



ENVIRONMENT AND SOCIAL MANAGEMENT FRAMEWORK- VOLUME 1

**West Bengal Accelerated Development of Minor
Irrigation Project**

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1 INTRODUCTION

1.1 PROJECT DESCRIPTION INCLUDE

West Bengal is richly endowed with water resources but has struggled to harness these effectively in agriculture. However, 76 per cent of the annual rainfall (1,740 mm) falls in the three to four monsoon months. The State has around 56 million ha of cultivable land that could utilise more than 70 billion cubic meters (BCM) annually in irrigation. However, the State has only been able to develop surface storage structures of 19.8 BCM. While surface water development has been slow in the State, West Bengal has been more proactive in utilising its groundwater potential of 29.33 BCM, particularly in northern and southern regions where alluvium aquifers are very rich in groundwater resources.

The World Bank-funded West Bengal Accelerated Development of Minor Irrigation ("WBADMI Phase I") project, implemented from 2011 to 2019, provided a successful model for developing minor irrigation schemes to enhance agricultural production. In addition to initiating the construction of small storage structures in western districts and other irrigation infrastructure in the rest of the state, it strengthened community-based irrigation management, supported agricultural development and services, encouraged crop diversification and new technologies, and created new income-generating opportunities. Overall, the project reached 124,700 beneficiaries, of which 111,203 were small and marginal farmers – approximately two per cent of West Bengal's over six million small and marginal farmers.

The WBADMI Phase II promotes resource-efficient, inclusive, and diversified growth in the rural sector, enhances competitiveness and enables job creation. The proposed Project is also aligned to transform by increasing agricultural productivity in targeted areas, improving incomes of small and marginal farmers, and contributing directly to ending extreme poverty and promoting shared prosperity. The Project will also aim to leverage private sector investments by enabling finance and building market access. The activities will support gender equality and empowerment through targeted training of women in modern agricultural, horticultural, and fishery methods, as well as by encouraging female plot holders to take up an active role in Water User Associations (WUAs) and get involved in the planning, implementation and management of minor irrigation schemes supported by the project.

1.2 PROJECT COMPONENTS

The proposed project will extend the achievements of the WBADMI Phase I Project by expanding minor irrigation services to more small and marginal farmers, mainstreaming modern agricultural techniques and institutionalising the participatory WUA approach to irrigation and water management. The project will also provide financing for existing minor irrigation schemes to support value additions and more efficient water management. These activities are expected to improve irrigation for up to 60,000 hectares (ha) of farmland, thus benefitting up to 150,000 farmers.

The proposed project will draw on the lessons from WBDMIP Phase I to enhance its effectiveness, notably integrating infrastructure with agricultural support services. It will ensure better access to irrigation translates into higher yields and incomes; the clustering of schemes in a watershed-based development approach to facilitate efficient implementation and monitoring, improving the capacity of implementing institutions to make planning, design and tracking efficient using modern GIS-based tools.

The project will consist of four components:

Component 1: Strengthening community-based institutions. The component aims to mobilize, engage, and empower farmers by building and strengthening transparent, inclusive, and self-

sustaining WUAs. The focus is on poor, and vulnerable farmers and women farmers who are small, marginal farmers or sharecroppers. Those who are in the climatologically stressed watersheds and, therefore, are currently managing their livelihoods through rainfed, single-cropped subsistence farming will be targeted especially. To do so, the Project will hire support organizations (SOs) to engage with farmers throughout the process i.e. develop Scheme Development and Management Plans (SDMP); set up a performing irrigation service fee collection, recording, and accounting system for WUAs; develop an equitable and sustainable water sharing and utilization system; and make WUAs perform in the governance procedures, social accountability mechanisms, and sustainable systems for water resources management.

Component 2: Minor irrigation services. The component aims to improve access to water for agricultural irrigation and other livelihood activities. The focus is on developing rainwater harvesting (storage) structures in watersheds that are water resource constrained and currently cultivated under rainfed conditions, while a limited number of tube wells will be included to pilot innovation and safeguard plantation-based crops. These investments will significantly strengthen small and marginal farmers' resilience in the face of climate change-related effects. Areas considered for borehole investments fall either in the periphery or outside the transboundary aquifer, and those schemes will use solar-powered pumps to facilitate access in remote areas and lower the Project's carbon footprint. Water management interventions will include improved conveyance and application systems, such as flexible piped water supply, sprinkler, and drip irrigation systems. Successful measures from Phase I will be adopted for fine-tuning and scaling-up, including standardised design model, standardised technology such as GIS and remote sensing, participatory identification of site-specific constraints, and water security and livelihood planning tools at the watershed level. Investments will be tailored to the geo-climatological and agro-ecological zones of West Bengal maximize returns for the farmers. In the western districts, the micro watershed of less than 20 km² will be prioritised for integrated watershed development. These structures will be used for irrigating plantations and developing fisheries where possible. Spring shed management, a combination of landscape, watershed, and recharge management, will be the focus in Northern districts. Water detention structures with a storage capacity of less than 0.1 MCM will be the main investments in Coastal districts. They will be used for both fisheries and agriculture. Small ponds for fisheries will be supported as well. In the groundwater-rich alluvium zones focus will be on water management practices, particularly of existing tube wells, and creating and rehabilitating surface ponds for use in fisheries and agriculture.

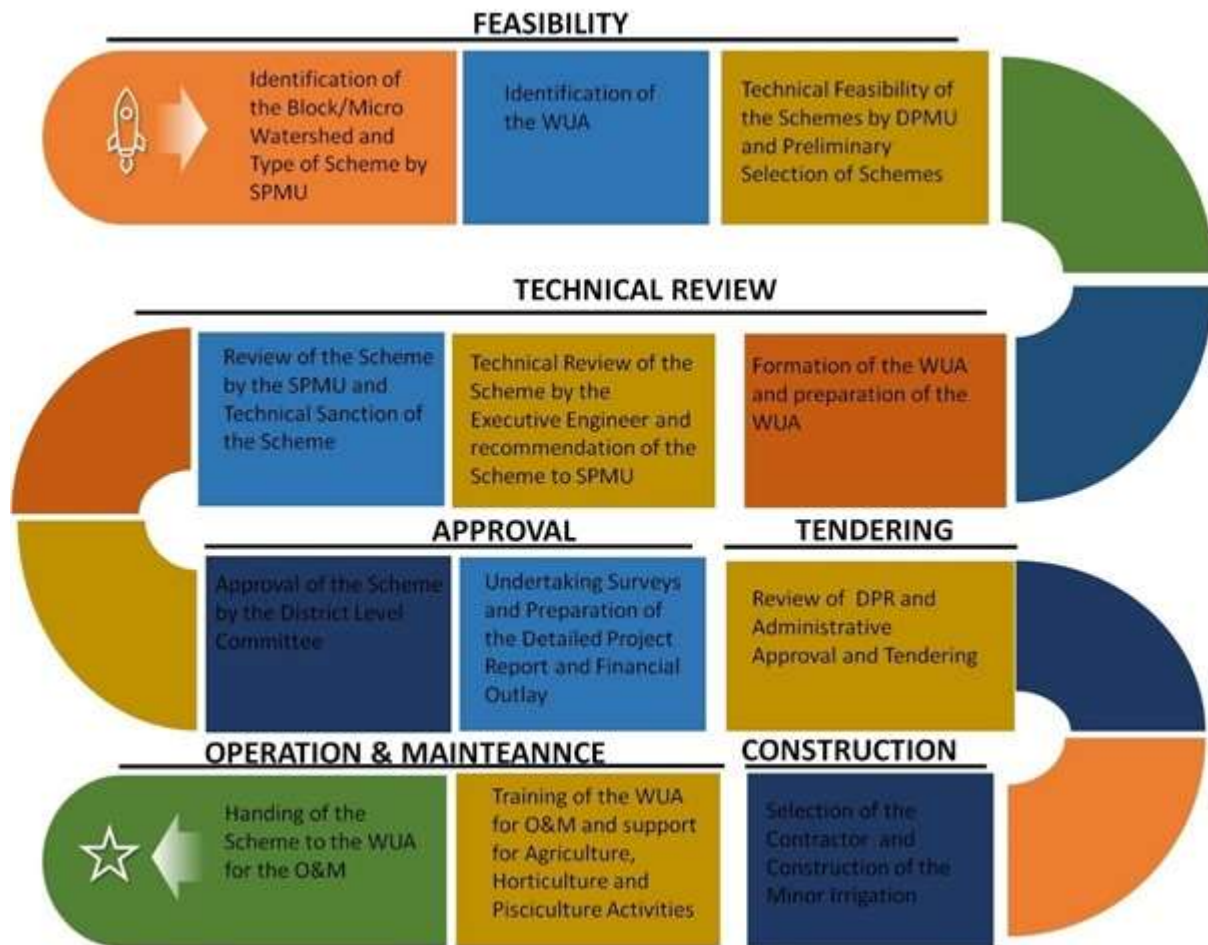
Component 3: Agricultural support services. The component aims to improve agricultural, horticultural, and fisheries production by promoting resilient technologies, raising water productivity with sustainable water management practices, and accessing market opportunities. The focus is on improving cropping intensity, promoting high-value crops requiring less water, diversifying farmer income, spreading climate-smart agriculture technologies, optimising inputs, and realising better prizes. Stress would be on integrated soil fertility and nutrient management, integrated pest management and organic farming techniques, and other good agricultural practices.

Component 4: Project management. The component aims to strengthen the DWRID to spearhead project implementation at all levels. The focus is reinforcing the project implementation vehicles already set up during Phase I by improving workflows, bridging skill gaps, and internalising institutional setups.

1.3 PROJECT PROCESS

The critical stages in the implementation of the WBADMI Phase II are i) Feasibility, ii) Technical Review, iii) Approval, iv) Tendering, v) Construction, and vi) Operation & Maintenance. The activities in each of these stages are presented in Figure 1. The ESMF would integrate E&S activities into these key processes.

Figure 1: Activities at different stages of the WBADMI PHASE II Implementation



1.4 PURPOSE OF ENVIRONMENT AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)

The project's Environment and Social Management Framework (ESMF) has been developed according to the provisions laid down in the Environment and Social Framework (ESF) of the World Bank. The different interventions included in this project are known; however, most sub-project's exact locations or detailed contours are yet to be firmed up. In this context, a framework approach was adopted to assess the environmental and social impacts of the different interventions. Since the interventions and the activities are well-defined, the impacts are relatively straightforward; thus, standard mitigation measures are presented in the framework. However, when sub-project contours are finalised, an Environmental and Social Assessment would be carried out for each subproject before the tendering process. Site-specific mitigation measures, along with these standard mitigation measures, would be referred to in the Tender.

The ESMF defines the process for integrating E&S aspects in decision-making and ensures compliance with National Laws and World Bank ESF, promoting sustainable environmental and social outcomes. Institutional arrangements and the monitoring mechanisms for ensuring ESMF implementation are also described. This ESMF will be an integrated part of the Project Implementation Manual (PIM) and apply to all linked investment activities financed in the project area regardless of their funding source or implementing agency.

1.5 APPROACH AND METHODOLOGY

For the development of the ESMF, an environment and social impact assessment of the different interventions in various agro-climatic zones of the state was carried out. Simultaneously, the institutional capacity assessment was carried out to understand the capacity of the Client to handle E&S issues during the implementation. A detailed review of existing information on the project and the project area was undertaken and included: i) Environmental and social baseline of the project area; ii) Central & state-level legal and regulatory framework; iii) World Bank Environmental and Social Framework; iv) Learning the WBADMI Phase, during the assessment process. Further representative districts were selected from each agro-climatic region based on environmental aspects (Water resource availability and quality and Climate Change) and social considerations (Vulnerability and Human Development). Districts which represented the regions best in these criteria were selected. The selected districts include Darjeeling (Hill Region), Jalpaiguri, Alipurduar, Coochbehar, Uttar Dinajpur (Tera Region), Dakshin Dinajpur, Murshidabad (Old Alluvium Region), Nadia (New Alluvium), Paschim Medinipur, Paschim Bardhaman, Bankura (Red laterite) and South 24 Parganas (Saline Coastal). In certain regions with multiple districts, the one which suited the best was selected for field visit taking into consideration a host of factors including logistics. The selection Matrix is presented in Annexure 1

A survey questionnaire was prepared to assess different types and interventions' environmental and social aspects. It was administered in schemes under preparation and under construction. In addition to the questionnaire survey, consultation with the project beneficiaries was also carried out. The survey covered 132 minor irrigation schemes (Jhora, Check Dam, pump dug wells, river lift irrigation, SMFI, borewells and water detention structures in the above districts. Existing baseline conditions and anticipated environmental impacts due to project implementation were assessed through this questionnaire. It also indicated mitigation to some of the impacts that have been further refined into the ESMF. The findings of the previous project and discussion held with SPMU and DPMU (which have carried over from Phase I) have helped define the institutional and operational arrangements.

2 LEGAL AND INSTITUTIONAL FRAMEWORK

This section discusses the policies, legislation and procedures for environmental and social assessment, and land acquisition / resettlement at the national and state levels, which apply to the minor irrigation schemes. Further, an outline of the environmental and social standards of the World Bank has been presented.

2.1 INDIA'S CONSTITUTIONAL PROVISIONS

The Constitution of India has several provisions for environmental protection. It lays down the duties and rights of the state as well as the citizens:

√The national policies which may be relevant to the project from an environmental or social perspective are presented below and detailed in Annexure 2.

- **National Conservation Strategy & Policy on Environment & Development, 1992:** lays down the guidelines that will help integrate environmental considerations into the national and development process.
- **National Environment Policy, 2006:** aims to mainstream environmental concerns into all developmental activities and points out that the best way to aid conservation and support livelihoods
- **National Water Policy, 2012:** Water should be treated as an economic good to promote its conservation and efficient use. It is stated that water availability for various users, including agriculture, will be under strain in future due to a range of causatives like increasing needs of a growing population, wastage, inefficient use, pollution etc. The Policy mentions that groundwater depletion should be arrested by introducing improved water use technologies, incentivising efficient water use, and encouraging community-based management of aquifers. The Policy emphasises a basin-wise approach and the emphasis enhancing the community's capabilities to adopt climate-resilient technological options.

- **National Agricultural Policy, 2002:** seeks to promote technically sound, economically viable, environmentally non-degrading and socially acceptable use of natural resources – land, water, and genetic endowment to achieve sustainable development of agriculture.
- **Tribal Development and Tribal Sub-Plan (TSP) Approach:** for an integrated approach to the tribal problems, tribal areas in the country were classified under three broad categories, i.e., (1) category 1: areas having a majority Scheduled Tribes population, (2) Category 2: areas having substantial tribal population but majority tribal population in particular administrative units, such as block and tehsils, and (3) Category 3 having dispersed tribal population. In the light of the above approach, for the second category of States and Union Territories, the tribal sub-Plan approach was adopted after delineating areas of tribal concentration. To look after the tribal population coming within the new tribal sub-Plan strategy in a coordinated manner, Integrated Tribal Development Projects are conceived during Fifth Five Year Plan. During the Sixth Plan, Modified Area Development Approach (MADA) was adopted to cover smaller areas of tribal concentration. During the Seventh Plan, the TSP strategy was extended further to cover even smaller areas of tribal concentration, and thus cluster of tribal concentration was identified. When delineating project areas under the Tribal Sub-Plan strategy, it was observed that the ITDPs/ITDAs are not co-terminus.
- **State Environment Policy, 1985:** intends to integrate environmental considerations into the decision-making process at all levels.
- **State Agriculture Plan:** states that the Agriculture Department, Government of West Bengal, is working on developing the Agriculture and Allied sector holistically with the vision of "Doubling farmers' income by 2020 by ensuring farmers' access to Skills, Technologies, Markets and Financial inclusion".

2.2 APPLICABLE REGULATIONS

Considering the direction of the Constitution, the Government of India has laid out various policy guidelines, acts, and regulations on protecting the environment. Consequently, individual states have also framed rules to further the cause of environmental protection.

The Environment (Protection) Act of 1986 provides umbrella legislation for protecting the environment. As per this Act, the responsibility to administer the legislation has been jointly entrusted to the Central Ministry of Environment Forests and Climate Change (MoEF&CC) and the CPCB / State Pollution Control Board (SPCB).

The implementation of the subprojects will be governed by the Government of India and the Government of West Bengal (GoWB) and other applicable environmental acts, rules, regulations, and standards. These regulations impose restrictions on the activities to minimise or mitigate likely environmental impacts. It is the responsibility of the project executing and implementing agencies to ensure subprojects are consistent with the legal framework, whether applicable international, national, state, municipal, local. Key standards include those related to air quality, and protected areas are included. Compliance is required in all stages of the subprojects, including design, construction, operation, and maintenance.

Applicable environmental regulations: Besides EIA Notification 2006, there are various acts, rules, policies, and regulations currently in force in India that deal with environmental issues that could apply to infrastructure development. The specific regulatory compliance requirements for the Project are shown below in *Table 2-1*. A detailed description of each of the laws is presented in Annexure 3

Table 2-1: Applicable Government of India Environmental Legislations and Specific Requirements for the Project (*for Applicability- K:Khal, C: Check Dam, W: Water Detention Structure, T: Tube wells, P: Pump Dug wells*)

Law	Requirement	Applicability				
		K	C	W	T	P
Environment (Protection) Act, 1986 and	The emission and discharges from the project need to comply with the standards promulgated under the Act.	√	√	√	√	√

Law	Requirement	Applicability				
		K	C	W	T	P
Environmental Standards.						
EIA Notification of 2006 and the later amendments	The minor irrigation projects are not included in Schedule I of the EIA Notification 2006. Thus, Minor Irrigation projects do not require					
Water (Prevention and Control of Pollution) Act of 1974, Rules of 1975, and amendments	The Minor irrigation project would not have any discharge or emission and thus does not require any CTE/CTO. However, if the Contractor establishes any plant or machinery, he must obtain Consent to Operate (CTO) under the said Act. The Consent must be regularly renewed during the tenure of the project.		√			
Air (Prevention and Control of Pollution) Act of 1981, Rules of 1982, and amendments.	Since no diesel-driven pumps are procured for the Minor irrigation subproject, the CTE and CTO from WBPCB are not required. In case the Contractor sets up (i) diesel generators (more than 15 KVA; (ii) cement concrete batching plants etc. CTE and CTO are required.		√			
The Motor Vehicles Act, 1988 (59 Of 1988) (14 Oct. 1988)	Rule no 115. Emission of smoke, vapour, etc., from motor vehicles and Rule 115 (A) sub-rule (8) also provides standards for construction equipment. All vehicles operating in the project must comply with these provisions.	√	√			
Noise Pollution (Regulation and Control) Rules, 2002 amended to 2010.	Contractors must ensure compliance with the applicable standards and install and operate all required noise control devices as may be required for all plants and work processes.	√	√		√	
National Institute of Occupational Safety and Health (NIOSH) Publication No. 98-126	Internationally recognized environmental standards on Occupational Safety Applicable to the construction and operation stages of the project	√	√	√	√	√
Plastic Waste Management Rules 2016 and amendments	The rules require that “single-use plastic ¹ ” should not be used.	√	√	√	√	√

¹Single Use Plastic : A plastic item intended to be used once for the same purpose before being disposed of or recycled;

Law	Requirement	Applicability				
		K	C	W	T	P
Municipal Solid Wastes Management Rules, 2016	The solid waste generated at proposed facilities shall be managed and disposed of following the Rules. The Contractor shall ensure all MSW generated during the construction is managed as per the provisions of these rules	√	√	√	√	√
E-Waste (Management) Rules, 2016	The project would qualify as a bulk consumer; the e-waste generated from the project must comply with the provisions of the rules and be disposed of through the prescribed channels only				√	√
Construction and Demolition Waste Management Rules, 2016	Construction and demolition waste generated from the project construction shall be managed and disposed of as per the rules. The Contractor should ensure all construction debris is disposed of as per the rules.	√	√	√	√	√
Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016	The hazardous waste generated from the construction, e.g., waste oils, lubricants, and bitumen, would have to comply with the storage and disposal rules. The rules also make it mandatory to maintain records and report to the WBPCB. The Contractor Would have to obtain authorization as a hazardous waste generator from the WBPCB. All the waste oil and lubricants would have to be disposed of per the Act's provisions.	√	√			
Forest (Conservation) Act, 1980 and Forest Conservation Rules, 2003 as amended	Not applicable as none of the project's subcomponents are in a designated forest area.					
West Bengal Tree (Protection and conservation in non-Forest Areas) Rules 2006	In case tree felling is required (except for the exempted species, permission for felling is required from the Forest Department, GoWB	√	√	√		

