on Construction of Biocontro Laboratory

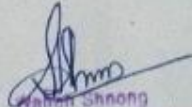
Annexure 4: No Objection Letter from Village Head

OFFICE OF THE DORBAR SHNONG WAHIAJER.  
West Jaintia Hills District.

No Objection Certificate.

This is to certify that The Dorbar Shnong Wahiajer West Jaintia Hills District has No Objection to Set up Bio Lab and Food Processing under the project of MBMA. The Agency must comply all the rules and regulations of the Dorbar Shnong.

Dated Wahiajer .  
The 12<sup>th</sup> April 2025.

  
Dorbar Shnong  
Wahiajer Village P. O. Thadlasketp  
West Jaintia Hills Dist

Planning Branch (DBD/L)  
Received No. 5162  
Date 14/4/2025

## Annexure 5: GRM form on MBMA website (www.mbma.org.in)



MEGHALAYA BUREAU OF  
MANAGEMENT AND  
ADMINISTRATION

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For grievances from the Khasi Hills and Ri Bhoi Region please call – +91880643109 and from the Garo Hills Region please call – +91880643108 between 10:00 am and 6:00 pm, Monday to Friday. For procurement-related grievances, please send an email to [procurementcomplaints.mbma@gmail.com](mailto:procurementcomplaints.mbma@gmail.com)

| Contact Method         | Information                                                                                                                                              |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| General Enquiries Form | Use the form on the right for general enquiries                                                                                                          |
| Address                | C/o Meghalaya State Housing Financing Cooperative Society, Nongrim Hills, behind Bethany Hospital, Shillong, East Khasi Hills District, Meghalaya 793003 |
| Landline               | +91-364-2522921                                                                                                                                          |
| Email Id               | mbma.mbda.grievance@gmail.com                                                                                                                            |

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First name

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Subject

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Enter CAPTCHA

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## Annexure 6: Environmental and Social Monitoring Checklist

This ready-to-fill monitoring checklist is designed to assist MBMA, DPMU, contractors, and external monitors in tracking the implementation of ESMP measures for the Wahiajer Bio-Fertilizer Unit. It includes key indicators across environmental, health, safety, and social dimensions. Monitoring should be conducted regularly and documented using this template.

| Monitoring Aspect    | Indicator/Parameter                              | Method of Verification            | Frequency   | Remarks/Status |
|----------------------|--------------------------------------------------|-----------------------------------|-------------|----------------|
| Water Usage          | Meter readings, records                          | Meter inspection, usage logs      | Monthly     |                |
| Solid Waste Disposal | Proper segregation and disposal                  | Visual inspection, disposal logs  | Bi-weekly   |                |
| Worker Safety        | Use of PPE, safety briefings                     | On-site inspection, training logs | Monthly     |                |
| Site Cleanliness     | No scattered debris or waste                     | Site walkthrough                  | Weekly      |                |
| Community Feedback   | No major grievances                              | Consultations, feedback register  | Quarterly   |                |
| GRM Performance      | Timely resolution of complaints                  | Grievance log review              | Bi-annually |                |
| GHG/Climate Measures | Adoption of rainwater harvesting, organic inputs | Observation, lab records          | Quarterly   |                |
| Gender Inclusion     | Women's participation in operations              | Staff lists, field interviews     | Quarterly   |                |

## Annexure 7: Sample Environmental and Social (E&S) Contract Clauses

This annexure provides sample E&S clauses for inclusion in bidding documents and contractor agreements, aligned with the ESMP and safeguard requirements under KfW guidelines. These clauses are intended to ensure contractors are held accountable for environmental and social compliance during project implementation.

| Clause Category                                       | Sample Contract Clause                                                                                                                                                                   |
|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| General ESMP Compliance                               | The Contractor shall comply with all provisions of the Environmental and Social Management Plan (ESMP), including mitigation measures, monitoring activities, and reporting obligations. |
| Environmental Permits and Laws                        | The Contractor must secure all necessary environmental permits and adhere to applicable environmental regulations during construction and operations.                                    |
| Occupational Health and Safety (OHS)                  | The Contractor shall ensure safe working conditions, provide personal protective equipment (PPE), conduct regular safety briefings, and comply with local labor safety laws.             |
| Labor and Working Conditions                          | No child or forced labor shall be employed. Equal pay and non-discriminatory practices must be enforced. Workers must have access to grievance mechanisms.                               |
| Gender-Based Violence (GBV) and Harassment Prevention | All workers must sign a Code of Conduct prohibiting GBV, harassment, and abuse. Violations will lead to disciplinary action or termination.                                              |
| Waste Management                                      | Waste must be managed in accordance with approved waste disposal practices. No hazardous material shall be disposed of in non-designated areas.                                          |
| Grievance Redress Mechanism (GRM)                     | Contractor shall establish an accessible grievance redress process for workers and affected community members and respond within seven working days.                                     |
| Monitoring and Reporting                              | Monthly E&S compliance reports must be submitted to the PMU, including incident records, safety audits, and stakeholder engagement activities.                                           |
| Non-Compliance and Penalties                          | Non-compliance with E&S clauses may result in penalties, suspension of payments, or termination of the contract. MBMA reserves the right to enforce corrective actions.                  |