Law	Requirement	Applicability				
		K	C	W	T	P
The Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act 2010	There is no protected monument in the subproject area. However, in the case of any notified monuments, the contractors must follow a protocol as defined in the Environmental Social Management Plan (ESMP).					
West Bengal Ground Water Resources (Management, Control & Regulation) Act, 2005	All Minor irrigation projects dependent on Groundwater must obtain permission under the Act.				√	√
Wetland (Conservation and Management) Rules, 2010	No interventions should be carried out in such wetlands. The wetlands of national importance include the Ahiron Bil in Murshidabad and the Rasik Bil in Cooch Behar					
East Kolkata Wetlands (Conservation and Management) Act, 2006	No activity should preferably be taken within the East Kolkata Wetland Complex. If any such activity is taken, adequate permission must be undertaken					
The West Bengal Inland Fisheries (Amendment) Act, 1993	Water bodies should not be put to any use other than fisheries.					
The Public Liability Insurance Act, 1991 and	The Contractor needs to obtain insurance under this Act to compensate any liability arising out of environmental degradation caused wilfully or unwilfully by him.	√	√	√	√	√
Notification of Eco-Sensitive Zones (ESZs):	The Ongoing agriculture and horticulture practices by local communities along with dairies, dairy farming, aquaculture, and fisheries are permitted. Open Well, Bore Well etc. for agriculture or other usages shall be regulated, and the activity shall be strictly monitored by the appropriate Authority.	√	√	√	√	√

Law	Requirement	Applicability				
		K	C	W	T	P
	Organic farming and the use of renewable energy shall be strictly promoted.					
The Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979	The Contractor shall register with Labour Department if Inter-state migrant workers are engaged. Adequate and appropriate amenities and facilities to be provided to workers - housing, medical aid, travelling expenses		√			
Minimum Wages Act, 1948.	All construction workers should be paid not less than the prescribed minimum wage.	√	√	√	√	√
Workmen Compensation Act, 1923.	Compensation for workers in case of injury by accident.	√	√	√	√	√
Equal Remuneration Act, 1979.	Equal wages for work of equal nature to male and female workers.	√	√	√	√	√
Panchayats (Extension to the Scheduled Areas) Act, 1996	The project will work in tribal areas where PESA Act is applicable	√	√	√	√	√
Constitutional Safeguard for Scheduled Tribes	This Article is applicable as the project works with Scheduled Tribes.	√	√	√	√	√
The SCs and the STs (Prevention of Atrocities) Act, 1989	This act is applicable as SCs and STs are primary beneficiaries of this project. The provisions of the Act will be applicable	√	√	√	√	√

2.3 WORLD BANK ESF POLICY, DIRECTIVES AND STANDARDS AND APPLICABILITY

The project would be governed by the World Bank's Environment and Social Framework. The applicability of the ten environmental and social standards (ESSs) are presented in Table 2.2 The description and requirements relating to other guidance notes of the World Bank are discussed in Annexure 4

Table 2-2: Applicability of the ESF in the WBADMI Phase II

World Bank ESS Policy, Standards, Directive	Relevance & Extent of Relevance to the sub-project/project
World Bank Environment and Social	Applicable to this project

World Bank ESS Policy, Standards, Directive	Relevance & Extent of Relevance to the sub-project/project
Policy for Investment Project Financing	
ESS-1 Assessment and Management of Environmental and Social Risks and Impacts	<p>Relevant</p> <p>E&S risks and Impacts have been identified based on surveys and consultations with primary stakeholders, including communities and implementing agencies. A summary of the assessment has also been presented in the ESMF. For subprojects separate assessment will be carried and ESMP's prepared once proposal have been formulated and DPR's are finalised.</p>
ESS-10 Stakeholder-Engagement-and-Information-Disclosure	<p>Relevant</p> <p>Many stakeholders are involved during the project there, including the Irrigation Department, Agriculture, Fisheries Department, District Administration, and WUA members. Initial consultations were held with these stakeholders during the project preparations. Their concerns have been integrated into the design. Stakeholder engagement would be continuous during the project's entire lifecycle. A stakeholder engagement plan has been developed to ensure continued consultation</p>
ESS-2 Labor-and-Working-Conditions	<p>Relevant</p> <p>The project will have the following types of workers:</p> <ul style="list-style-type: none"> i) Direct workers: (People employed or engaged directly by ADMI project ii) Contract Workers: workforce deployed by Civil contractors and other contractors employed in this project, to perform work related to the core function of the project regardless of location iii) Primary supply workers: People employed or engaged by project's primary suppliers. <p>s. Statutory requirements for labour and working conditions, labour management practices and the occupational Health safety of workers need to be followed in the project and all activities associated with it</p>
ESS-3 Resource-Efficiency-and-Pollution-Prevention-and-Management	<p>Relevant</p> <p>The project is built around improving water efficiency in agricultural practices.</p> <p>The agriculture extension component promotes methods for reducing water in agriculture. The project also emphasises Integrated Nutrient Management and Integrated pest management techniques. It would not procure any chemical fertilisers or pesticides under the project budget. Organic farming practices are encouraged in both agriculture and fisheries, thus reducing sources of pollution from the project.</p> <p>Even though no significant construction practices are envisaged in the project, pollution prevention in line with the World bank EHS guidelines and statutory requirements has been included in the contract. Estimating GHG would not be possible at this time in the project as all subprojects and interventions are not yet known. This would be covered as part of the ESCP</p>
ESS-4 Community-Health-and-Safety	<p>Relevant</p> <p>No major construction activities are envisaged in this project, so community health and safety relating to influx of migrant workers and</p>

World Bank ESS Policy, Standards, Directive	Relevance & Extent of Relevance to the sub-project/project
	<p>communicable diseases are not expected. However, given the exiting COVID -19 situation, the Contractor would take all precautions.</p> <p>The project does not envisage the construction of dams more than 2 m high, water detention structures planned would only be used for irrigation purposes. No flood control or other activities are planned, thus; dam safety requirements would not be applicable.</p>
<p>ESS-5 Land-Acquisition- Restrictions-on-Land- Use-and-Involuntary- Resettlement</p>	<p>Not Relevant</p> <p>No private land acquisition would be undertaken under this project. The minor irrigation structure would be constructed on either government land free from encumbrance or land donated to the WUA's. Further, in the case of land acquisition, the member donating the land would get additional benefits from the WUA, which would cause any economic losses. Further, the project targets most dry and single-cropped areas with irrigation facilities and uses the land for alternate use like horticulture and fisheries, thus enhancing livelihood options.</p>
<p>ESS-6 Biodiversity- Conservation</p>	<p>Relevant</p> <p>The project would not take up any interventions in protected or critical habitats. In the case of modified habitats, in the vicinity of protected or critical habitats, the project has developed a series of the guidance described below.</p> <p>Special measures have been prepared for ecologically sensitive areas 1 areas, e.g., wildlife corridors, a wetland with large bird populations, and Eco-sensitive zones.</p>
<p>ESS-7 Indigenous-Peoples</p>	<p>Relevant</p> <p>This standard is relevant as the project will work in the tribal blocks. However, no adverse impact is envisaged on tribal land or communities.</p>
<p>ESS-8 Cultural-Heritage</p>	<p>Relevant</p> <p>The screening criteria in the project make it mandatory to ensure that none of the sub-projects is located within 200 m of any ancient monuments and/or archaeological site(s) or any site of socio-cultural importance. This standard, however, is relevant as there may be tangible and intangible cultural heritage in tribal areas and the possibility of a chance find during implementation.</p>
<p>ESS-9 Financial-Intermediaries</p>	<p>Not relevant as there is no financial intermediary involved.</p>
<p>Environmental and Social Directive for Investment Project Financing</p>	<p>Applies to Bank in addressing E&S aspects of this project</p>
<p>Bank Directive Addressing Risks and Impacts on Disadvantaged or Vulnerable Individuals or Groups</p>	<p>Applies to the project. The E&S Screening procedure adopted for this project and presented in the ESMF identifies all E&S risks, including impacts on biodiversity, vulnerable groups, and cultural heritage.</p>

World Bank ESS Policy, Standards, Directive	Relevance & Extent of Relevance to the sub-project/project
World Bank's Guidance note on managing the risks of adverse impacts on communities from temporary project-induced labour influx, 2016	A Labour Management Procedures has been prepared and will be customized for each of the sub-project requiring a labour force. A labour management procedure has also been developed for managing various types of labour.
General EHS Guidelines, April 2007, IFC	Relevant
Environmental, Health, and Safety Guidelines : Aquaculture	Relevant The fisheries would be promoted as an activity in the water detention structure. The guidelines for fisheries development would include EHS measures proportionate to the activities.

2.4 INSTITUTIONAL FRAMEWORK

Project management and coordination will be under the WRI&DD. Within WRI&DD, the existing State Project Management Unit (SPMU) and District Project Management Units (DPMU) created under WBADMI Phase I will manage the project. The SPMU will be headed by a Secretary in the Government of West Bengal who will take the role of the Project Director. District Project Directors (DPD) will lead the DPMUs. The DPDs would be an officer equivalent to the Superintending Engineers of WRI&DD. The DPD is supported by Social and Environment Specialists who are already in place

The WRI&DD will draw on the expertise available in the Departments of Agriculture, Horticulture and Fisheries, supplemented by technical assistance to provide comprehensive support to beneficiaries. The DPMU would also be supported by Support Organisation (SO). These SO's would have irrigation, agriculture and horticulture, fisheries specialists, and social expert/training experts.

New and existing WUAs will play a critical role in the participatory design, planning, monitoring, and management of irrigation and related services at the local level. The Support Organisation would also be involved in Farmer mobilization, WUA institution building, Organisation development, livelihood facilitation, etc. In addition, experienced farmers and skilled WUAs, primarily from Phase I will also be deployed to support farmer institution building. The project will leverage private-sector partnerships to converge livelihood support at the WUA level.

3 ENVIRONMENTAL AND SOCIAL BASELINE

The chapter presents a synopsis of the environmental and social baseline of West Bengal. It emphasises the key aspects which would be important to the project interventions. The chapter also present the outcomes of the survey which was carried out as part of the ESMF studies.

3.1 ENVIRONMENTAL AND SOCIAL BASELINE

The environmental and social baseline is summarised in Table 3-1 and discussed in detail in Annexure 5.

Table 3-1 : Environmental and Social Baseline

Sl. No	Environment And Social Aspects	Baseline Conditions
Social Baseline		
1.	State Profile	State of West Bengal is situated in the eastern part of the country between 21°20' and 27°32' N latitude and 85°50' and 89°52' E longitude. The State's total area is 88,752 sq. km, which is 2.7% of the total area in the country. The State has international borders with the People's Republic of Bangladesh in the East, the Federal Democratic Republic of Nepal, and Bhutan in the North. It shares boundaries with the national State of Sikkim and Assam in the North, Bihar and Jharkhand to the West and Orissa in the southwest. The Bay of Bengal is to the South. Administratively the State has 23 districts.
2.	Demography	As per Census 2011: Population: 91,276,115 (Males 46,809,027 and Females 44,467,088, respectively), representing 7.1% of India's Population. Population density - 904 persons per square kilometre against the national average of 324 persons. Population growth: 13.84 per cent (2001-2011), 17.84 per cent (1991-2001). The population of West Bengal formed 7.54 per cent of India in 2011. In 2001, the figure was 7.79 per cent. West Bengal has the highest. The Sex ratio is 950 females per 1000 males, though there is significant variation across districts
3.	SC& ST Population	Scheduled Castes (SCs) constitute nearly 23.5%, while another 7% are Scheduled Tribes (STs) of the State's population. Districts with a higher SC population are Cooch Behar, Jalpaiguri, Uttar Dinajpur, Dakshin Dinajpur, Birbhum, Burdwan, Bankura, and South 24 Parganas. 40 (forty) Ethnic groups have been notified as Scheduled Tribes in West Bengal (Among these tribes, Toto, Birhor and Lodha have been notified as PVTGs (Particularly Vulnerable Tribal Groups) ² in terms of backwardness in different development indicators. These PVTGs are domiciled in Paschim Medinipur, Purulia, Jalpaiguri and Sagar Block of South 24 Parganas districts, i.e., Lodha in Paschim Medinipur and Sagar Block of South 24 Parganas, Toto's in Jalpaiguri and Birhors in Purulia. The Santal community alone contribute more than 54% of the total Scheduled Tribe population of the State. GoWB has identified certain villages as 'tribal' depending upon the tribal population (40% and more) living in a particular village.
4.	Literacy	Overall literacy level in the state is 66.17%, with males contributing 71% and females contributing 76%. Except for Uttar Dinajpur, Murshidabad, Malda, Purulia and Birbhum, all the districts have literacy rates above the national average
5.	Working Population	Main workers (3,47,56,355), which is 38.08% of the population in 2011. Among the districts in the West Lateritic Zone, Purulia is 42.6%, Bankura 40.8% and Paschim Midnapore 42.4%, accounts for the highest overall work participation rate. Uttar Dinajpur 35.8%, South Twenty-Four Parganas 36.3%, North Twenty-Four Parganas 35.7%, and Nadia 35.7% have the lowest work
6.	Health and Gender	The Total Fertility Rate of the State is 1.5. The Infant Mortality Rate is 22, and the Maternal Mortality Ratio is 98, lower than the national average.

² During the Fourth Five Year Plan, a sub-category was created within Scheduled Tribes to identify the most vulnerable groups which were considered to be at the lowest levels of development. Consequently, on the basis of the Dhebar Commission report, a criterion for identifying Particularly Vulnerable Tribal Groups was established i) pre-agricultural level of technology, ii) Low level of literacy, iii) Economic backwardness, iv) a declining or stagnant population. PVTGs were formerly known as primitive tribal groups

Sl. No	Environment And Social Aspects	Baseline Conditions
Environmental Baseline		
7.	Physiography	Nine major physiographic divisions, Central Himalayas in the North of state (Darjeeling district) to the mangrove areas in the southern districts (Dakshin 24 Parganas, East and West Midnapur). A large portion of the state in transition zone between the Himalayas in the North, the Chhota Nagpur plateau in the West to the plains of the Ganga-Brahmaputra delta (GBD) in the southern and eastern sections.
8.	Climate	Generally, experiences a Tropical Monsoon type of climate, Five Climatic Zones namely i) Humid on the northern mountain slope and Humid coastal area, 2) Super humid Terai and the southern Mountain slope, 3) Semi-humid North and South, 4) Sub-humid east and West, and 5) Humid coastal area.
9.	Agro-Climatic Zones	divided into six agro-climatic zones, namely: i) Hill Zone, ii) Terai Zone, iii) Old Alluvial Zone, iv) New Alluvial Zone, v) Red and Laterite Zone, vi) Coastal and Saline Zone. Intervention in WBADMI Phase II has been customized for each agroclimatic zone. Further, for the purpose of the Environmental and Social assessment during the ESMF preparation, one representative district has been considered in each agroclimatic zone for the assessment.
10	Temperature	Variations in temperature across the Latitudinal extent of the State are not pronounced, summer temperature in the North Hills is 14 ^o C at Sandakphu in the Himalayas, while it is around 29 ^o C in the southern parts of West Bengal. Climate Action Plan suggest a +0.010C per year in the annual mean maximum temperature no observed trend in the annual mean and annual mean minimum temperatures
11.	Rainfall	Cooch Behar in the Terai region at the foothills of the Himalayas records the highest rainfall of 3584mm, while Birbhum (1377mm) in the Western Lateritic region receives the lowest. Southwest monsoon between June and September accounts for 76.8% of the rainfall. The average number of rainy days in the State is 79. However, northern region, the number of rainy days is 88. A decreasing trend has been observed in India's rainfall pattern over the Gangetic Plains. The historical analysis ³ of rainfall (1901-2016) suggests gross variations in trends across the State. The districts - Nadia, Burdwan, Howrah, Hooghly, Malda, Jalpaiguri, North and South Dinajpur and Purulia shows a decline trend. Lack of rainfall is expected to impact the agricultural productivity seriously in these districts. However, the rainfall increased in coastal districts like South 24 Parganas, Purba Midnapur and Paschim Midnapur, which increased in flooding situations.
12.	Soil	The soil in West Bengal varies widely over the different physiographic regions. The soils of the western part i.e., west of the Bhagirathi-Hugli River systems, are mostly lateritic or red soil, the eastern deltaic tract and western floodplain soils are younger alluvium while the southern littoral tract of Sundarbans, the soil is saline due to recurrent submergence during high tide,

³ Presented in the West Bengal: Climate Action Plan

Sl. No	Environment And Social Aspects	Baseline Conditions
		The Soil degradation in West Bengal has been due to both natural causes and anthropogenic causes. Western Lateritic districts and Hill have poor soil depth the southern coastal belt has salinity issues.
13.	Landuse	The total area of state is 88,752 sq. km, i.e. 2.7 per cent of India. Population density is 1,028 per sq. km compared to national figures of 328 per sq km, thus, pressure on land is imminent; further, 68.1 per cent of West Bengal's population is from rural areas, necessitating huge demand for agricultural land. The Land use - land Cover map ⁴ , indicates approximately 4.02 per cent of agricultural land is under the current fallow, and over 8 per cent of the area is under wetland and water bodies.
14.	Drainage Basin	three major basins: the Ganges, the Brahmaputra, and the Subarnarekha. Draining 83.9%, 13.4%, and 2.4% of the State's total area. Spatially and morphologically, the state can be divided into i) the Rivers of North Bengal, ii) The Ganga- Bhagirathi System, iii) Western Tributaries, and iv) the Tidal creeks of Sundarbans
15.	Surface Water Resources	North Bengal: Sankosh, Raidak, Torsa and Jaldhaka, the major rivers, act as tributaries to the Teesta River. These originate in the Himalayan Mountain zone or the Piedmont fans. These main rivers and its tributaries drain some 39% of the surface water. Gangetic basin: It drains some 46% of the surface water of the State. Mahananda is the most left bank tributary. Other streams from North Bengal meet the Padma River, the name given to the Ganges downstream of Farakka, in Bangladesh as left bank tributaries. Downstream of Farakka, the Ganges-Padma River has thrown several left Bank distributaries. the Bhagirathi is the major one. Many of these distributaries become tidal in extreme south Western areas: many rivers flow into the Ganges basin. These are all tributaries to the Bhagirathi. Amongst these, the Damodar is the major one. All these rivers are flood prone.
16.	Surface Water Quality	The water quality monitoring ⁵ carried out along the stretch of River Ganga in West Bengal under the National Water Quality Monitoring Program indicates that the water quality does not meet Class "B" standards. Even for the other major rivers in West Bengal, the results indicate that the water quality does not meet Class "B" ⁶ of the CPCB standards. However, along the entire stretch of the river Ganga, the water can be used for drinking water purposes after conventional treatment and can also be used for irrigation.
17.	Groundwater Resource	The dynamic groundwater resources of the State assessed jointly by the CGWB and State Water Investigation Directorate (SWID), GoWB. Indicates

⁴ The State of Environment Report 2016 prepared landuse -land cover map based on IRS LISS III data

⁵ The West Bengal Pollution Control Board, in collaboration with the Central Pollution Control Board, under the National Water Monitoring Program (NWMP), Under the Regular monitoring water quality of all major rivers of the State to assess the water quality of rivers and assess the fitness of water for different usages

⁶ Designated-Best-Use Class of water Criteria as per CPCB: **Drinking Water Source without conventional treatment but after disinfection (Class A)**: i) Total Coliforms Organism MPN/100ml -shall be 50 or less, ii) pH between 6.5 and 8.5, iii) Dissolved Oxygen 6mg/l or more, iv) Biochemical Oxygen Demand 5 days 20°C 2mg/l or less; **Outdoor bathing (Organised) (B)** i) Total Coliforms Organism ;MPN/100ml: 5000 or less, ii) pH: between 6.5 and 8.5, iii) Dissolved Oxygen; 5mg/l or more iv) Biochemical Oxygen Demand 5 days 20°C : 3mg/l or less; **Drinking water source with conventional treatment followed by disinfection (Class C)** i) Total Coliforms Organism MPN/100ml: 5000 or less, ii) pH between 6 and 9, iii) Dissolved Oxygen: 4mg/l or more, iv) Biochemical Oxygen Demand 5 days 20°C 3mg/l or less **Fish Culture and Wildlife propagation (Class D)** i) pH between 6.5 and 8.5, ii) Dissolved Oxygen : 4mg/l or more, ii) Free Ammonia (as N) : 1.2mg/l or less, iv) **Irrigation, Industrial Cooling or Controlled Waste disposal (E)**

Sl. No	Environment And Social Aspects	Baseline Conditions
		that out of 269 ⁷ administrative blocks, one block has been categorised as “Critical”, 76 blocks are categorised as ‘Semi-critical’, and the rest are ‘Safe’.
18.	Groundwater Quality	The wide range of electrical conductivity indicates a wide variation in dissolved constituents in the groundwater of West Bengal. The minimum conductivity value (41 $\mu\text{S cm}^{-1}$) Nagrakata (Jalpaiguri), whereas the maximum conductivity value (5354 $\mu\text{S cm}^{-1}$) at Domjur (Howrah District). As per the salinity hazard classes, only 3.64% of analysed samples were found unsuitable (i.e., $\text{EC} > 2250 \mu\text{S cm}^{-1}$)
19.	Arsenic	Arsenic in groundwater in the Gangetic delta lie on an NNE-SSW tract of approximately 470 km extending from Malda in the north to South 24 Parganas in the south. It has been found almost to the east of the Bhagirathi-Hugli River system; some parts on the west have also started reporting arsenic. Public Health Engineering Department, GoWB reported Arsenic concentration above 50 $\mu\text{g/l}^8$ in tube well in March 2016 in parts of 83 blocks, 11 municipalities and 18 non-municipal urban areas of 8 districts of West Bengal. Vertical distribution of arsenic in groundwater was explored in three aquifer systems i.e. 100 mbgl, 120-160 mbgl, and 200-250 m bgl, separated by an impervious clay layer of 10-20 m in thickness. The top layer within 100 mbgl is arseniferous, while deeper layers are arsenic free. Studies ^{9,10} indicated the upper soil gets contaminated with arsenic due to continuous irrigation by arsenic-contaminated groundwater, thus enhancing the bioaccumulation of arsenic in rice plants.
20.	Fluoride	Fluoride-contaminated water was reported from tube wells from western lateritic districts and part of the older alluvium. The spatial distribution of fluoride
21	Salinity	The whole of this coastal region is affected by the problem of salinity to varying extents. Additionally, a strip along the bank of Hooghly in Howrah district (parts of Bagnan I & II Shyampur I, Shyampur II, Uluberia I & II, Panchala, Sankrail and Balijagacha Blocks) have shown a marked presence of saline water.
22	Agriculture	Net cropped area is 52.05 lakh ha, comprising 68% of the geographical area and 92% of arable land. The cropping intensity is 184%. Agriculture practices are small farmer-centric, with 90 per cent are small and marginal farmers, who hold 84% of the State’s agricultural lands. Operational holding (less than 1 ha) accounts for 88.8 per cent of the total operational holdings There has been a considerable increase in fertiliser consumption in West Bengal from 11.3 tons to 1471.5 tons (1961 -2014-15), however the N:P: K gap is narrowing down and approaching the ideal ratio of 2:1:1. The decreasing trends indicate that the farmers are becoming conscious of

⁷ The assessment was carried out for 269 of the 341 administrative blocks in the states based on the ‘stage of groundwater development and ‘long term pre-monsoon and post-monsoon water level trend’.

⁸ Threshold above which alternate drinking water sources must be provided as per IS 10,500: 2012. The permissible limit for As in drinking water is 0.01 mg/l

⁹ The Nadia District is highly affected by arsenic. In the study area in 5 blocks of Nadia District, irrigation water had an average concentration of 0.53mg/l during pre-monsoon, and during post-monsoon, this average dipped down to 0.32 to 0.49mg/l. The average arsenic concentration in the agriculture field was observed between 4.578 to 9.720mg /kg during pre-monsoon, while in the post-monsoon season, it was found to vary between 3.233 to 9.131mg/kg.

¹⁰ Transfer of Arsenic from Groundwater and Paddy Soil to Rice Plant (*Oryza sativa* L.): A Micro Level Study in West Bengal, India, P. Bhattacharya, A.C. Samal, J. Majumdar and S.C. Santra, Department of Environmental Science, University of Kalyani, West Bengal, India, World J. Agric. Sci., 5 (4): 425-431, 2009

Sl. No	Environment And Social Aspects	Baseline Conditions
		<p>using a balanced nutrient ratio. The is inadequate use of organic manure in sufficient quantity has gradually deteriorated soil quality.</p> <p>Pesticide consumption has an increasing trend in this decade even though there has shown a steady decline in pesticide consumption in the last decade. The average pesticide input in southern Bengal paddy fields is 982.38 gm/ha in a cropping year. This ranges widely from 0 in the agriculturally poor Purulia district of the lateritic belt to around 2414.28 gm/ha in the agriculturally progressive West Midnapore district.</p>
23	Forest And Wildlife	<p>Recorded forest area of 11,879 sq km, (13.38 per cent) of the State. The forests occur mainly on the slopes of the Darjeeling Himalayas, the Himalayan foothills, the lateritic tracts southern part of the State, and the Sundarbans delta region. The PA network comprises 6 National Parks, 16 Wildlife Sanctuaries and 5 Conservation Reserves. At present, three Natural Bio-Diversity Heritage Areas have been notified in the State: i) Tonglu Biodiversity Heritage Site, ii) Dhotrey Biodiversity Heritage Site, iii) Chilkgirh Kanak Durga Biodiversity Heritage Site. East Kolkata Wetlands, Rasik Bil, and the Sundarbans are important wetland sites. The East Kolkata Wetlands and Sunderban Wetlands are Ramsar Wetlands, while the Sundarbans is also a UNESCO World Heritage site. The IBA program of Birdlife International has identified nine areas of West Bengal. The Elephant Population in the present Northern and western districts of West Bengal. In the state's northern parts, the elephants move on an east-west axis and West Bengal, Nepal, Bhutan, and Assam Forest areas.</p>
24	Cultural Heritage	<p>The districts are Bankura, Murshidabad, Malda, Medinipur, and Hooghly are rich in cultural heritage and have monuments/ sites which are protected. In West Bengal, sacred groves are Gramthan, Haritan, Sabitritan, Jahera, Deo Tasara and Mawmund. Five hundred sixty-two sacred groves have been documented in the state.</p>
25	Natural Disasters	<p>Floods: River and coastal flooding occur in almost all districts except for Darjeeling, Bankura and Purulia between July and October and are increasing in occurrence more rapidly than any other disaster.</p> <p>Cyclones: West Bengal has two cyclone seasons – pre-monsoon and post-monsoon cyclones during April-May and Nov-Dec, respectively. Dakshin 24 Parganas and Purba Midnapore are the two most cyclone-affected districts in the country. The Climate change projection modelling ¹¹ indicates that the frequency of cyclones during the late monsoon season is likely to be higher in the future (2071–2100). The intensity of the cyclone is also expected to be higher in the A2 scenario¹² than that in the baseline scenario.</p> <p>Drought: Agricultural Drought are prevalent in the districts of Purulia, Bankura, Birbhum and parts of Paschim Midnapore</p> <p>Landslides: Various locations in the Darjeeling district are prone to landslides</p>

¹¹ Tropical cyclones in the Bay of Bengal and extreme sea-level projections along the east coast of India in a future climate scenario: A. S. Unnikrishnan, M. R. Ramesh Kumar and B. Sindhu

¹² As per the IPCC scenario: The A2 storyline and scenario family describes a very heterogeneous world. The underlying theme is self-reliance and preservation of local identities. Fertility patterns across regions converge very slowly, which results in continuously increasing global population. Economic development is primarily regionally oriented and per capita economic growth and technological change are more fragmented and slower than in other storylines.

3.2 RESULTS OF BASELINE SURVEYS

The baseline surveys were conducted with the questionnaire developed for the project in all the agroclimatic zones of the state. There were 130 responses to the surveys, primarily from the lateritic and Terai region. The analysis of the type of intervention in each agroclimatic region indicated that Water Detention structures (WDS) are the predominant intervention across agroclimatic Zone and districts in alignment with the objectives of harvesting surface water. The major interventions are the Pump dug wells (PDW) and Tube wells (TW) in the Terai region and Jhora in Hills. The districts have been classified as Drought Prone Area Program (DPAP), Left Wing Extremism districts, Fluoride or Arsenic Affected. Majority of schemes are outside any of the vulnerabilities presented earlier. However, approximately 22 % of schemes are in drought-prone areas, while about 20% are in fluoride-infected areas. Approximately 40.7% of the schemes surveyed were in SC communities, while 26.15% were in the ST's communities' areas. Only 19.5% of the schemes were from non-vulnerable communities. Thus, Phase II schemes are focused on aligning with the project objectives of targeting vulnerable communities.

The key issues which have emerged from the survey are discussed below and detailed in Annexure 6:

- Gross Command areas by the type of interventions, groundwater-based schemes, e.g., Tube wells (TW) and Pump Dug Wells (PDW), have a maximum command area of 57.33 ha and 43.25 ha. The Surface water-based schemes, e.g., Check Dams (CD), River Lift Irrigation (RLI), and Water Detention Structure (WDS), have average command areas of 38.33, 36.0 and 27.33 ha, respectively, smaller than the groundwater schemes.
- To develop a green project, stress was laid on harnessing solar power as an energy source. Figure 16 indicates that more than 80 % of the schemes where energy is used would be powered by Solar energy in the surveyed sub-projects
- Different activities were planned in the project as allied activities. The results show that agriculture is predominantly the main activity. However, in the case of WDS, some additional activities are planned. include Pisciculture and Horticulture. The activity basket is most diverse in the case of WDS.
- In most of the interventions, it was identified that there was no requirement for tree felling.
- More than 60% of the beneficiaries are small farmers, and that small and marginal farmer are almost 90% of the beneficiaries except for Pump dug wells.
- In many of the WDS and CD structures, pisciculture will be undertaken. Indian Major Carps (IMC) is major species that would be cultivated. In addition, some of the WUA have opted to cultivate Pangasius/ Chetal (Chitala chitala)/ Bhetki (L. calcarifer).
- For 50% of the interventions, there is no requirement for workers' accommodations. Worker accommodation would be required in case of construction of a Water Detention Structure. However, these camps will be very small given that at any given point of time not more than 6 to 10 migrant labourers will be in the camp.
- The number of workers in the camp would vary between 6 -10, depending on the stage of construction. In the case of Check dams, the number of days of construction would vary between 3-5 months. The development of tube well would also require the highly skilled rigging crew to be on site for 2-3 days. The crew size, in this case, would be even smaller, 3-5 persons.

4 ANALYSIS OF ALTERNATIVES

The analysis of alternatives was carried out to assess the alternative scenarios that can be considered while planning, developing, constructing, and implementing the project regarding their environmental and social implications. The analysis was carried out for "no-project" and "with-project" scenarios. The sections below consider the possible alternative scenarios in the project.

4.1 ANALYSIS OF ALTERNATIVE APPROACH

The Analysis of alternatives looks at the potential project design and technical alternatives, e.g., resources that might be available. However, it would be essential to note that the alternative scenario

analysis cannot always be applied equally across all interventions and / or across the state. These may vary with different agroclimatic zones depending on the variability of physiographic and other physical and other constraints. Thus, there may be a requirement to reconsider these alternatives during the Technical Review stage on a case-to-case basis.

Different irrigation and agricultural fisheries technologies that the project is expected to promote will be more localized based on their suitability to the agro-climatic condition, soil characteristics, water availability, resources availability, natural climatic disasters, etc. The same technology and measures may not be applicable across all the project locations as they will vary significantly depending on the local characteristics. For example, measures proposed in New Alluvial Agro Climatic Zone in North 24 Parganas may not apply to the Saline Coastal Zone intervention in the same district. In the saline zone of the North 24 Parganas, the depth of the pond would be restricted to prevent salt intrusion in the ponds as it would affect freshwater pisciculture. Thus, the depth of the pond would be governed by the depth of the saline aquifer.

4.2 ANALYSIS OF ‘NO PROJECT’ SCENARIO

In case of the project, i.e., WBADMIP Phase-2, is not taken up, i.e., the minor irrigation structure or other interventions in agriculture, horticulture, and fisheries are not implemented, the development of irrigated agriculture and the positive socio-economic outcome envisaged from the intervention would not accrue. Moreover, this project targets the dry areas of the western lateritic region, which are dominated by the tribal population. A positive impact on socio-economic conditions would thus not be possible. Further, the project aims to provide handholding support to some WUA developed as part of WBADMI Phase I. This support would be crucial for their sustenance and can serve as a lighthouse for all the WUAs or similar arrangements in the State. Thus, gain in WBADMI Phase I can be consolidated with the support extended to the WUA. With project and without project scenario is presented in Table 64.

Table 4-1: Analysis of “No Project” and “With Project” Scenario

Sl. No	No Project Scenario	With Project Scenario
1.	Minor Irrigation structures in the Western Lateritic districts are few as a result the agriculture it is primarily rainfed	The project focuses on rainwater harvesting in this region and develops check dams and water detention structures. This would provide an assured supply of irrigation. As a result, agricultural activities can take place throughout the year. This would also improve the economic condition of the people
2.	The environmental and social concerns arising due to inefficient water use will continue for a more extended period.	Improving the minor irrigation structure and intervention in irrigation practices would improve water efficiency and thus improve water efficiency. The project would result in efficient use of natural resources.
3	Groundwater exploitation may further increase in the absence of surface water for irrigation during Rabi and Boro, resulting in an increased area under critical or semi-critical groundwater zone.	Rationalisation in the use of natural resources is one of the cornerstones of this project and would help in the judicious use of water resources. Further dependence on groundwater and its abstraction for agricultural purposes would reduce.

Sl. No	No Project Scenario	With Project Scenario
4	Current agricultural production status may continue further with lower production	Agricultural productivity and water efficiency would increase sustainably. The project would promote Integrated Nutrient and Pest management techniques, thus reducing the requirement for the use of chemicals in agriculture and pisciculture.
5	Water use efficiency and water productivity status may remain relatively the same.	Water use efficiency has increased through judicious irrigation and agricultural practices. Moreover, multiple uses of water resources, e.g., agriculture, and horticulture on the banks and aquaculture, further increase efficiency.
6	An irrigation system is individually based, and thus use of shared natural resources, e.g., ground/ surface water for community use and upkeep, is not achieved	Water user associations will be formed to manage minor irrigation structures. PGM groups will be further helpful in reducing groundwater exploitation, recharge, and management.
7	Current nutrient and pest management practices may continue with low awareness and management capacity.	Awareness, INM and IPM will boost the understanding of the farmers and greater adoption of environment-friendly practices. It will also reduce the cost of production of different crops.
8	Current practices of intensification of agriculture and use of hybrid varieties lead to bio-diversity losses	The project would promote the use of traditional rice varieties, fish species as well as horticultural species. This would help maintain biodiversity.

Overall, the impact of “no project” is significant in hampering the sustainable use of natural resources. The project interventions would improve the efficiencies of irrigation systems. Further, sustainable agricultural practice is not being practised in the present context. This situation would deteriorate further, leading to the depletion of resources in the coming years. The “with project” scenario, on the other hand, would lead to the improved economic status of the people, better livelihood, and sustainable use of natural resources.

5 ENVIRONMENT AND SOCIAL RISKS AND IMPACTS

The project will have both positive and adverse social impacts. The project involves the development of minor irrigation primarily through surface water resources using broad-based community support. No major construction activities are envisaged neither is the project expected to have any interventions in sensitive environmental or social areas. The impacts would thus be limited in nature, but a detailed environmental and social assessment has been carried out at the project level to identify and assess the impacts and accordingly develop mitigation measures.

5.1 SCREENING OF IMPACTS ASSOCIATED WITH THE PROJECT INTERVENTIONS

The WBADMI Phase I carried out an Environment and Social Impact Assessment (ESIA) in 2010, considering the WB safeguards Operation Policies. An Environmental and Social Management Framework and Management Plans were also developed. However, for WBADMI Phase II, the Environment and Social Assessment have been developed based on the Environmental and Social Framework (ESF). The ESIA for WBADMI Phase 2 is built on the learnings of Phase I and additional fieldwork and stakeholder consultation carried out. In line with ESF requirements, labour-

management procedures and stakeholder engagement plan has been prepared. The State Project Management Units (SPMU), District Project Management Unit (DPMU), and the Support Organisations (SO's) assisting these respective units have been involved in developing the ESIA. Their experience in implementing the Environmental and Social Management Plans (ESMP) under the previous project has been instrumental in modifying and remodelling the present ESF instruments. The table below summarises risks and impacts against each of the components and relevant ESSs.

Table 5.1: Component wise Potential E&S Risks

Component and Investment	Potential E&S Risks and Impacts	Relevant ESSs
<p>Component 1: Strengthening community-based institutions. The interventions include (i) developing WUAs for new schemes; (ii) strengthening WUAs for existing schemes; and (iii) establishing internal and external linkages</p>	<p>Risk is low. No adverse impacts but has the risk of exclusion.</p> <p>The project is centred on the involvement of the community. Since the WUAs will drive this project, a strong community focus is included as part of the project design. Consultation with the community and WUAs has continued even after Phase I has been closed.</p> <p>Direct workers and SO hired for project in the district provided handholding support during the formation of WUA and would also advise them during the operation. The working condition of these people was reviewed and found compliant with the National laws as well as the ESS2.</p>	<p>ESS 10, ESS 2</p>
<p>Component 2: Minor irrigation services. The investments include (i) developing rainwater harvesting structures (Check Dams, Khals and Water Detention Structures; (ii) ground water-based irrigation facility; and (iii) surface water-based irrigation facility</p>	<p>Risk is Moderate.</p> <p>No large-scale construction activity is envisaged in this project. However, potential issues during construction phases may include: (i) occupational health and safety (OHS) risks to the workers in Check Dams and machinery operation in Khal excavation; (ii) dust, noise and issues from construction activities; (iii) temporary water quality impacts due to increased turbidity and discharges from work sites affecting water users and possibly aquatic life; (iv) improper storage and/or disposal of debris/construction wastes (especially excavated muck from Khal, WDS etc.); (v) health and safety risks to near-by communities and; (vi) limited impact on trees/vegetation/biodiversity in and around the minor irrigation structures.</p> <p>Potential risks during operation and maintenance may include: (i) impact on flow in the rivers and streams, even if small, as the streams on which these structures would be constructed are seasonal or small and flows; (ii) dewatering of aquifers leading to decrease in quantity and deterioration in the quality of groundwater (including arsenic mobilisation); (iii) inadequate operation and maintenance of minor irrigation infrastructures.</p> <p>Most of the interventions would not have a large land requirement, and thus private land -acquisition is not envisaged in the project. The investment would be either on government land that is free of encroachment and other encumbrances, or land donated by the community or user rights provided to the Water user association. Thus, the loss of assets or livelihood risk is not significant.</p>	<p>ESS 1; ESS 2, ESS 3, ESS 4, ESS 6, ESS 7, ESS 10,</p>

Component and Investment	Potential E&S Risks and Impacts	Relevant ESSs
	<p>The draft contract for the civil works to be used was reviewed, and it was observed that contractual requirements on labour and working conditions for the Contractor to fulfil ESS 2 and regulatory requirements.</p> <p>The project activities do not envisage large-scale civil construction except for check dams. Approximately 6-10 skilled or semi-skilled migrant labour would be required to camp at site depending on the stage of construction, remaining labour will be sourced locally. Given the low number of migrant labour in the area, the impacts are not significant.</p> <p>The project envisages the use of solar pumps. There are allegations of forced labour risks associated with polysilicon suppliers.</p> <p>The Project does not envisage any large-scale construction and also does not involve large number of construction workers hence Occupational Health Safety risk are not high. Since the project envisages to use more local labour who would not be trained on OHS issues need attention.</p> <p>In the event that land is donated, the project will ensure that land donated is (i) not site specific; (ii) not more than 10% of the total landholding of the landowner; and (iii) land donated is transferred to WUA through written MoU.</p> <p>If private land is donated to the WUA, the member/s donating land to the WUA get some additional benefits. These include free water for irrigation, rent or dividend from fisheries, plantation on the embankment etc. In consultation and surveys, it was pointed out that additional benefits have accrued to the members donating land to the WUA. Thus, no involuntary acquisition of land is envisaged, and those donating land to the WUA are provided additional benefits to offset the loss of land.</p> <p>WBADMIP II is not energy intensive; moreover, solar pumps are being envisaged, which would reduce carbon footprint, but the energy efficiency of pumps has to be considered. Further, the project focuses on harvesting surface run-off, improved usage of water, agro-climatic-based cropping, and agricultural practices like mulching, zero tillage etc, to improve water resource efficiency. However, these need to be put to practice.</p> <p>Check Dam would be one of the water retention structures. These would be less than 2.0 m in height, primarily located in the western region which is seismically sound. These would be developed on seasonal streams to impound monsoon runoff that downstream -riparian users will not be affected. Thus, these CD structures are not considered “small risky” dams.</p> <p>To integrate Climate resilience, several methods have been adopted for e.g. Micro-pot farming techniques, System of assured rice productivity (SHARP). WBADMIP in</p>	

Component and Investment	Potential E&S Risks and Impacts	Relevant ESSs
	<p>coordination with the Indian Metrological Department and provides advisory to farmers on agricultural practices based on weather forecasting to build resilience. Climate models predict increasing frequency and intensity of cyclones, 4mm/yr. increase in the sea level and a storm surge of 5%. The WDS in coastal areas i.e., Khals and WDS are prone to flooding by salt water.</p> <p>Community Health Safety issue are not envisaged because no major traffic movement is envisaged, hazardous material are unlikely to be used, no large labour camps are envisaged (6-10 labours would stay on site for max 3 months).</p> <p>A large area of the state groundwater is contaminated with Arsenic. Research shows that Arsenic tends to bio-accumulate in paddy when irrigated with Arsenic contaminated water . Also the land gets contaminated with Arsenic.</p> <p>The guidelines for sub-project selecting ensure that no subproject would be located i) within protected areas, ii) in Natural Bio-Diversity Heritage Areas, iii) in wildlife corridors iv) in IBA's water bodies supporting large bird populations, v) 1 km upstream of any river flowing into the protected area. Exotic species are not introduced in fisheries intervention. Traditional rice, local fruit varieties would be promoted as part of the agriculture intensification or horticulture activities. Thus, the genetic pool is maintained. The impact on critical habitats and biodiversity is envisaged. Further WDADMIP guidelines mandate that no intervention would be taken up within 200 m of a legally protected archaeological monument, sacred groves for protect cultural heritage.</p>	
<p>Component 3: Agriculture support services. The intervention includes advisory services for agriculture, horticulture and aquaculture.</p>	<p>The Risk is low.</p> <p>The potential risks from investments in agriculture, horticulture and fisheries could be: (i) degradation of soil health from the overuse of agrochemicals; (ii) health and safety impacts from improper usage and handling of pesticides; (iii) degradation in soil and water quality from nutrient loading due to excessive use of fish feed; (iv) uncontrolled use of antibiotics and hormones in fisheries; (v) exclusion of small and marginal farmers / vulnerable community.</p> <p>The project will not sponsor chemical fertiliser, or pesticides but propagates Integrated Pest Management (IPM) and Integrated Nutrient Management (INM). However, the use of chemicals and fertilisers by WUA members cannot be ruled out with the intensification of agriculture or pisciculture activities. Pollution from spillage, disposal of empty discarded containers or residual solutions and OHS issues during spraying cannot be ruled out.</p>	<p>ESS 1; ESS2 ESS 3; ESS 10</p>

High - *The Project is likely to generate a wide range of significant adverse risks and impacts on human populations or the environment. This could be because of the complex nature of the Project, the scale (large to very large) or the sensitivity of the location(s) of the Project.*

Substantial - *the Project may not be as complex as High Risk Projects, its ES scale and impact may be smaller (large to medium) and the location may not be in such a highly sensitive area, and some risks and impacts may be significant.*

Moderate - *the potential adverse risks and impacts on human populations and/or the environment are not likely to be significant.*

Low - *its potential adverse risks to and impacts on human populations and/or the environment are likely to be minimal or negligible*

6 ENVIRONMENT AND SOCIAL MANAGEMENT PLAN

As described earlier, the interventions are small in scale, and the anticipated impacts are straightforward, localised and would be carried out over a short duration. Further, the project design has ensured (through an exclusion criterion discussed in detail in Chapter 7) that no environmental and socially sensitive areas are considered for project interventions. Thus, template of ESMP have been developed to mitigate the predicted impacts from each intervention and mitigate adverse impacts to acceptable levels. The mitigation measures have been summarised in Table 6-1 and the Template EMP's for each intervention is presented in Annexure. However, during the sub-project preparation, District Project management Units and Support Organisations would carry out site-specific assessments and would append these Template ESMP with site-specific Mitigation measures. This site-specific ESMP would also be included in the Bid Document.

279. During the implementation phase, there would be some influx of worker population in the project area. Though 6-10 labours are expected, on average, a maximum of 30 labours would be expected in the case of Check Dam construction. Managing this labour influx and issues related to the labour campsite would be critical to ensure environmental and social issues are managed during construction. For each intervention, before the bidding process, the issues of labour influx would be assessed and a Labour Influx and Construction Workers' Camp Management Plan will be prepared as part of the ESMP for the project.

A copy of the ESMP along with the Labour Influx and Construction Workers' Camp Management Plan will always be kept on-site during the construction period. The ESMP should be included in the bid and contract documents. Non-compliance with, or any deviation from, the conditions set out in this document constitutes a failure in compliance.

For civil works, the contractor will be required to (i) establish an operational system for managing environmental and social impacts, (ii) carry out all the monitoring and mitigation measures outlined in the ESMP; and (iii) implement any corrective or preventative actions set out in E&S monitoring reports that the employer will prepare from time to time to monitor implementation of this ESMP. The contractor shall allocate a budget for compliance with these ESMP measures, requirements, and actions

Table 6-1 :Environment and social Management PLAN for Planning & Design, Tendering, Construction, Operation & Maintenance Stages (K:Khal, C: Check Dam, W: Water Detention Structure, T: Tube wells, P: Pump Dug wells, R: River lift Irrigation)

ACTIVITIES	Environmental & Social Impacts/Issues	Mitigation Measures	K	C	W	T	P	R
Planning and designing								
Scheme/Site Selection	Improper selection of sites can lead to ecological and social impacts.	The ecologically and other sensitive areas would be avoided. The exclusion list has been detailed in Box 7-1	√	√	√	√	√	√

ACTIVIT IES	Environmental & Social Impacts/Issues	Mitigation Measures	K	C	W	T	P	R
		Subprojects in demarcated Eco-sensitive Zones Protected obtain permission from the Forest Department, Government of West Bengal. For Fisheries activities in such sensitive habitats, please refer to the guidance in Annexure 14						
	Many rivers/rivulets flow into neighbouring Bangladesh, especially in Terai, Oil and New Alluvium. Thus, there can be transboundary impacts on water resources.	No subprojects will be taken up in any of the except forty-eight (48) international rivers		√				√
	Bioaccumulation of arsenic in crops and contamination of soil when irrigated with water having more arsenic	<p>Before developing any Groundwater-based schemes and the parameters mentioned in IS: 11624:1996 (EC, Sodium Absorption Ratio, Residual carbonate and Bi-carbonate and Boron), arsenic and fluoride should also be tested.</p> <p>Groundwater-based irrigation structures in the arsenic-affected block¹³ should only be considered if surface water schemes are not feasible. There should be judicious use of groundwater, and priority should be provided to surface water. In such cases, NOC from SWID is mandatory (as in Phase I). Preferably water should be abstracted from aquifers which are arsenic free.</p> <p>An alternative analysis and detailed geohydrology should be carried out to look at the feasibility of surface water schemes and included as part of the Detailed Project Report. The DPR should also mention a monitoring plan should be developed and integrated into the scheme design to ascertain the vertical spatial spread of arsenic over time.</p> <p>The feasibility of technologies for removing arsenic developed by NEERI should be explored. A monitoring plan should be developed and integrated with the scheme design to ascertain the vertical spatial spread of arsenic over time.</p>				√	√	
Geologica l Surveys	Ensure the sustainability of the irrigation source. Long-term trends would also be an important indicator	<p>As was done in WBADMI Phase I geophysical investigation using a data logger, should be used to identify the aquifer and determine the optimal location of the borewell</p> <p>In addition to, the innovations already carried out by PMU should be documented in the final</p>				√		

¹³ The following blocks in Malda (English Bazar, Manickchak, Kaliachak I, Kaliachak II and Kaliachak III Ratua I , Ratua II and Chanchal II) Purba Bardhaman (Purbasthali I , Purbsthalii II, Katwa I , Katwa II, Kalna I and Kalnall), Dakshin Dinajpur (Balurghat) , Hooghly (Balagarh, Pandua, Dhanaikhali, Polba Dadpur, Singur, Srerampur- Uttarpara, Chanditala II, Goghat I, Khanakul I , Khanakul II, Hariपाल) have been identified as Arsenic affected.

ACTIVIT IES	Environmental & Social Impacts/Issues	Mitigation Measures	K	C	W	T	P	R
	of water resource sustainability.	<p>guidelines. Classification of the block by CGWB into “Safe”, “Semi-Critical ‘, “Critical”, and “Overexploited” should be taken into consideration while planning and designing. Groundwater-based irrigation schemes should be avoided in the “Critical “and “Over exploited blocks”.</p> <p>For “Semi critical: blocks, the groundwater schemes may be taken up with appropriate demand-side management. Climate resilience must be built into the projects through demand-side management</p>						
Planning of Scheme/ Climate proofing	Climate models indicate that in all districts, temperature is likely to increase while there. is a like hood of a decrease in rainfall. Since the present average rainfall is above 1000 mm, the reduction would not be significant, but the variability of the rainfall is a matter of concern.	<p>Demand-side management interventions must be planned in the “Semi critical Blocks” schemes. Emphasis must be provided on efficient agronomical and water management practices, the promotion of drip, sprinkler and rain guns, better irrigation scheduling like Alternate wetting and drying (AWD) soil moisture sensor-based irrigation, and surface or sub-surface water distribution pipe, and water budget-based crop and water use management planning.</p> <p>The agro-climatic zone-specific planning of crops, intercropping practices, use of straw as much etc, would certainly help conserve soil moisture and reduce water demand.</p> <p>Promote water management interventions like Alternate Wetting and Drying (AWD), Direct Seeding of Rice (DSR), soil moisture sensor-based irrigation; promote drip, sprinkler, and rain gun; land levelling, and better irrigation scheduling.</p> <p>Capacity building of farmers on developing cropping plans to ensure efficient water use is necessary.</p>				√	√	
	An increase in the Frequency of Cyclone and Storm Surges can lead to an influx of saline water.	<p>The increasing frequency and intensity of cyclones in the Sundarbans region have also increased the severity of storm surges. The HFL of the Embankment should thus be calculated based on climate projection models.</p> <p>In the coastal districts, areas are prone to flooding, salt-tolerant indigenous rice varieties are being promoted.</p>	√					
Design Solar Panels	Experience from other projects indicates that the panels, especially the MS/GI structure, are susceptible to high winds causing community Health safety concerns. Since these districts are susceptible to	<p>The design of solar installation should take into consideration wind loads based on IS 875 (Part 3) (1987): and IS Code; IS 15498 (2004) for cyclone-prone areas.</p> <p>The design of the support of the panels and fasteners must also be able to withstand the uplift pressure on the panels due to the wind blowing under the panels. All bolts, nuts, and fasteners</p>				√	√	

ACTIVITIES	Environmental & Social Impacts/Issues	Mitigation Measures	K	C	W	T	P	R
	high winds, wind loads need to be taken care of during design.	shall be of corrosion-resistant material or stainless steel of grade SS 304						
Technical Surveys and Planning (River Lift Irrigation)	<p>Unless the adequate flow of the river is maintained, there would be adverse ecological impacts</p> <p>The sustainability of the source, potential erosion or deposition also needs to be assessed.</p>	<p>The following guidelines (which were considered in WBADMI Phase I) should be followed during the selection and design of the schemes:</p> <p>In the case of Lift Irrigation (LI), the river/source should be perennial; otherwise, the LI subproject should be in conjunction with the weir/check dam structure</p> <ul style="list-style-type: none"> - The peak agricultural demand should be less than 50% of the mean streamflow during the lean season to ensure that downstream villages are not impacted significantly. To assess peak agricultural demand, schemes within 1km upstream and downstream need to be considered - The flow of the minor river/rivulet after abstraction should be about 10% of the incoming average annual flow; if the flow is less than that and then the subproject needs to be avoided - Additionally, the inlet structure should not be in any area where the river is prone to erosion or there is shifting of the river channel <p>In the case of SMFI in the Hills, good design must be considered for erosion protection. Preference shall be provided for erosion control measures, e.g., turfing, mulching, jute-matting, etc.</p>						√
Technical Surveys and Planning (Check Dams)	<p>The faulty design resulted in Erosion of the Sidewall, seepages from structures and failure.</p> <p>Siltation has been another major problem.</p> <p>Not considering Water flows in the catchment would question irrigation structure's sustainability.</p>	<p>The following design guidelines will ensure that the Check Dams do not cause adverse environmental and social impacts:</p> <ul style="list-style-type: none"> - Sufficiency of the resource available for irrigation must be established. The water available from the catchment should be correlated to the water requirement for irrigation and other uses planned in the check dam or WDS. - Water availability in the stream is given prime consideration. The Catchment should be wide enough to provide high runoff—use Google Earth to study temporal water availability through historical imagery. - The height of the check dam from the foundation should not be more than 2.0 m - Check dams should be located at a straight and firm stream bed. It should not be made on a curve and junction of 		√				

ACTIVITIES	Environmental & Social Impacts/Issues	Mitigation Measures	K	C	W	T	P	R
		<p>gullies or streams. Turning locations of rivers were avoided to prevent river erosion and the risk of river shifting</p> <ul style="list-style-type: none"> - The spillway must be large enough with sufficient freeboard to take the expected maximum runoff. - All check dams must incorporate a spillway to direct flows over the centre of the structure. The spillway elevation must be at least 150 mm to 200 mm lower than the crest of the structure. - The foundation of the check dams should rest on base rock. Configure check dams so the sides extend up the bank slopes. <p>In case of a series of check dams on the same river/channel, place check dams so that the toe of the upstream dam is at the same elevation as the downstream of the dam's center height (spillway level).</p> <p>In the case of erodible soil, channel protection and stabilization (i.e., with turf reinforcement mats, erosion control blankets, seed, etc.) should be achieved before installing check dams. Check dams should be installed immediately after ditch/channel stabilization (i.e., seeding and mulching or rolled erosion control products).</p> <p>A protective apron should be formed on the downstream toe of the Check dam to form a small protective apron below the spillway. This measure will protect the area below the dam when water runs over the spillway from erosion</p> <p>If sandbags are used for protection, it should be ensured that the fabric used for sandbags is UV resistant.</p> <p>Install vegetation (temporary or permanent seeding) or mulching to stabilize other areas disturbed during the construction activities. All excavated soil placed on the bank should be stabilized using vegetative methods. The use of rock or boulder for pitching should be avoided.</p> <p>Check dams constructed on perennial streams must assess fishes' presence and develop a specific design for fish passage.</p>						
Technical Design (RLI)	Improper design of the inlet structure in River Lift Irrigation can adversely impact the fish population.	The design of the intake structure should have provisions to prevent fingerlings from getting trapped in the suction mechanism						√
Technical Survey and Planning	Resource Availability	Sufficiency of the resource available for irrigation had to be established. The water available from the catchment should be correlated to the water requirement for irrigation	√		√			

ACTIVITIES	Environmental & Social Impacts/Issues	Mitigation Measures	K	C	W	T	P	R
of Khals/ WDS		and other uses planned during the planning of Khal. Use GIS-based tools to estimate the catchment and the runoff thereof. Similarly, the water detention structure should be appropriately sized, not too big or small. These must be verified during the feasibility stage.						
	Faulty design or design restriction can result in failure of the embankment slopes and erosion embankment resulting in siltation of the waterbody	All embankments of the Khals should have a slope of 1:2. Due to the unavailability of adequate land, the slopes are steeper. In such cases, the stabilization measure shall be proposed. The slopes may be stabilized using pile-driven retaining walls. Turfing, mulching, jute-matting, etc., shall be undertaken. The Depth of excavation of the Khal should be decided considering the depth of the saline water layers in the region	√		√			
	Inadequate cross drainage would lead to water logging in Catchments	The embankment of the Khals should not prevent water flow and result in water logging. Hume pipe culverts should be placed at the lowest contour to avoid waterlogging. The invert levels of the Hume pipe culvert should be checked during the DPR Preparation to prevent waterlogging in the agricultural fields	√		√			
	Sediments carried along with runoff from agricultural fields can result in siltation	The sediment-laden runoff from agricultural fields should be allowed to settle before it is discharged into the khals. The feasibility of the construction of a small sedimentation tank should be considered in the design to prevent siltation of the waterbody	√		√			
Planning of Slice Gates (in Khals)	In some Khals, Sluice Gate is developed to control salinity. These gates would be located under the Coastal Regulation Zone 2011	For developing sluice gates in coastal blocks of South 24 Parganas, and North 24 Parganas, please refer to the Coastal Zone Management Plan maps for these blocks to understand the requirement for CRZ clearance. If required, requisite clearance /permission shall be required under the CRZ rules.	√					
Land Requirement /Land Donation	Land required for the check dam would be primarily government land, but WUA members would donate the same if any land is required. Khals are under the ownership of the government, so no land is required for the desilting of the canals. These water bodies are still used for irrigation but are	The negative list given in this ESMF, will ensure that no private land unless donated, will be considered for the installation of irrigation scheme. Formalize the community contribution process, i.e., required land as a donation. Private land required for the Check dam/ Khal is not envisaged. However, only small quantities are required if there is a land requirement in Check Dam. In the case of Khal land is required for the dumping of excavated material. Since the land donation is only required to store excavated material during the construction, there is no land loss. This raised land is used to cultivate vegetables; being close to the water body, the soil moisture levels are enough, so there are no irrigation requirements.	√	√	√			

ACTIVIT IES	Environmental & Social Impacts/Issues	Mitigation Measures	K	C	W	T	P	R
	<p>in degraded conditions and covered with aquatic weeds. Thus, they cannot be used for other purposes like agriculture or pisciculture.</p> <p>Private land, however, is required for dumping the excavated material</p>	<p>Further, the WUA members point out that most of the land is single cropland, and by conversion to double cropland, the farmer who has donated and is anyways benefitted. Further, the irrigation requirement is met close to the water sources. Thus, even though no tangle or monetary compensation is provided, the community members and land donors agree to this intangible transaction. This replacement for the loss (tangible or intangible) and rationale should be recorded during the land donation process.</p> <p>Project will ensure that there will be no coercion of communities / community members to donate land through following steps: (a) the potential donor or donors have been appropriately informed and consulted about the project and the choices available to them; (b) potential donors are aware that refusal is an option, and have confirmed in writing their willingness to proceed with the donation; (c) the amount of land being donated is minor and will not reduce the donor's remaining land area below that required to maintain the donor's livelihood at current levels; (d) no household relocation is involved; (e) the donor is expected to benefit directly from the project; and (f) for community or collective land, donation can only occur with the consent of individuals using or occupying the land. The Borrower will maintain a transparent record of all consultations and agreements reached.</p> <p>For any Grievances related to the project activities, including land donation, please refer to the Grievance Mechanism presented in Section 11.411.4</p>						
Selection of Beneficiaries	Exclusion of marginalized community	<p>The stated objective of WBADMI is to ensure maximum participation of small and marginal farmers having single-cropped land. It also encourages the participation of women. The guidelines for beneficiary selection in Phase I thus ensure participation of socially economically weaker section of society and strives to empower women. Further, while selecting subprojects, the following socio-economic criteria shall be considered:</p> <p>Villages with a considerable population of low-income families will be provided preference so that the scheme's impacts are pronounced. The presence of many small farmers owing most parts of the command area would be an ideal site for intervention.</p> <ul style="list-style-type: none"> • Priority should be given to tribal villages (ST population more than 40%) • Villages or settlements with large chunks of unirrigated cultivable/ 		√				

ACTIVIT IES	Environmental & Social Impacts/Issues	Mitigation Measures	K	C	W	T	P	R
		<p>culturable wasteland have the potential to become double-cropped land under irrigation.</p> <ul style="list-style-type: none"> • Current Crop production and water demand need to be compatible with the project objective of promoting water efficiency <p>Livelihood dependency on agriculture It is important to carry out a livelihood analysis of the village to understand the level of dependency on Agriculture and other primary sources of livelihood. Areas where poor people primarily depend on adjacent forests and labour in remote places should be provided preference.</p> <p>Cohesion among group members helps during crop planning. Group activities are better managed when all members come from similar socioeconomic backgrounds. It is thus suggested to promote homogeneous groups considering social, economic, and socio-political profiles.</p> <p>Therefore, the focus of social mitigation measures is largely on social mobilization. The issues raised during consultations have been incorporated in the design of the project itself. The project plans to:</p> <ul style="list-style-type: none"> • Hire Support Organization that will help in community mobilization • The sub projects will be identified and finalized in consultation with the community. • Grievance Redress Mechanism that is accessible and responsive to the needs of the community. • Regular monitoring <p><u>Strategy and differentiated measures for Vulnerable Groups</u></p> <p>The project will be implementing differentiated measures to include the feedback of vulnerable and disadvantaged groups during the stakeholder engagement process under project implementation. These disadvantaged and vulnerable people are landless and marginal farmers, scheduled castes households, scheduled tribes, women-headed households, people with disability, as well as households designated below the poverty line. The project will deploy the services of a support organisation (SO) at the sub-project level. Each SO will have one Community coordinator (CC) responsible for mobilisation of the marginalized community, including tribal families. The site-specific interventions will be discussed with the community in a village-level meeting, ensuring</p>						

ACTIVITIES	Environmental & Social Impacts/Issues	Mitigation Measures	K	C	W	T	P	R
		the participation of all sections of society. It will be the responsibility of the SO to ensure that community feedback is incorporated into the design of the project to the extent possible.						
Formation of WUA	Exclusion of marginalized community	<p>The following guidelines should be followed for the formation of the WUA:</p> <ul style="list-style-type: none"> - Small and Marginal farmers preferably be a minimum of 80% of the total members of the water user's association - Potential beneficiaries Farmers are to be ready to form WUA and agreeable to the Operation and Maintenance (OMM) of schemes - Priority is given to women farmers to be the beneficiaries and the representative of the WUA management committee and subcommittee. - Priority is given to women farmers to be the beneficiaries and the representative of the WUA management committee and subcommittee. - In Districts/ areas with a considerable tribal population in these districts, the involvement of the tribal and women members should be ensured. Please refer to guidance notes in: Error! Reference source not found. <p>Mapping of the Command area needs to be undertaken during the formation of the WUA to map different assets in the command area.</p> <p>Carrying out exposure trips to nearby successful WUA to motivate the WUA members</p>	√	√		√	√	√
Tendering and Procurement								
Procurement of Solar Panels	Any defunct / broken solar panel would qualify as e-waste. Improper disposal can lead to impacts on soil and water.	The contractor installing panels should be contractually liable for removing the broken solar panel and disposing of them as per the E-Waste Management Rules.				√	√	
	There are allegations of forced labour risks associated with polysilicon suppliers. These polysilicon cells are used to manufacture the solar panel.	Contracts supplying and installing solar pumps/ panels to have in their contracts with developers and utility requirements that neither they nor their solar panel suppliers have or will engage or employ forced labour				√	√	
Procurement of Pumps	The energy efficiency of pumps has not been considered deeply	The Bureau of Energy Efficiency, Government of India, has issued a Schedule for the Energy efficiency of pumps, Schedule No 7 Revision No 4, effective 1 st February 2020.				√	√	√

ACTIVITIES	Environmental & Social Impacts/Issues	Mitigation Measures	K	C	W	T	P	R
	in the guidelines published under WBADMI Phase I. This aspect needs to be considered to improve the carbon footprint of the project	http://www.beestarlabel.com/Content/Files/Schedule7-APS.pdf . The tender document would have specific clauses on the energy efficiency of pumps. For the solar pumps, the guidelines issued by MNRE, GOI (F.NO 32/5/2021 dated 8 th June 2021) or equivalent for installation of Solar pumps shall be considered during planning (file_f-1623146691576.pdf (mnre.gov.in)) and also include in the Tender Documents						
Pre-Construction & Construction Phases								
Development of Contractor Camp	Improper siting and lack of facilities at the contractor camp can degrade the environment.	For Siting of the Contractor Camp, facilities to be developed and environment management during the operations, have been described in Annexure 19		√				
Sourcing of Labour	Conflicts with the local population can cause delays and reputational risks	The project emphasises the use of local labour for project activities, the construction of the check dam would require 6-10 skilled or semi-skilled labour from adjoining areas. This labour would camp at the site for 3 months may not be readily available in the areas, and thus there would be an influx of migrant labour. However, the labour influx would be limited to an influx of direct labour; no indirect influx for ancillary opportunities is expected. Even though the contractor's camp would have all the amenities, the workers would not be dependent on the community for the natural resources. However, conflicts between the migrant workers and the community cannot be ruled out. The Labour and Construction Workers' Camp Management Plan details the specific steps to prevent any conflict between the labour and the host population. Further, a Code of Conduct for workers, as specified in Annexure 20. will reduce conflict chances						
Sourcing and Storage of Material	Improper or unsustainable sourcing of Raw material can lead to irreversible impacts at the place where it is extracted.	Guidance for sourcing construction material has been provided in Section Annexure 16: Good Construction Practices- Sourcing of Construction Material		√				
Transport of Construction Material	Transport of raw materials can cause air pollution and cause accidents	To prevent adverse environmental impacts and safety-related issues, please follow the guidance provided under the Traffic safety Annexure 18 : Vehicle And Equipment Management Plan		√				
Storage of Material	Storage of construction materials can cause community health safety risks. Run-off	Guidance for storing construction material has been provided in Annexure 16: Good Construction Practices- Storing of Construction Material		√				

ACTIVITIES	Environmental & Social Impacts/Issues	Mitigation Measures	K	C	W	T	P	R
	from the storage areas can result in siltation and pollution of water channels. Similarly, improperly placed material can block water channels							
Construction of wells	The excavated material (dug well), drill cutting and drilling fluid (from the tube well) unless disposed of properly, can affect the fertility of the agricultural land.	The contractor must adopt good Construction management practices (presented in the Section), and these must be included in the Bidding Document and Contractor's Contract.				√	√	
	Blasting can cause collateral damages to adjoining properties	If explosives are used, the quantity of charge should be determined based on the resultant Peak Particle velocities from the explosion conforming to the DGMS circular DGMS(TECH)/(S&T) Circular No 7 of 1997 dated 29.9.1997					√	
Ground Clearance for Construction of Check Dams	The felling of trees (if any) can impact the ecology	Felling of trees would not be carried out unless it is essential. Before felling of trees, permission must be obtained from the Forest Department Compensatory afforestation would be carried out in the ratio (1:8 after 3 years of survival) or as recommended by the Forest Department, Government of West Bengal. The afforestation program would be carried out preferably in the catchment to prevent siltation.	√	√	√			
	Improper removal of topsoil can impact the soil environment.	Please refer to Error! Reference source not found. The topsoil excavated from the Khal /WDS shall be stored separately and re-laid at the bottom of the WDS after completion of the excavation. Relaying the topsoil at the bottom of the WDS would stimulate the generation of the organism in the waterbody and increase primary productivity. The WUA can be utilised for the relaying of the topsoil and preparation of the pond Bottom	√	√	√			
	Generation and haphazard disposal of debris can impact adjoining agricultural properties and damage the topsoil of agricultural field Runoff carrying sediment from the stockpile of	Please refer to: Error! Reference source not found. Since the excavated material from Khal/WDS/ Check Dams will be dumped on private land, the material will be dumped in the previously identified area. The WUA members shall monitor this activity, and if there is any spillage, they shall immediately inform the works supervisor and ensure that it is removed from the site.	√	√	√			

ACTIVITIES	Environmental & Social Impacts/Issues	Mitigation Measures	K	C	W	T	P	R
	excavated material can cause sedimentation in the check dam or rivulet, and Chanel							
Development of Foundation and Superstructure	Improper disposal of construction debris can lead to soil and water pollution	Please refer to the mitigation measures suggested in Section Error! Reference source not found. : REF_Ref98696287 \h * MERGEFORMAT Error! Reference source not found.		√				
	Occupational Health Safety of Workers	The following OHS mitigation (as applicable) need to be considered: <ul style="list-style-type: none"> - All workers are required to have Safety Helmet (IS 2925), High Visibility Jacket, Safety Shoes (IS 15298 (Part 2) : 2011) - While working at Height Fall Protection Devices e. g. Full Body Harness (IS 3521), Proper scaffolding (IS 1396.1:1986) shall be provided - In case of Deep Excavation within 300 m of the settlement barricading with Tapees/ Bamboo would be provided. - In case of steel form works are developed rebar caps should be used at steel protruding ends. - High noise-producing activity ear plugs (IS 9167: 1979) should be used - For steel works, gloves (IS 6994 (Part 1) : 1973) should be used - COVID -19/ Infections Disease-appropriate behaviour as prescribed by the MoHFW, GoI or State Health Department or Local Bodies shall be followed 	√	√	√	√		
Mobilisation of Excavator or machinery	impacts on air quality and other environmental issues	The environmental management issues related to vehicles and equipment are presented in Error! Reference source not found.	√	√	√			
	Community and occupational Health Safety issues involved in the operation of the Excavator	The safety-related aspects of construction equipment are presented in Annexure 16: Error! Reference source not found.	√	√	√			
Construction of Conveyance system (Pipes/open channels)	Leakages from water mechanisms (both open channel and underground pipelines) and resultant water losses undermine	To improve water use efficiency, investments are required in improving on-farm water management, including land contouring/levelling for developing channel-based irrigation practices. Piped irrigation using advanced technologies like soil moisture sensor-based irrigation, promotion	√	√	√	√	√	√

ACTIVITIES	Environmental & Social Impacts/Issues	Mitigation Measures	K	C	W	T	P	R
	the water use efficiency in the project.	of drip, sprinklers etc., would be critical to improving the water use efficiency. Promote improved technologies & practices (SRI, Poly/ Straw mulching, System of assured rice production (SARP))						
Slope Stabilization works	Sedimentation of the structure/channel due to erosion of adjoining catchments	<ul style="list-style-type: none"> - The excavated material shall be dressed to develop a proper slope. The excavated material should be rammed appropriately to reduce the potential for erosion - All Khals/ Check Dams/ WDS embankments should have a slope of 1:2. Due to the unavailability of adequate land, the slopes are steeper. In such cases, stabilisation measures shall be proposed. The slopes may be stabilised using pile-driven retaining walls. Turfing, mulching, jute-matting, etc., shall be undertaken. The use of Boulders and rocks for pitching should be avoided. 	√	√	√			
Installation of Solar Panels	The construction-activities for installing the solar panels would not have any significant impact due to the scale of operations. Further, good construction practices would be sufficient to cover the relatively minor impact on soil and water	<p>Good Construction practices (presented in Annexure 16) must be taken up to prevent impacts on water and soil during the construction activities</p> <p>The Bid-document to contain provisions for the Contractor to remove all damaged solar panels and dispose of it as per the e-Waste Rules 2016.</p>				√	√	
Decommissioning or Post Construction Clean-up	Construction waste and debris can lead to the deterioration of the soil and water quality	The Contractor to undertake a clean-up of all rubble and debris. The construction waste and debris are to be disposed of at a location designated by the Contractor.				√	√	√
Operation & Maintenance								
Operation and maintenance of solar panels and irrigation assets	<p>Faulty water management practices would reduce water use efficiency and misuse natural resources.</p> <p>With the climate projections showing an increase in temperature and</p>	<p>Demand-side management interventions must be planned. Emphasis must be provided on efficient agronomical and water management practices, the promotion of drip, sprinkler and rain guns, better irrigation scheduling like AWD, DSR, soil moisture sensor-based irrigation, and surface or sub-surface water distribution pipe, and water budget-based crop and water use management planning.</p> <p>The WUA should also be trained in Water use efficiency:</p>	√	√	√	√	√	√

ACTIVIT IES	Environmental & Social Impacts/Issues	Mitigation Measures	K	C	W	T	P	R
	reduction in rainfall, water management needs additional attention.	<ul style="list-style-type: none"> - Land levelling, channel-to-field irrigation, and better irrigation scheduling must be included in agriculture production, - Crop Planning shall be carried out. Introduce less water-consuming crops to increase water efficiency, - Introduce Fisheries/Horticulture/animal husbandry to promote multiple uses of the water, - Prepare installation schedule and ensure community monitoring and contribution, i.e., required land as a donation, seed money, etc., - Training /Demonstration in agriculture /Fisheries /horticulture, Pest management, - Introduction of traditional, climate-tolerant varieties of rice and other crops, - In a bid to improve water efficiency, the project should promote indigenous / organic/ natural farming practices, good agricultural marketing practices & technologies to reduce pest infestations - WUAs to collect water charges. To shift water charge collection from per unit land area (per bigha/ per ha) to per unit time (per hour) - Provide handholding support in converting to Organic farming, Establishing Backward and Forward linkage <p>Exposure trip to successful WUA should be carried out to provide their knowledge,</p>						
	Water losses from Poor Maintenance of Conveyance Systems	The local youth be trained in the repair and maintenance of irrigation systems.	√	√	√	√	√	√
	Discharge of waste oil and maintenance of pumps on land or river generated from repairs can degrade the soil and water environment.	WUA also needs to be sensitised during training that the waste generated should be disposed of responsibly not to contaminate their land and water bodies.	√	√	√	√	√	√
Desilting of Irrigation Structure	Sustainability of the Irrigation Structure Deposition of silt on agricultural land may affect soil fertility	<p>The WUA should ensure the desilting of the check-dams. The WUA members should be encouraged to support either by providing labour or monetary contribution</p> <p>The de-silted material should be tested before deposition.</p>	√	√	√			

ACTIVITIES	Environmental & Social Impacts/Issues	Mitigation Measures	K	C	W	T	P	R
		The deposition sites should be selected after consultation with Gram Panchayat						
Upkeep of the WUA	Sustainability of the WUA	Encourage WUA to develop assets either in the form of Financial Instruments or other physical assets which can be put to productive use and increase the income of the WUA members.	√	√	√	√	√	√
Support to Agriculture, Horticulture and Fisheries Activities	Impact on Biodiversity	<p>In agriculture and Horticulture</p> <ul style="list-style-type: none"> - exotic species are not introduced to maintain genetic pool - INM and IPM Practices - Horticulture cashew is being revived as a cash crop in Lateritic Zone - Traditional rice varieties are promoted <p>In fisheries intervention:</p> <ul style="list-style-type: none"> - procure seeds only from government-approved hatcheries or those developed/approved under the project - Organic Feeds or HAACP certified feed - Controlled used of antibiotics and hormones - Culture Mahseer (Putitor Mahseer) promoted in the hill districts, and Giant Sweet Water Prawns (<i>Macrobrachium rosenbergii</i>) in the coastal areas to prevent overexploitation /over-fishing and depletion of the natural stock - culture of <i>Pangasius hypophthalmus</i> (Thai Pangus) is not allowed within 2 km of Protected areas or sensitive habitats, e.g natural habitats, river/rivulet enters a downstream protected natural habitat, wetland, or habitats of lia good population of wetland birds or waterfowl). The project should be constructed above the High Flood Level. Additionally, provisions must be made to provide nets around the water Detention structure to prevent fish escape during any floods 	√	√	√	√	√	√

Environment Management Plan: Horticulture Interventions

The EMP for Horticulture lays stress on i) Improving cropping practices, ii) Improving water use efficiency, iii) Integrated Pest and Nutrient Management, v) Organic Agriculture, vi) Use of alternate materials. The measures identified are detailed in (Annexure 13). Further, frequency and intensity of cyclones are both likely to increase, low-cost poly-shed developed under the project should consider retractable roofs so that they can be dismantled very quickly by the farmers themselves before such an event. Further a pilot would be conducted to ascertain alternative material so that use of plastic can be phased out.

Environment Management Plan: Fisheries Intervention

This type of intervention can occur in the Water Detention structure, and Khals created under the project. The considerations to be taken during the i) preparation of fishpond, ii) Development of

Hatchery, iii) rearing of fish iv) Fish Feed, organic practices and the reduce the use of chemicals and antibiotics. etc, have been detailed in (Annexure 14)

Measures for Conserving Biodiversity

The screening mechanism for sub-project ensures that all ecologically sensitive areas e.g (Protected areas, congregation sites of birds, wild life corridors etc) have been excluded from the project interventions. Further to protect the biodiversity during the operation additional measures have been proposed.

In the case of agriculture and horticulture, several interventions have been undertaken to ensure that exotic species are not introduced and that the genetic pool is maintained. Traditional rice varieties are promoted, e.g., Badhsabhog, Haripur, and Gobindobhog. Similarly, Horticulture cashew is being revived as a cash crop in Lateritic Zone in Purba and Paschim Midnapore and Purulia districts.

In Fishery intervention to prevent problems of inbreeding and cross breeding, it is mandatory for fisheries interest groups under the program to procure seeds only from government-approved hatcheries or those developed/approved under the project. Culture Mahseer (*Puntius Mahseer*) will be promoted in the hill districts, while Giant Sweet Water Prawns (*Macrobrachium rosenbergii*) will be promoted in the coastal areas of South 24 Parganas and Purba Midnapore to prevent overexploitation /over-fishing and depletion of the natural stock. The culture of *Pangasius hypophthalmus* (Thai Pangus) is not allowed within 2 km of Protected areas or sensitive habitats, e.g natural habitats, river/rivulet enters a downstream protected natural habitat, wetland, or habitats of high good population of wetland birds or waterfowl). In case of or flood prone areas or flood plain of river or natural water channel exotic fish species (like tilapia, pangus) would be discouraged. The project should be constructed above the High Flood Level. Additionally, provisions must be made to provide nets around the water Detention structure to prevent fish escape during any floods.

The **positive social impacts** are:

- Participation of marginalised in the decision-making process and streamlining of sub-project planning that will be inclusive
- Strengthening of community institutions leading to effective management of community assets.
- Increased employment opportunities and enhanced household income
- Increased access to irrigation and benefit to marginal & small farmers through improved irrigation facility.
- Increased access to irrigation water
- Increase in cropping intensity; restoration of soil fertility; enhanced knowledge of agriculture and water conservation; improved marketing facility will lead to informed decision-making and higher household income and lesser out-migration
- Access to better prices of produce as well as cheaper farm inputs.
- Improved women's access to technology.

Guidance For Formation of WUA

To develop the WUA and its effective functioning, the WUA members need to be active. Preference should be given to those WUA who initially showed interest and took the initiative to develop the group. In the case of vulnerable groups like women, Tribal etc., additional efforts must be taken by the project for the development of the WUA

6.1 GENDER ISSUES AND REDRESSAL

In different development projects, especially projects of this nature, women either remain excluded or benefited in a limited way. Attempts to mainstream gender concerns into the project planning and implementation also remain inadequate in many cases. To make the project more inclusive and

participatory, it is required that women associate themselves with different activities which they find feasible. This approach of inclusion and equity, specifically the involvement and engagement of women will be helpful to attain social justice and reduce marginalization of women and empower them to avail maximum benefit from the project. Thus, incorporating gender and other social issues in the development projects helps to improve project performance and facilitate the achievement of the Bank's goal of poverty reduction. A gender approach in the overall project framework takes care of key gender issues, brings in parity in as the sociation and participation of women, and minimises the gap between males and females at the project level. Minimising gender-based disparity and improving the scope for equal participation of males and females would be encouraged through a gender-based approach in the project planning and execution strategy.

During the social assessment, consultations were organised with different stakeholders to understand the gender issues and possible measures to help women ensure their participation in the overall process. The assessment helped to identify certain key issues pertaining to women and their involvement in different livelihood activities. It is observed that while participation of women in different development activities has been poor in general, their association in agricultural decision-making remains marginal. Though their contribution is significant in different stages of farm activities; still, their contribution has been ignored to a great extent. On the labour front, the wage rate paid to women workers is comparatively less than their male counterparts. Though Government has been taking required measures for giving land rights to women by registering land jointly with the male counterpart, in most of the earlier records of rights, the men in most cases is the titleholder. This creates an imbalance as far as land holding is concerned. Access to the market by women is also limited due to factors like social stigma, the low quantum of sellable produce, the distance of the marketplace from the village etc.

Policy Provisions

The different policy provision and legal provisions in the country for gender-related issues are presented in Annexure 24.

Issues of Significance

Mainstreaming gender equity and empowerment is already a focus area in the project. In the sub projects, activities related to diversification of livelihood and improvement of basic services will address women's needs.

The participation of beneficiaries and focus on poverty reduction are two other key determinants of the effectiveness and sustainability of any project. Any project must address the constraints on women's participation in project design, construction, and monitoring and evaluation (M & E). The project will also focus on the linkage between gender and poverty, by identifying, for example, relation between the household income and occupation of the women of the household. Three major tools are used to identify and deal with gender issues in the project cycle: gender analysis, project design, and policy dialogue.

- Gender analysis should be an integral part of the initial social assessment at the screening stage itself. The issues identified can be scaled up during the feasibility and detailed analysis can be carried out during the project preparation stage.
- The project designs should be gender responsive based on gender analysis and should be included in the SIA document. The findings and recommendations from the gender analysis during project planning and feedback from beneficiaries during implementation must be discussed thoroughly to determine the need for further action.
- Consultations will be organised with different stakeholders to understand gender issues and possible measures that can help women in ensuring their participation in the overall process. The consultations

helped to identify certain key issues pertaining to women and their involvement in the proposed interventions.

In Phase I of the project, the target women beneficiaries were 14 %. There is an increased target in Phase II, which is pegged at 40% of the target beneficiaries. Several initiatives have been taken to this end. In addition to women centric WUA's, women members of the household of the WUA members are encouraged to be involved in the WUA with equal rights, opportunities and liabilities. In addition, women are encouraged to be part of the governing body of WUA and be part of effective decision making. The gender issues that have significance for the project include (i) low land holding and hence low production and insecure livelihood; (ii) women earn less wage for the same duration of work, especially in informal / private sector; (iii) occupational health issues due to prolonged duration of engagement during farm activities; (iv) drudgery of women in agricultural activities due to less usable agricultural equipment; (v) limited access to extension services and institutional facilities; (vi) few women holding of agricultural productive resources such as land, animals, and machinery; (vii) negligible or no role of women in farm related decision-making process; (viii) agricultural tasks / multiple tasks, which add more burden to them; (ix) active participation in community the institutions is limited to a few women and large section either do not participate or remain passive; (x) access to formal financial credit institution for agricultural activities is limited for women headed farming households and hence investment in agriculture; and (xi) poor Capital Investment capacity for agricultural and allied activities

The project has identified some women-centric activities through a consultative process. These activities can be taken up in surplus time after the household works. These women centric livelihood activities include i) development and operation of a fish hatchery, ii) rearing of spawn to fingerling, iii) making of fish feed from organic matter, iv) fisheries activities like scampi cultivation, v) rearing table size fish, vi) developing vermicompost, vii) developing nursery and viii) agricultural crop demonstration. In the tribal districts, they have been involved in horticulture, orchards and intercropping.

Through a mechanism of WUA-to-WUA support, the project has developed a mechanism whereby the vermicompost, fingerlings are bought by the other WUA's from these women promoted WUA's, thus ensuring that the women are economically self-reliant. Similarly, the project allows for a part of the activities undertaken by WUA to be offloaded to the SHG groups. For financial sustainability, women members in the WUA are encouraged to form self-help groups. The groups provide funds and the linkages to a line of credit under the West Bengal Swanirbhar Sahayak Prakalpo (WBSSP)¹⁴. This economic self-sufficiency is helping women also to attain decision making roles in the society.

Involvement of Women

Women have a significant contribution to agriculture production but have limited influence. Their inclusion & participation are critical for the success of the project. If the women-headed households have land ownership in the command area, they should be invited to join the managing committee of WUA. Women's experiences in managing finance in SHGs help them carry out the task of collecting rentals and keeping accounts. The familiarity of managing SHGs also has helped them supervise service providers such as pump operators and accountants and resolve conflict. Working in a group is a distinctive competency that women possess, which helps them adjust, resolve conflicts amicably,

¹⁴ WBSSP was launched in 2012-13 financial year with the objective of reducing interest burden of the Self-help Groups accessing bank credit through the interest subvention. The scheme ensures that no Self-help Group pays more than 2 per cent as interest for the bank loan received. Interest subsidy from the department ranges from 9 per cent to 2 per cent, depending on the nature of the group and the programme under which the group is mobilized. Implemented throughout the state and for all the registered SHGs accessing bank credit. It is implemented through the West Bengal Swarajgar Corporation Limited, this is an entirely state government funded programme.

and develop synergies. An important part is to impart proper skills for Leadership development and in the technical tasks related to managing assets of minor irrigation. Encouragement from support organization/Nodal Department and concerned men from villages can make them successful in running the Scheme. They should be made aware of their duties in the running of the WUA

Scope of involvement of women in WBADMIP:

- Women in Managing committee: One-third of its managing committee member should be women. Prospective women dominated SHGs should be identified (At least 3 women on the managing committee)
- Women members in (4) sub-committees (works, water management, finance, and monitoring)
- Women-headed household (HH) member of WUA
- Demo plot managed by women Member
- Promote women-managed Water User association

Monitoring Gender Action Plan

The indicators, frequency and agency recommended for monitoring are presented in the table.

Table 6-2 ; Monitoring Indicators

Aspects	Monitoring Indicators (Process and Outcome)	Frequency	Monitoring Responsibility
Economic	No. of women engaged in different activities and their proportion to total workforce. Days of engagement of women in different wage / non-wage activities and proportional days of engagement in comparison to their male counterpart. Growth in income of women due to such engagements. Reduction in no. of days of migration (if migrating earlier). No. of women having additional / new market oriented employable skills for self-engagement. No. of women accessed different govt. schemes / provisions including beneficial enrolment in agricultural interventions. Improvement in asset holding of women (productive and household assets).	Planning Stage: for the base line data Half yearly Monitoring Mid Term Review (MTR) Final Impact Assessment	DPMU Third party Monitor along with PMU
Social	Improvement of association of women in local institutional and decision-making process (membership, management position etc.);	Planning Stage: for the base line data Half yearly Monitoring Mid Term Review (MTR) Final Impact Assessment	DPMU Third party Monitor along with PMU

Implementation Arrangements

The preparation, implementation and monitoring of Gender Action Plan (GAP) is the responsibility of the project implementing entities. The Social Development specialist, at the PMU level will facilitate and supervise this process of preparation and implementation of Action Plan. All efforts will be made to coordinate and work with associated line departments and other department, more specifically the

Women and Child Development department, State Livelihood Mission, Panchayati Raj and Rural Development department to help dovetailing with their development programs for the socio-economic development of women.

6.2 GENDER BASED VIOLENCE

As per NHFS V, In West Bengal, 26 percent of women aged 18-49 have ever experienced physical violence, and 9 percent have ever experienced sexual violence. In all, 28 percent of women experienced physical or sexual violence and 7 percent experienced both physical and sexual violence. For every married woman who experienced physical violence since age 15, the most common perpetrator was the current husband. The experience of spousal violence is higher among women in rural areas (31%) than in urban areas (27%) and among women who are employed for cash (41%) than women who are not employed (27%). However, in the project area the GBV risk as per the Risk Assessment Tool is low. The reason being the project has low labour influx (at the most 10 at any given point of time that too in WDS sub projects; though project is in rural area still it is accessible, and project can be supervised all the time as project will hire the services of NGO as support organization; and there may not be any women worker at the project site. Therefore, following actions have been proposed to address issues related to GBV:

- Mapping of response actors
- Develop an IEC strategy and prepare IEC material in the local language on gender equality, zero tolerance for SEA or SH in the project area and labour camps.
- Sensitization of implementing agency on SEA/SH
- Informing community about national laws that make sexual harassment and gender-based violence a punishable offence which is prosecuted.
- Project GRM which will address and respond to GBV/SEA/SH incidents.
- Sensitization and awareness generation of community members and at-risk groups to be carried out regularly on GBV risks, prevention, reporting and response, and
- Continuous stakeholder consultation will be carried out in the project villages to inform the community about GBV risks and redressal mechanisms.
- Strengthen institutional linkages with other departments and response actors for GBV risk mitigation and response.
- Monitoring to be integrated into project safeguard monitoring.

To ensure that women are not harmed at the sub project level, following actions will be taken:

- Contractor will prepare and implement robust measures to address the risk of SEA/SH that include
 - mandatory and repeated training and awareness raising for the workforce about refraining from unacceptable conduct toward local community members, specifically women and girls.
 - informing workers about national laws that make sexual harassment and gender-based violence a punishable offence which is prosecuted.
 - introducing a Worker Code of Conduct as part of the employment contract and including sanctions for non-compliance (e.g., termination), and (iv) contractors adopting a policy to cooperate with law enforcement agencies in investigating complaints about gender-based violence.
- Additional measures can aim to reduce incentives to engage with the local community by providing workers with the opportunity to spend their time off away from the host community, where feasible with a small transport allowance, ideally allowing workers to regularly return for brief visits to their families, spouses, and friends, or to visit nearby urban centres that provide a variety of legal social opportunities. For workers who need to travel further it may be attractive to forego weekends off in exchange for longer breaks that would allow for such home leave travel

7 ENVIRONMENT AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)

The environmental and Social Management Framework has been developed considering World Bank ESF, EHS guidelines and sector specific EHS guidelines (Aquaculture , General EHS Guidelines)

and is compliant with the National Laws. It provides guidelines and procedures to be applied in WBADMIP Phase II to avoid or minimize adverse environmental and social impacts.

7.1 NEED FOR ENVIRONMENT & SOCIAL MANAGEMENT FRAMEWORK

The project authorities would use the ESMF to incorporate environmental and social safeguards in each project activity's planning, execution, and operation stages. Project activities which have the potential to cause adverse, irreversible impacts would be screened out using the Go-No-Go Criteria mentioned in the ESMF. Site-specific Environmental and Social Management Plan (ESMP) will be prepared for others. The ESMF will help identify those activities and sites where major issues can be expected and suggest specific measures. Based on this, additional efforts should be made to address environmental and social concerns appropriately. The ESMF has been prepared based on the preliminary field visits to sample locations, physical observations, and consultation with different stakeholders. Preparation of the site-specific ESMPs will require further focused field study. Project activities with no significant environmental or social concerns do not require site-specific ESMPs.

7.2 Identifying Environment and Social Impacts

The Implementation of the Environmental and Social Framework Comprises these key elements: i) Preliminary Screening, ii) E&S Scoping, iii) E&S Assessment, iv) Developing Tender E&S Conditions, v) Training of WUA on ESMP, vi) ESMP Implementation, vii) Handholding Support of the WUA. These ESMF-related action has been coordinated with the project activities to ensure they are in sync. The inputs for the ESMF thus can be integrated into the project design. A schematic representing the integration of the project components and E&S processes is presented in Figure 2

Figure 2:ESMF Processes integrated with the Project Cycle



7.3 POTENTIAL IMPACT OF PROJECT ACTIVITIES

The activities under the project will not involve any land acquisition as all intervention for the development of minor irrigation structures would either be on government land free from encumbrance or on land donated by the WUA members to the WUA. Since the land donated is minimal and primarily single-cropped land that would be converted into multi-cropped land after the intervention, impacts are not pronounced. However, any loss of livelihood, property or other temporary losses must be addressed. Similarly, adverse environmental impacts are not envisaged as the project interventions would not be undertaken in environmentally sensitive areas. A negative list which includes exclusion from both environmental and social perspectives has been developed. However, temporary environmental impacts from construction activities or the agricultural, horticultural or pisciculture need to be addressed. Impact on the community in terms of loss of common property resources or access to such resources, such as grazing land, other land used by commons etc., are also not expected as no intervention on such land is expected unless the community members agree to it. The ESMF will address such exigencies, and mitigation measures (for both environmental and social) suggested would be implemented.

Go No-Go Screening

The Negative list of activities identifies activities which are not permissible or areas where project interventions cannot be undertaken. The Projects in such sensitive locations or activities can

potentially cause irreversible impacts and thus are not permissible under the project. The Support Organisation would undertake the preliminary screening during the identification of the WUA. The negative list of items is presented in Box 7-1 **Error! Reference source not found.** A screening checklist (Annexure 25) has been developed based on this negative list and will be filled up during the identification of WUA.

Box 7-1:: Negative List of Items / Activities not allowed under WBADMIP II

- No intervention in :
- Forty-eight (48) international rivers in West Bengal or groundwater investments either in the periphery or outside the transboundary aquifer.
- within 100m of any natural habitat, protected or not, such as wetlands, elephant corridors, mangroves, or community forests ;
- within one km of any protected natural habitats, such as reserved forests, national parks, wildlife sanctuaries, tiger reserves, biosphere reserves Natural Bio-Diversity Heritage Areas, traditional Community Property;
- within Sites of Conservation Importance, IBA, Water bodies identified as habitats of a good population of wetland birds or waterfowl
- converts or leads to conversion and/or degradation of significant areas of critical natural habitats (areas officially protected) and/or Sites of Conservation Importance and designated forest area and
- No private land acquisition. Public/community land with no encroachment or encumbrances will only be considered for any sub project.
- Any activity involving construction within 100 meters of an archaeological site/monument
- Any activity involving pesticides that are banned by the Government of India
- Purchase or use of pesticides, insecticides, herbicides and other dangerous chemicals, asbestos, and other investments detrimental to the environment.
- Any activity involving the use of Asbestos Containing Materials (e.g., AC pipes for irrigation, AC sheets for the roof)
- Any activity that violates the provisions of applicable National and State laws
- Construction of any dam more than 2m in height
- Construction of new channels and new branch canal
- Major excavation works are expected to lead to significant adverse environmental impacts or large-scale silt removal (quantities above 500,000 m3).
- Introduction of Genetically Modified species.
- Any activity that require obtaining FPIC
- For Lift Irrigation Schemes : All water bodies which are designated as Important Bird Areas or support large waterbird populations or which may contain niche habitats of wetland birds or rare, endemic, or threatened flora and fauna will be identified (with the help of Forest Department) and avoided if the relevant river/rivulet enters a downstream protected natural habitat within 2km of its abstraction point not to disturb the water flow into the protected natural habitat.
- Check Dams sub-project will be avoided if the relevant river/rivulet enters a downstream protected natural habitat within 2km of the check dam location so as not to disturb the flow of water into the protected natural habitat

E&S Scoping

Likely E&S Issues in the project would be identified through this checklist. The Support Organisation would assist the DPMU in developing this checklist. This would help the project focus on key issues, e.g., sustainability of the resources and involvement of vulnerable people. Ensure vulnerable people are not further disadvantaged etc. This has been considered at two stages. While DPMU is responsible for preparing the E&S Scoping using the E&S Scoping Questionnaire (Annexure 26) while assessing the feasibility of the schemes, the SPMU would use this information to review the E&S aspects during the review and technical sanction of the schemes. Considering the micro watershed, the scheme's sustainability will be assessed during the review. The GIS team at SPMU would assist the Environment Officer at SPMU in the verification process.

Establishing Environmental and Social Impacts

Additional information would be available during the survey and DPR preparation for each scheme. With the help of Support organizations, the DPMU will identify the impacts and suggest Mitigation Measures. Impacts during the construction, e.g., generation of debris, the labour camp, requirement of construction material, land requirement (processes of land donation) etc. Based on this information, the environment and social aspects would be assessed, and the specific mitigation measures suggested in the EMP would be included in each scheme. A guided assessment framework has been prepared and presented in Annexure 27 to facilitate the Environment and Social assessment process. The assessment and the management measures developed through this guided assessment Framework would be an integral part of the Detailed Project Report. The scheme-specific ESIA and ESMPs will be shared with the Bank prior to the issue of Bid- documents.

Developing E&S Conditions for Tender Document

The E&S Mitigation measures are identified through the E&S Assessment described above. These must be implemented by the Contractor and would be included in the Tender Documents of the Contractor. These mitigation measures would also be a part of the Contract document. Thus, labour and working conditions, resource efficiency and pollution prevention measures identified during the planning would be integrated into the pre-, construction, and post-construction activities.

The EMP prepared, and the DPR should be finalized and approved by the Environment Officer at SPMU before being included in the bid documents. The DPMU will also review the various permissions and approvals to be obtained. Before signing contracts, the DPMU to ensure the following are completed (i) all environmental permission and approvals from relevant authorities, (ii) Training and capacity-building activities initiated and (iii) stakeholder consultations have been conducted as required.

In addition, contract documents will include references to various Legal provisions/ acts and clauses relating to environmental and social performance (compliance with EMP), labour management, occupational health, and safety management. The Environment Officer of SPMU will monitor the implementation of the same with the support of the Executive Engineer of the DPMU.

E&S Audit for Schemes under Retroactive Financing

For any scheme that is currently under implementation and is candidate for retroactive financing, E&S audit will be carried out by an independent agency. For E&S audit of schemes under retroactive financing, following indicators will be evaluated:

- E&S Screening would have carried out to identify E&S impacts consistent with ESMF provisions
- Based on screening results, mitigation and management measures would have been designed and have been implemented or are in the process of implementation
- The relevant documents would have been disclosed
- No land acquisition or related impacts would have taken place for implementation of these schemes
- Analysis of alternative carried out to ensure avoiding / minimization of E&S impacts
- Procedure for grievance resolution and appeals mechanism is in place and GRC is functional.

In case of any gap identified during the audit, a corrective action plan will be prepared which will be implemented prior to disbursement claim from the World Bank.

Environmental and Social Management Plan Implementation

This stage primarily refers to actions detailed in Chapter 6 ,Environment and Social Management Plan, that the contractor must take on the ground. Under the supervision of the DPMU, Support Organisation and WUA, the Contractor would ensure all the actions mentioned in the Contract document are implemented on-site. A mechanism for monitoring the implementation would also be developed under the ESMF. The SPMU would develop a monitoring checklist as part of the ESCP.

Training of WUA on ESMP Implementation

During the implementation of the activities, for e.g., intervention in Fisheries and Agriculture, several safeguard measures have been planned to improve water efficiency, reduce chemicals and pesticides, encourage INM , IPM and organic farming, diversify crops, and promote and present indigenous species. The training for the group of farmers carrying out fisheries would include reduction in use of hormone and antibiotics, use of organic fish feed or HAACP certified feed, maintaining genetic purity during breeding. The support Organisation would train the WUA member on these aspects. A pilot project would be carried out with the involvement of farmers to demonstrate the benefits of these activities to the farmer. The Support Organisation would also facilitate the operation of the WUA by assisting with the registration of the WUA under the West Bengal Societies Registration Act, 1961 and developing operating procedures for accounting, recording resolutions and minutes of meetings etc. Gender mainstreaming sustainability of WUA would also be initiated at the stage and continue over the project's Operation and Maintenance Phase.

Handholding Support to WUA

Even after the schemes are handed over to the WUA, Phase I results show that Handholding support is required to ensure WUA functions properly. Through the Support Organizations, the project would help them link up with other government schemes, facilitate credit linkage, and help market the produce. They would also help them plan the sustainability of the WUA beyond the project period. The WUA would prepare a Sustainability and Continuity Plan with the help of the Support Organisation. The handholding support would also include field-based training of WUA on Sustainable agricultural practices, IPM, INM and the benefits of organic farming.

7.4 APPLICATION OF THE ESMF

The ESMF and the different tools embedded in it would be used for different project activities at the planning, implementation, and post-implementation phases to identify the environmental and social concerns and adopt an appropriate strategy to mitigate potential adverse impacts. A full-fledged environmental and social assessment are not envisaged as any project with considerable adverse environmental and social impact would be screened through the Go No-Go Checklist. Additionally, the project interventions are straightforward and predictable, and the resultant impacts are known. However, if any residual impacts are identified, they can be handled through the E&S Assessment Format. As the program focuses on vulnerable groups, e.g., women and tribal populations, a separate Gender Action Plan and Tribal Development Plan have been prepared. The project also focuses on sustainable agricultural practices and nutrient and pest management, so the Integrated Pest and Nutrient Management Plan has been prepared. Table 7-1 gives details of the application of the ESMF to the different project stages – planning, implementation, and post-implementation. It lists the key ESMF activities and outputs in each stage, the timeframe for implementation, and the implementation responsibilities.

Table 7-1: Application of ESMF in Different Project Stages

Key ESMF Activities	Project Stage	Key Formats/Documents to be Used	Expected Output/	Timeframe for ESMF activities	Responsibility	Monitoring & Review
Go No-Go Screening	Feasibility	Go No-Go Screening Checklist	Confirmation that the scheme is not on the list of non-permissible activities or at locations where there can be irreversible impacts	Identification of the WUA / Selection of Schemes	Support Organisation	DPMU and SPMU
Preparation of E&S Scoping	Feasibility	E&S Scoping Checklist	Gather information on the resource available, Resource requirement, involvement of vulnerable populations, and focus of target groups identified by the project.	During the Technical Feasibility and preliminary selection of Schemes	Support Organisation with the support of DPMU	DPMU and SPMU
Verification of E&S Scoping	Technical Review and Approval	E&S Scoping Checklist	Identification of sustainability of resources, Gender inclusion, adverse impacts etc	Review of the Scheme by the SPMU	SPMU with support from DPMU	
Preparation of E&S Assessment	Detailed Design	E&S Assessment Format	Identification of the Key E&S Issues in construction and associated project intervention	Preparation of the DPR	Support Organisation with DPMU	DPMU and SPMU
Review of the E&S Assessment	Detailed Design	E&S Assessment Format	Verify that all the E&S impacts have been appropriately assessed and the mitigation measures duly identified.	Review of the DPR	SPMU	
Preparation of Tender E&S Conditions	Tendering	-	The mitigation measures and the E&S Assessment format should be included in the Tender documents	Tender Document Preparation	DPMU /SPMU	
ESMP Implementation	Construction	E&S monitoring Format	Checklist to ensure that the EMP provisions stated in the tender document are implemented	E&S Monitoring Checklist	DPMU with WUA & Support	

Key ESMF Activities	Project Stage	Key Formats/Documents to be Used	Expected Output/	Timeframe for ESMF activities	Responsibility	Monitoring & Review
					Organization	
Training of WUA on ESMP	Operation & Maintenance	-	Demonstration and Training of WUA on improved farming practices		Support Organizations	

8 SUSTAINABLE AGRICULTURE: INTEGRATED PEST AND NUTRITION MANAGEMENT

The project interventions on improved irrigation will convert single-cropped land to double-cropped land. In the business-as-usual scenario, agricultural intensification would lead to increased use of the associated agrochemical such as pesticides and fertilizers, even though none would be financed through the project. Therefore, the ESMF of the project includes a strategy to introduce Sustainable Agricultural Practices, e.g., Integrated Pest Management, Integrated Nutrient Management (IPNM), water budgeting, crop diversification, and maintaining genetic diversity in crops to the farmers in the project area. The project will support these sustainable agricultural practices as the key strategy to enable farmers to combat pests, diseases, and nutrient deficiencies. Effective implementation of sustainable agricultural practices will reduce the risk of water pollution by leaching chemicals from farmlands to both surface and sub-surface water sources.

8.1 OBJECTIVES OF SUSTAINABLE AGRICULTURAL PRACTICES

Sustainable Agricultural Practices seeks to promote and support the safe, effective, and environmentally sound management of natural resources and reduce chemical inputs in crop production. The INM and IPM thus play a key role in this.

The specific objectives of the:

- Good agricultural practices include:
 - Enhance crop productivity as well as cropping intensity and livelihood in small and marginal farmers of the project area in a sustainable manner
 - Improve returns to the farmer and other water users of the MI system
 - Efficient use of water to improve water productivity
- Good Pest management will include:
 - Minimize crop loss, and augment farm production with the scientific application of recommended pesticides.
 - Reduce environmental pollution caused due to the injudicious application of synthetic pesticides.
 - Introduction and adoption of biological and cultural methods for managing pests below the Economic Threshold Level (ETL).
 - If chemicals are the last resort it has to be done with the prior permission of the SPMU. Best practices in the handling, application, and storage of pesticides would be promoted. This will also include measures to monitor and ensure that the usage of pesticides that fall under the World Health Organization's (WHO) Recommended Classification of Pesticides by Hazard Classes 1a (extremely hazardous) and 1b (highly hazardous), or Annexes A and B of the Stockholm Convention and are not in the list of "Banned Pesticide" by Government of India.
 - Reduction in health hazards arising due to chemical pesticides during handling.
 - Minimizing pesticide residues by applying appropriate doses and adhering to the recommended waiting period.

- Promotion of biopesticides.
- Good nutrient management will include:
 - Improving and sustaining soil fertility and land productivity.
 - Reducing environmental degradation due to the overuse of synthetic fertilizers.
 - Addressing nutrient deficiencies identified through systematic soil testing.
 - Introduction and adoption of organic methods for meeting plant nutrition needs.

8.2 PROJECT APPROACH TO IMPROVE AGRICULTURAL PRACTICES

The WBADMI Project has undertaken several initiatives to demonstrate to the farmers the benefits of adopting good agricultural practices and handhold them into adopting such practices. The key approach adopted by the project include:

- To motivate the small and marginal farmers to grow crops twice / thrice in a year with added irrigation facilities and at the same time ensure the sustainability of the agricultural practices
- Production to be driven by a combination of factors, including farmers' choice and market demand and sustainable cropping practices

8.3 SALIENT FEATURES OF THE PROJECT APPROACH

Several interventions have taken up agricultural support services to ensure that the farmer benefits from the project intervention, i.e., assured water supply for irrigation. These are primarily driven to ensure sustainable agricultural practices, food security, livelihood generation, and increased farmers' income. The interventions which have been planned include

Good Agricultural Practices:

- **Crop Diversification:** Shifting from paddy -paddy -paddy cycles to a crop mix. Introducing agroclimatic zone-based crop planning. Maize was thus introduced in Phase I. In Phase II Green Pea would be introduced in Dakshin 24 Parganas, while black gram would be introduced in Purulia, Bankura Jhargram Uttar Dinajpur, Jalpaiguri Malda Murshidabad Nadia North 24 Parganas, Burdwan and Birbhum. Sunflower has also been introduced as a cash crop in some districts.
- **Seed treatment:** Preserving of seed to ensure that the quality of seeds do not deteriorate
- **Promotion of Local variety:** In WBADMI Phase II, a local variety of rice would be encouraged. These include Badhsabhog, Gobindobhog etc. In addition, in South 24 Parganas, salt tolerant variety is being encouraged. These salt-tolerant varieties would include KaloMati, Dudheswar, Lunisree, Hira Moti etc.
- **Timely sowing:** Sowing is based on the availability of soil moisture. In case of cases, mustards grown in lateritic zone late sowing due to delay in winter rains harmed flowering and attack from pest. Thus, the seedlings are developed in micro-pots in low-cost greenhouses, and then mature plants are transplanted to the field when the agro-climatic conditions are favourable. This reduces crop loss due to the variability of weather
- **Recommended spacing:** Use appropriate seedlings spacing to allow for plant growth and increased productivity.
- **Efficient utilization of water:** Avoid excess watering of agricultural activities. Phase II moves towards irrigation based on soil moisture availability. Develop water budgeting in the micro-watershed to use the water efficiently, putting intensive and less water-demanding crops under cultivation.
- **Timely intercropping operation:** Sowing nitrogen fixation crops like Dhaicha and Azolla in paddy fields before harvesting improves fertility. Intercropping is promoted, especially on a plantation. Agriculture is carried out in the lower tier, horticulture in the middle tier and trees in the top.

Improved Technologies

- **Integrated Nutrient Management:** The project aims at the following intervention as part of the INM measures (Vermicompost/Green Manure/ Azola pits etc.) and improved fertilizers (Neem coated urea, Sulphur coated Urea for slow release) etc
- `

8.4 STRATEGIES FOR PROMOTING SUSTAINABLE AGRICULTURE

The key strategies which have been adopted by the program to promote sustainable agricultural practices are:

- Dissemination of Good Agriculture Practices (GAP) & Technologies through on-farm demonstration (OFD)
- Capacity-building – Training Programs, Exposure visits, Farmers Field Day, linkage with line departments
- Farmer Field School (FFS)- Wider adoption of GAP

8.5 CAPACITY BUILDING ON SUSTAINABLE AGRICULTURE

For capacity building, a need assessment related to IPM & INM will be done with the stakeholders, including current mapping practices. Based on the Training Need Assessment (TNA), relevant training modules and IEC materials will be developed covering crop specific IPM and INM practices (crops grown in different agricultural seasons). Training will be organized before the onset of agricultural seasons, i.e., at least 30-45 days before sowing / planting. It will help the farmers get acquainted with the IPM and INM and their adoption during the cropping period. Hand holding support will be rendered to the farmers through the individual service providers and irrigation operators during crop growth stages.

The different methods which have been adopted to ensure knowledge transfer to the farmers and help them migrate to sustainable agricultural practices are highlighted in Table 8-1

Table 8-1: Capacity building Initiatives for Good Agricultural Practices under WBADMIP II

Area of Intervention	Tools Considered	Details
Crop Planning	Training Booklet	Competency-based training booklets were prepared in the local language on the cultivation of Paddy, Brinjal, Tomato, Chili, and Ladies' finger
Safe use of Pesticides	Training Booklet	A book on "Safe use of pesticides" with a list of WHO class 1A 1B & Class 2 and GoI list of banned pesticides and their effects on the human health of farmers /farm workers will also be prepared. Training booklet should outline "safe practices" in the handling, application and storage of pesticides as well as discarding of empty containers
	Wall Writing	The harmful effects of modern agriculture, Good Agricultural Practices, and a list of WHO restricted and banded pesticides and their effects on human health were developed and displayed in each village
Integrated Crop Management	Training Booklet	A book has been developed for Integrated Crop Management of various horticultural crops of agroclimatic zones
Integrated Nutrient and Pest Management	Training Booklet	This Book contains farmers' level methods for production and application of Azolla & vermicompost, biofertilizers, and biopesticides in different crops.
	Publicity Campaigns	Campaigns are organized once each season on integrated pest management, the effect of indiscriminate use of chemical pesticides, information about unsafe pesticides and their alternatives management with mechanical, cultural & biological methods

Area of Intervention	Tools Considered	Details
Support and Handholding of farmers (Training of Para Workers)	Training Session	Farmer's training will be organized to produce and apply different bio-fertilizers, bio-pesticides, vermicompost, and Azolla. In addition, they were specially trained on the motivation of farmers, GAP certification, marketing of GAP products and entrepreneur development.
Good Agricultural Practices	Training Sessions	Farmers training on the cultivation of traditional crops under GAP will be organized. Extensive training on seed production and cultivation of a new crop, Elephant Foot Yam, was organized in some villages.
	Farmer Field School	The Farmer Field School introduce them to good agricultural practices so that they get better yield and good returns
	Demonstration Plots	The key objectives/purpose for demonstration implementation are to a) Demonstrate recommended best practices/new technology, b) Build the capacity of the WUA farmers in new technology and practices through practical exposure and on-site experience of results and thereby catalyse technology adoption. c) Accelerate adoption of technology/improved practices among farmers (other than WUAs) beyond the ADMI project area

The project will adopt a cascading approach for the capacity building of farmers where resource persons will be developed through the Training of Trainers (TOT) programme. The key WUA members would be trained on IPM and INM initiatives. They will support farmers on IPM and INM in consultation with the Agriculture Officer and Fishery Officer in the DPMU. The details of the IPM and INM are presented in Annexure 28

9 TRIBAL DEVELOPMENT FRAMEWORK (TDF)

The Indigenous People (IPs) in India are categorized as tribal who often become vulnerable in development projects because of their cultural autonomy, which is usually undermined and because this group endure specific disadvantages in terms of social indicators of quality of life, economic status and usually as the subject of social exclusion. The term "Indigenous Peoples" is used in a generic sense to refer to a distinct, vulnerable, social, and cultural group possessing the following characteristics in varying degrees:

- Self-identification as members of a distinct indigenous cultural group and recognition of this identity by others.
- Collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories
- Customary cultural, economic, social, or political institutions that are separate from those of the dominant society and culture; and
- An indigenous language is often different from the country's official language or region.

The key objective of the TDF is to give special attention and focus to the tribal issues and concerns during the implementation of the project. Under the Disclosure Policy, this TDF will be discussed

with and disclosed to the key stakeholders. This framework encompasses suggestions and recommendations received from different sections during its preparation. Further, this framework shall be disclosed to the public on the project website of IWD; printed copies of the framework will be placed in government offices and other public locations for easy access by the tribal population.

9.1 TRIBAL INCLUSION APPROACH

To ensure the ‘inclusion’ of Tribals in the Project in accordance with the World Bank’s policy, a separate Tribal Development Plan (TDP) was prepared for WBADMI Phase I. The plan had pointed out that as per Article 342 of the Indian Constitution¹⁵, in West Bengal, 40 groups have been categorized / scheduled, viz., Scheduled Tribes. Of these, 3 are declared as Primitive Tribal Groups ¹⁶. A list of the 40 tribal communities in the state and the 3 PTGs and the spatial distribution in different districts is provided in been provided in Annexure1, From the perspective of the World Bank’s ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities, these 40 groups constitute ‘indigenous people’. It may be noted that in this report, the terms ‘tribals’ and ‘scheduled tribes’ are used synonymously.

Even though the project focuses on the red lateritic region with a considerable tribal population, specific measures are made for the involvement of the tribal in WUA (detailed in Section 7.1.10: Guidance for Formation) WUA) a strategy is required to ensure the active involvement of tribal. The strategy proposed for the inclusion of tribal communities is discussed in Table 9-1

Table 9-1:Project Approach and Strategy for Tribal Development

Project Stages	Project Approach and Strategy	Expected Outcome	Responsibility
Preparatory Phase	Discussion with tribal families / farmers of the project area and in scheduled areas on project components and activities.	Key intervention areas are identified, and guidelines prepared in WBADMI Phase I are revisited to ensure the improved participation of tribal farmers, particularly in the WUA.	SPMU along with DPMU (a district with and Support organizations.
	Reviewing the outcome and assessment of the PHAI program to identify key issues that hinder their greater involvement and benefit from the project intervention.	List of actions finalized for implementation and modification of the guidelines prepared in Phase I to ensure greater involvement and participation of tribal by activities	Other tribal interest groups may be invited
	Preparing a priority list of actions based on the identified issues and interests of tribal farmers / families of the project area.		
	Preparing a cluster-specific plan of action for better inclusion of tribes in different activities that		

¹⁵ The term ‘Scheduled Tribes’ first appeared in the Constitution of India. Article 366 (25) defined scheduled tribes as "such tribes or tribal communities or parts of or groups within such tribes or tribal communities as are deemed under Article 342 to be Scheduled Tribes for the purposes of this constitution". The criterion followed for specification of a community, as scheduled tribes are indications of primitive traits, distinctive culture, geographical isolation, shyness of contact with the community at large, and backwardness. This criterion is not spelt out in the Constitution but has become well established.

¹⁶ The Primitive Tribal Groups (PTGs) have been identified by the Govt. of India in 15 states/union territories on the basis of (a) pre agricultural level of technology (b) extremely low level of literacy; and (c) small, stagnant or diminishing population.

Project Stages	Project Approach and Strategy	Expected Outcome	Responsibility
	are feasible for their greater participation.		
Implementation Phase	<p>Implementing priority actions that are finalized during the preparatory phase. Removing bottleneck identified during the implementation of Phase I.</p> <p>Initiatives for convergence with tribal development schemes of Government at the village / block level, through improved coordination with other government departments</p> <p>Based on feasibility, priority action in inaccessible scheduled areas (project village) for establishing infrastructures planned under the project.</p> <p>Equal opportunity to dispersed tribal (living in a mixed community) for accessing project benefits, as per the plan for beneficiary coverage.</p> <p>Ensuring more significant participation of the tribal community in activities / sub-activities taken up under each component / sub-component of the project.</p> <p>Taking measures, adhering to the project's scope, to build the capacity of tribal farmers in agricultural technologies, marketing, institution management etc., as per the project requirements.</p> <p>Taking measures that are legally binding under PESA.</p> <p>Monitoring of actions taken under the project for inclusion of tribal by project component / sub-components and initiating corrective measures accordingly.</p>	<p>Participation of tribal / tribal farmers in different activities implemented under the project.</p> <p>Project supported infrastructure and services in less accessible scheduled areas / tribal-dominated areas.</p> <p>The inclusion of tribes and their active involvement ensured better operational and management capabilities.</p> <p>Adoption of improved farming technologies by the tribal farmers and hence better yield from the available land.</p>	DPMU, with the help of the Support Organisation

Project Stages	Project Approach and Strategy	Expected Outcome	Responsibility
	Documenting success and learning from different initiatives undertaken by the project ensures more significant participation of tribes.		

9.2 TRIBAL DEVELOPMENT AND INCLUSION FRAMEWORK

Involvement of Tribal Communities

The districts (i) West Medinipur; (ii) Purulia (iii) Dakshin Dinajpur; (iv) Malda; (v) Jalpaiguri; (vi) Birbhum; and (vii) Burdwan have significant in terms of tribal presence. The government of West Bengal has identified based on the tribal predominance. In villages with more than 40% tribal population, the following criteria should be used in the formation of the WUA. Ensure representation of the tribal community members in the Managing Committee of WUA

- There should be a representative of the Tribal community in (4) sub-committee (works, water management, finance, and monitoring)
- 6% Lead farmer for crop demonstration should select from the tribal community (as per population sharing of state)
- Identify Women tribal SHG; link them with different government schemes and the guidelines to tap the fund for their development. (See Annex-1V)
- Promote Tribal women managed Water User association

ESS7 requires that special planning measures be established to address issues concerning tribal people. More specifically, the policy requires undertaking a social assessment and free, prior, and informed consent process leading to the broad community support by tribal for the project and the development of an instrument for indigenous peoples in the form of a Tribal Peoples Plan (TPP). Generally, a TPP is prepared with appropriate measures identified during the social assessment and consultation process.

The following describes the processes and procedures that will be followed under the project to fully address the Bank's ESS 7, Indigenous Peoples.

Project Information Dissemination and Vulnerability Awareness Building

The Tribal Development Plan for Phase I developed following the World Bank Policies has served the following objectives: (i) ensuring inclusion through selective targeting/prioritization; and (ii) establishing anew/strengthening the existing tribal institutions to undertake irrigated Agriculture. The key elements underpinning the tribal development plan (TDP) relate to (i) discriminatory targeting – to ensure inclusion and equity and (ii) capacity support/building – to enable tribals to participate and derive full benefits. A specific process has been defined for implementation to ensure that the Tribal people are integrated into the project.

Before the ESIA, the project will disseminate project information to all stakeholders through various means, such as mass media, project brochures/posters and a dedicated site on the internet. With the help of the Institutional Development Specialist and the Support Organizations, the project information would be disseminated especially in the identified tribal villages.

Ethnic Screening

An ethnic screening will be conducted to determine if ethnic minorities are present or have a collective attachment to the proposed irrigation modernisation project. Tribal communities live within varying and changing historical, cultural, political, and economic contexts. According to the ESS 7,

determination as to whether a group is to be defined as indigenous peoples is made by reference to the presence (in varying degrees) of four identifying characteristics:

- Self-identification as members of a distinct indigenous cultural group and recognition of this identity by others.
- Collective attachment to geographically distinct habitats or ancestral territories in the project area and the natural resources in these habitats and territories.
- Customary cultural, economic, social, or political institutions that are separate from those of the dominant society and culture; and
- An indigenous language is often different from the country's official language or region.

Considering all these factors, the Tribal Development Plan developed as a part of the project preparation in Phase I has carried out an Ethnic screening and listed 4,568 villages as 'tribal'. These villages have more than 40% or more tribal populations. As part of Phase II the screening would be revisited to update the list of villages.

Social Assessment (SA) and consultations with tribal communities

In the villages identified as "tribal villages", a participatory Social Impact Assessment (SIA) will be carried out as part that will be conducted as part of a Feasibility Study that will address all elements of Social Assessment (SA) defined under ESS 7, including, at minimum, the following:

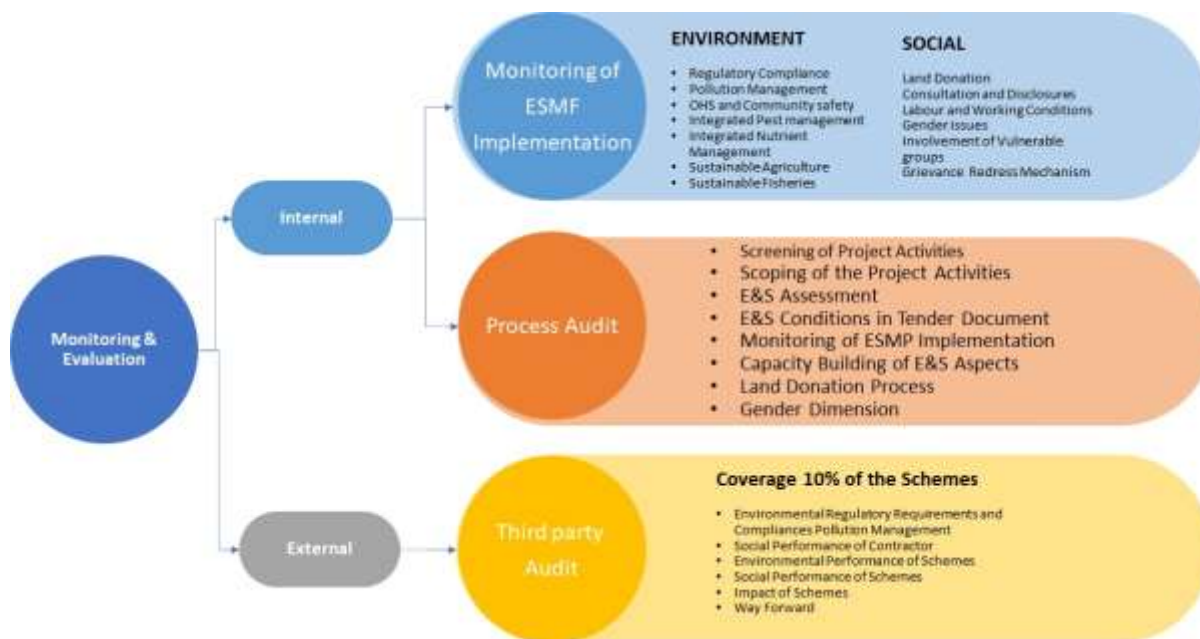
- Identify key stakeholders of affected tribal minorities and establish an appropriate framework for their participation in the selection, design, implementation, monitoring and evaluation of the relevant project activities.
- Assess the demographic, socioeconomic, cultural, and other relevant characteristics of affected ethnic minorities in the catchment area of the respective irrigation rehabilitation sites, establish a social baseline and identify potential barriers to their full participation in benefiting from project activities.
- Review relevant legal and institutional frameworks applicable to tribal minorities.
- Based on free, prior, and informed consultation with the affected tribal minorities, assess the potential impact of project activities and, where adverse impacts are identified, determine how they can be avoided, minimized, or substantially mitigated.
- Propose specific measures to ensure that affected tribal minority people will, meaningfully and in a culturally appropriate manner, participate in project activities, benefit from the project, and mitigate and mitigate negative impacts; and
- Develop institutional arrangements and implementation procedures to assist tribal farmers in voicing grievances and have them addressed in socially sound ways, in line with the procedures described in this ESMF.
- Assess the nature, scale, and scope of displacement (if any) when the proposed minor Irrigation project is constructed. Assess the current state of the livelihood of the potentially displaced tribal minority population.

Under the guidance of the Environment Officer at DPMU, the Support Organization will provide the necessary support to the Feasibility Study team so that all requirements under ESS7 will be addressed in the respective SIA. Free, Prior and Informed Consent with affected tribal minorities will also be conducted as part of the SIA in case of land donation. Notice of consultation meetings will be disseminated at least one week before the meetings and in a language or mode that is understandable to the affected people. Care will be exercised so that beneficiary farmers and a broad range of local people will be invited. The SIA will cover the entire catchment area of the respective minor irrigation scheme. Also, the SIA will be conducted even if no negative impact is anticipated under the respective minor irrigation scheme. If broad community support cannot be ascertained from affected tribal communities, the project activities will not be financed as relevant for the scheme/ site. The Tribal Development Plan and its components are presented in Annexure 29

10 ESMF MONITORING AND EVALUATION FRAMEWORK

The M&E framework of ESMF is designed to assess the progress and achievements made in line with the identified risks and mitigation measures. The M&E will enable decision-makers to take up mid-course corrections by providing a feedback loop. The M&E framework is designed as a two-step process: a) Internal Monitoring & Internal Process Audit and b) External Third-party auditing. The schematic of the M&E is presented in Figure 3.

Figure 3: Conceptual framework of the M&E process



10.1 INTERNAL MONITORING AND AUDIT OF THE ESMF OF THE PROJECT

Monitoring of the ESMF implementation by the SPMU

The key environmental and social aspects that have significance for the project will be monitored periodically. It will indicate the milestones achieved per the national / state benchmarks / safeguards' measures identified in the ESMF. As mentioned earlier, in the case of construction activities, certain aspects of the ESMP implementation e.g., such as debris management, use of community property, and post-construction clean up, will be monitored by the WUA. However, other aspects of pollution control, labour and working conditions, and occupational health safety would be monitored by the DPMU with the support of the Support Organization. Specific environmental and social indicators can be quantitatively and qualitatively measured and compared over a period to understand the progress made as per the plan. The Monitoring indicators and plan for monitoring are presented in Annexure 30. These monitoring indicators and modalities would be further refined and the SPMU during the development of the M&E protocol.

Audit of the Environmental and Social Management in the Project

The Safeguards Officer and the Institutional Development Expert of SPMU will audit the ESMF process to ensure that the framework suggested in the ESMF is implemented across all the interventions undertaken in the project. This would help in assuring that E&S issues and impacts are identified for each scheme and mitigation measures are implemented. It would also help identify issues in the process, good practices, and required actions. The SPMU Safeguards Expert will prepare reports based on the Process Audit, half-yearly for the first two years and, after that, annually. The

Report with district-wise findings will be submitted to the Project Director. The reports will be shared with the DPMUs, and Support Organisations to draw up the Environment and Social Action Plan. The Executive Engineer of the DPMU would be responsible for monitoring the implementation of the Action Plan. The aspects to be covered in the Process Audit is presented in Annexure 31. SPMU would develop the Monitoring Protocol on ESMF Implementation' and Auditing Protocol as part of the ESCP.

10.2 EXTERNAL AUDIT OF E & S MANAGEMENT ASPECTS IN PROJECT ACTIVITIES

The external M&E Agency hired by the SPMU to undertake a mid-term and end-term evaluation of the ESMP implementation to identify issues, and good practices and make recommendations for strengthening E&S management. The evaluation will be undertaken twice during the project implementation period of 6 years– at the mid-term and end of the project. A mid-term audit shall be carried out only after the implementation of 30% of project activities or after 2.5 years but before 3.5 years from the date of loan agreement with the World Bank, whichever is prior. The SPMU will share the audit reports with the DPMU and other implementing agencies, e.g., Support Organisations and the World Bank. The audit will review the implementation status of recommendations /mitigation measures and activities proposed in the ESMF to i) assess the major environmental non-compliances and propose corrective actions. ii) prepare an audit report that specifies iii) the deviations in implementing environmental measures, if any, iv) positive measures taken, v) suggestions for further improvement of social and environmental management practices, vi) to identify constraints, if any, in ensuring compliance to the measures outlined in the EMP. The suggested areas to be covered during mid and end-term audits are provided in Annexure 32. The SPMU prepare the Terms of Reference for External E&S Audit as part of the ESCP.

11 CONSULTATION, INFORMATION DISCLOSURE, AND GRIEVANCE REDRESS MECHANISM

11.1 STAKEHOLDER'S CONSULTATION ON ESMF

Stakeholder consultation is an integral part of the environmental and social assessment and provides inputs for the preparation of the Social and Environment Management Framework (ESMF). The overall objective of such consultations was to document the concerns of the stakeholders with specific reference to the project's planned interventions. The consultation meetings were organized basically for two important purposes, i.e., (1) to share project objectives and proposed project interventions with the identified stakeholder groups and (2) to consult with the stakeholders and document their concerns with reference to the social and environmental impacts of the proposed project interventions.

Field visits were conducted to different places within the planned project jurisdiction to understand the expected project benefits / risks and people's perceptions of the project. In the assessment process, stakeholders were mapped in the visited areas to understand how the project would impact these stakeholders. The field visit and stakeholder consultations were conducted in Birbhum and Dakshin 24 Parganas. The interaction with stakeholders covered farmers of different social and economic categories, local service providers etc., in project districts to understand their concerns.

Stakeholder Identification and Analysis

The proposed project will influence a large section of society in the project districts. Stakeholders identified in the process are either the individuals or group/s of individuals or their institutions in the village / project area that will be influenced by the proposed project's activities and vice versa. Different stakeholders with direct or indirect stakes in the project were identified and analysed in the process so that the consultation could be focused on them. The stakeholder identification and analysis are presented in Table 11-1

Table 11-1:Stakeholder Identification and Analysis

Name of Stakeholder /Group	Direct/Indirect	Type of Influence/ Interest	Key areas of Consultation
Village-level key stakeholders			
Landowners in the Catchment Area of Schemes	Direct	Very important, their active involvement is necessary for the successful involvement	Their expectation, willingness to donate land and the impacts envisaged from the loss of land
Vulnerable Groups in the Catchment Areas of Schemes (Scheduled Tribes and Scheduled Caste, Marginal Farmers)	Direct	Very important as the project has a special focus on this group, and most of the schemes are concentrated in the western districts where these people are concentrated	Their willingness to participate, any apprehensions they have
Women Member of Potential WUA (ST Women Farmers, Women Farmers in Other Social Categories)	Direct	They are the focus group of the Project. Their involvement has been low in Phase I of the project. Thus you	Understanding of the requirements. Specific areas of interventions which would improve their involvement
Existing WUA	Direct	They would be an inspiration for other WUA. Their experiences also need to be included in the schemes	Understanding of their experience and suggestion on areas for improvement. Sustenance of the Schemes
Absentee Landlords in catchments	Direct	Their participation would be essential for ensuring contiguous land parcels in the catchment	Understanding how their interest can be protected.
Sharecropper and Agriculture labours	Indirect	Understanding their livelihood and mechanism	Measures which need to be taken to protect the livelihood
Gram Panchayat President (Pradhan) and other members	Indirect	Local-level institutions and their support are required for the effective implementation	Areas where they would like convergence with the schemes
Small Traders/Input Providers (Seed, Fertilizers and Pesticides)	Indirect	These people are the go-to persons of the farmers. They help farmers in making choices for the chemical and other farm inputs	It would be good to understand the influences in the recommendation of the products.
Block Level Stakeholders			
Panchayat Samiti President (Sabhapati) and members	Indirect	Convergence with other government schemes is important for the sustenance and livelihood generation	The process which must be followed in such cases

Name of Stakeholder /Group	Direct/Indirect	Type of Influence/ Interest	Key areas of Consultation
Village-level key stakeholders			
Executive/ Assistant Engineer, WRI&DD	Direct	They play an important part in the development of the schemes, including E&S aspects	Areas where additional support is required from the project
Officer of the Line Department	Direct	These people on deputation provide technical expertise in agriculture, animal husbandry and horticulture activities	Areas where additional support is required from the project
District Level Stakeholders			
Sabhadhipati, Zilla Parishad	Indirect	Convergence with other government schemes is important for the sustenance and livelihood generation	The process which must be followed in such cases
Karmadshakhya, Krishi – Sech – O – Samabay – Sthayee – Samiti (Standing Committee);	Indirect	Convergence with other government schemes is important for the sustenance and livelihood generation	The process which must be followed in such cases
Backward Classes Welfare Directorate (BCWD);	Indirect	They would be important during the process of identification of the schemes and target beneficiaries during scheme selections Collaboration would be required during the preparation and implementation of the Tribal Development Plan	Identification of Vulnerable groups Need assessment of Tribal requirements
Superintending Engineer, Water Resources Investigation & Development Department	Direct	They are important in the Feasibility and Detailed Project Report Preparation verification process. They must ensure that all the E&S Aspects are included. They would also be instrumentation in the inclusion of E&S conditions in the Tender documents	Areas where additional support is required from the project
State Level Stakeholders			
Department of Panchayat Raj and Rural Development	Indirect	They would be an important partner during the convergence	Understanding the requirement of the schemes and incorporating them into the design of the program

Name of Stakeholder /Group	Direct/Indirect	Type of Influence/ Interest	Key areas of Consultation
Village-level key stakeholders			
Departments of Agriculture, Horticulture, Fisheries	Indirect	They are technical knowledge partners in the different interventions	Being important partners who have been involved in Part, it would be important to know additional support to push through with Sustainable Agriculture and Aquaculture practices
Project Directorate, ADAMI	Direct	They are instrumental in ensuring that the project development objectives are met, and at the same time, the agenda of sustainable development are implemented	Understand the lacuna in Phase I implementation or other development areas and integrate them into the schemes.

The project's direct beneficiaries will be the small and marginal farmers belonging to different social categories at the village level. They form the key stakeholder and would be the focus of all the consultations.

During the project preparation, stage stakeholder's consultation was carried out to capture their view regarding proposed project implementation and understand areas where interventions are required based on the experience of Phase I. Additionally, information on baseline environmental and social conditions, ecologically sensitive areas, protected areas, endangered flora & fauna species, and cultural property resources were collected. The date and place-wise consultation matrix are given in Annexure 33.

Stakeholder's Concerns / Opinion

The issues identified through consultations were common across the regions and communities. The following key issues identified across different stages have greater significance and must be addressed under the project.

Sl. No	Stage of Project	Observations/ Issues /Concerns	Learning/ Remedial Measures	Inclusion in ESMF
1.	Selection of Village or Scheme	It was observed most of the Identified villages, some of the villagers have visited the nearby project and have been instrumental in galvanizing support.	The beneficiaries must take the initiative during the WUA formulation and implementation of schemes. However, in some cases, especially in tribal or other vulnerable group-dominated villages, the Project can take the additional initiative to	Under WUA Formation Guidelines

Sl. No	Stage of Project	Observations/ Issues /Concerns	Learning/ Remedial Measures	Inclusion in ESMF
			introduce villagers to success stories.	
2	Site Selection and WUA Formulation	Vulnerable groups are unaware that the project requires them to be involved in the decision-making. There is thus a possibility of the WUA being captured by the elites, i.e., “elite capture” in the village.	The vulnerable, especially tribals, need to be made aware of their role and involvement in the functioning of the WUA.	The Guidance on the Involvement of Vulnerable Groups provides them with this support to ensure fruitful engagement in the functioning of the WUA.
3	Development of the Schemes	Some of the institutional stakeholders are not acquainted with the inclusion of environmental, social and sustainability aspects which need to be included in the design to make them sustainable.	Institutional stakeholders should be made aware of environmental, social and sustainability aspects.	Dedicated Training has been identified for each stakeholder.
4	Tendering of Schemes	The consultation also indicates that Tender Documents are lacking in E&S Aspects to ensure that the contractor implements these	In some instances, the Tender document must be updated to ensure site-specific E&S mitigation is not included in the tender document.	The ESMF has a provision for the inclusion of E&S Aspects in the tender Document.
5			The SoP of the construction needs to be addressed to ensure that the E&S safeguards are implemented	Site-specific requirements would be integrated once the Site-Specific E&S Assessment and EMP are included in the bidding document. The ESMF has a provision for its inclusion. The SOP has been modified to ensure topsoil excavated is re-laid on the

Sl. No	Stage of Project	Observations/ Issues /Concerns	Learning/ Remedial Measures	Inclusion in ESMF
				bottom of the pond to facilitate the growth of organisms
6	Construction of the Minor Irrigation structures	The farmers are not aware of the E&S aspects which need to be implemented during construction	Farmers need to be made aware of the areas where their involvement in the construction process would be required	These would be carried out as part of the handholding support to the WUA
7	Lack of conviction about sustainable agricultural practices	Farmers are aware of the importance of agricultural practices but are not willing to participate, considering the risk	Provide hands-on support during the implementation	The mobile-based advisory services, i.e., <i>Krishi Katha</i> , have been strengthened to address these concerns.
8.	Climate resilience	People in Coastal areas are all aware of salt-tolerant varieties. They are also seized by the benefits of growing these rice varieties. However, there is hesitancy in adopting these varieties.	The Project need to carry out an awareness and demonstration program	Good Agricultural Practices include all these aspects

11.2 STAKEHOLDER'S CONSULTATION FRAMEWORK

This section describes the stakeholder consultation process undertaken during the detailed implementation of the project activities.

Through the Support Organisation, the SPMU/DPMU would engage with the stakeholders on a continuous basis during the process of development and implementation of the schemes. The feedback received would be duly assessed and incorporated into the schemes. All stakeholders should be consulted on the project E&S documents at least once during the process of development of the schemes. The Stakeholder Consultation will summarise the proposed project's objectives and a summary of the E&S concerns identified and the developed mitigation or conclusions.

Consultation, participation, and disclosure will ensure that information is provided, and feedback on the proposed design is sought early, right from the preparation phase, so that the views/preferences of stakeholders, including potential beneficiaries and affected person, can be adequately considered, and continue at each stage of the activity preparation, processing, and implementation. Meaningful stakeholder consultation and participation are part of the activity preparation and implementation strategy. The key stakeholders to be consulted during project activity preparation and implementation include:

- Project beneficiaries and members of the WUA, especially persons donating land to WUA

- Elected representatives, community leaders, and representatives of community-based organizations, businesses, etc.,
- Local government and relevant government agencies,
- Vulnerable groups, women groups etc.

The implementing agencies will conduct meaningful consultations directly or indirectly with all relevant stakeholders. For this purpose, the project has prepared a Stakeholders Engagement Plan. The proceedings and outcomes of these consultations will be recorded. DPMU/Support Organisation will, with the support of participants, summarize how the consultations were conducted, key topics discussed, and the decisions arrived. These decisions will be incorporated into the ESIA and EMP. Comments and suggestions of all stakeholders will be noted, and their queries will be clarified. The signatures of all participants will be collected. Photographs of the consultations will be taken for record.

Various approaches can be adopted, and stakeholders should be consulted throughout the project implementation. At a minimum, the following consultation activities should be conducted. This is indicative, and SPMU can also adopt more effective methods and locally appropriate approaches. These are discussed in Table 11-2

Table 11-2: Consultation Activities over the project periods

Project Stage	Consultation Activities	Remarks
Project activity preparation	Household-level consultations on needs and priorities for project preparation	During the Preparation of the Schemes
	Consultation with all line departments (Agri, fishery, Horticulture & Agri Marketing) and other Govt. (WBPCB, electricity, forests, irrigation, etc., as well as a private agency	At the start of the project
	Focus group discussions with the member of the WUA	During the entire duration of Handholding of WUA
	Consultations with vulnerable people to ensure: Inclusion of vulnerable groups in the project benefits Make them aware of their rights and duties in the WUA Motivate them to be actively involved in working with them Avoid potential conflicts for smooth project implementation. It will also provide adequate opportunities for consultation and participation to all stakeholders and inclusion of the poor, vulnerable, marginalized, and affected persons in the project process	At various stages, especially during the preparation and initial phases of implementation
Activity Implementation	Focus group discussions with the members of the WUA	During the EMP monitoring at worksites
	Informal discussions with the construction workers and DPMU)	During the EMP monitoring at worksites

11.3 INFORMATION DISCLOSURE

Information Disclosure on ESMF

The draft and final versions of the ESMF will be disclosed for public knowledge through the IWD and the World Bank website. The Executive Summary of the ESMF will also be disclosed in both Bengali and English at these locations.

Information Disclosure Procedures

Project-related information shall be disclosed through public consultation and making relevant documents available in public locations. The SPMU/ DPMU shall provide safeguards related to relevant information on time, in an accessible place, and in a form and language understandable to the affected person and other stakeholders. For illiterate people, other suitable communication methods will be used.

At a minimum, the following documents shall be made available at the offices of DPMU/ SPMU, Horticulture, Agriculture Marketing Dept., Agriculture Dept., Fisheries Department, DM's Office, State and District Libraries, Local municipal and gram panchayat office and other public places for public reference and shall also be uploaded on the website of ADAMI.

- Summary of project and draft ESMF (in Bengali and English)
- Draft ESMF Report (in English)
- Final ESMF Report (in English)
- Disclosure of Salient Feature on ESMF (in Bengali)
- Updated/amended ESMF (in English)
- Stakeholder Engagement Plan
- Labour Management Procedure
- ESIA / ESMP of each sub-project
- Corrective action plan, if any, prepared during project implementation (English)
- Semi-annual Environmental Monitoring Reports (English)

A concise summary of the project and draft ESMF report (in Bengali), providing all necessary details of the project, implementation arrangements, likely issues and mitigation and monitoring measures and grievance redress mechanism, shall be made available to the stakeholders. This should also provide the contact information of the project agency. This summary shall also be displayed on the notice boards of SPMU and DPMU.

11.4 GRIEVANCE REDRESS MECHANISM

An effective grievance redressal mechanism allows the organization to implement specific measures to ensure good governance, accountability, and transparency in managing and mitigating a particular project's environmental and social issues. This consists of defining the process for recording/receiving complaints and their redressal regarding environmental and social matters.

An integrated system will be established with Grievance Redressal Cell (GRCs), with necessary officers, officials, and systems at the state and district level. Grievances, if any, may be submitted through various mediums, including in person, in written form to a noted address, e-mail, or through direct calls to concerned official/s. The Institutional Development Specialist in the DPMU shall be responsible for the coordination of grievances/complaints received

The grievance redress mechanism should be in place to identify Schemes and WUA and civil construction activities in the area. A platform for grievance redressal should be organized, and regular meetings may be conducted to allow people to express their grievances. It will help the appropriate authority find solutions and amicably address the issues. The project, apart from the web-based mechanism, will have a three-tier grievance redressal mechanism, i.e., (1) at the project site level (up to DPMU level), (2) State level (SPMU level) and (3) at the Judiciary level.

Web-based grievance mechanism: In case of grievances received through a toll-free number or web-based system, a person will be made in-charge of screening and resolution of the same /communicating with the concerned divisions for resolution. Based on the nature of the complaint, the person in charge will forward the same to the concerned official. A ticket or a unique number will be generated for all such complaints. The complainant will follow up based on that unique number. All calls and messages will be responded to within two weeks. If a response is not received within 15 days, the complaint will be escalated to the project head.

- **Tier I:** Under this project, the WUA, local Gram Panchayat and the officer of the DPMU on site will serve as the first-tier mechanism to handle complaints and grievances. The local Pradhan of the Gram panchayat would be the key person. The Support Organisation will be the focal point to receive, address, and record the complaints and feedback. The grievance focal point will first review the grievances submitted. If grievances or disputes cannot be solved at the GP level within 30 days of submitting the grievances, the issue will be brought to the DPMU level for mediation. DPMU is expected to inform aggrieved persons or parties to disputes of the resolution in 30 days.
- **Tier II:** If the aggrieved person is not satisfied with the verdict of the local level grievance cell, they can escalate the grievance to the district level grievance cell. The tier II cell will be under the Chairmanship of the Executive Engineer. The other members will include the Institutional Development Specialist and Environmental Specialist at the district level. The second level of the grievance cell will provide its view within 30 days of receiving the grievance.
- **Tier III:** If unsatisfied with the verdict given by the district grievance cell, the aggrieved person will have the right to approach the State level Mechanism. The tier III cell will be under the Chairmanship of the Chief engineer. The other members will include the Environmental and Institutional Development Specialist of the SPMU. The second level of the grievance cell will provide its view within 30 days of receiving the grievance.

If not satisfied with the verdict given by State level grievance cell, the aggrieved person will have the right to approach the Judiciary. The project will help the aggrieved person if a person wants to approach the judiciary.

Grievance mechanism for SEA/SH: Though the risk of SEA/SH is low in the project, in case of any such incident the Institutional Development Specialist of SPMU will be the first level of contact. The IDS will be specially trained for handling SEA/SH related grievances. The IDS in turn will inform the Project Director. The IDS will get in touch with the service provider / all women police station in the district for necessary support to the victim. The name and cell phone number of IDS will be displayed in all work sites especially at check dam sites. In case of any SEA/SH related allegation, a minimal information will be collected to protect the confidentiality of the survivor. These includes (1) the allegation in the survivor's own words; (2) if the alleged perpetrator is (to the best of the survivor's knowledge) related to the project; and, if possible, (3) the age and sex of the survivor. The IDS will report only the most basic information to the implementing agency, who then will notify the Bank task team. These includes:

- a) the nature of the case;
- b) if the case is project-related;
- c) age and sex of survivor (if available); and
- d) if the survivor was referred to services

12 INSTITUTIONAL ARRANGEMENTS FOR IMPLEMENTATION

Water Resource Investigation and Development Department (WRI&DD) would be the nodal department to implement the West Bengal Accelerated Development of Minor Irrigation Project (WBADMIP). To manage and oversee the implementation of the project, a dedicated State Project Management Unit (SPMU) has been formed. The SPMU would be supported by a District Project

Management Unit (DPMU) in each district. The SPMU will be headed by a Project Director who is also the Secretary of WRI&DD. The Project Director would be assisted by the Dy Project Director and the entire team of professionals at SPMU. The DPMUs will be headed by the district's Superintending Engineer, WRI&DD. The DPMU would also have a team of professionals supported by the Support Organisation in each district. The overall institutional arrangement for the SPMU and DPMU is presented in Figure 4 and Figure 5

Figure 4: Organogram of SPMU for E&S Implementation at State Level

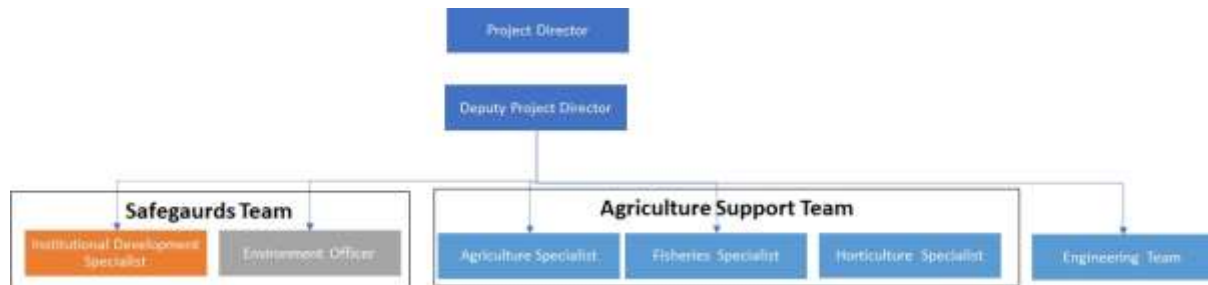
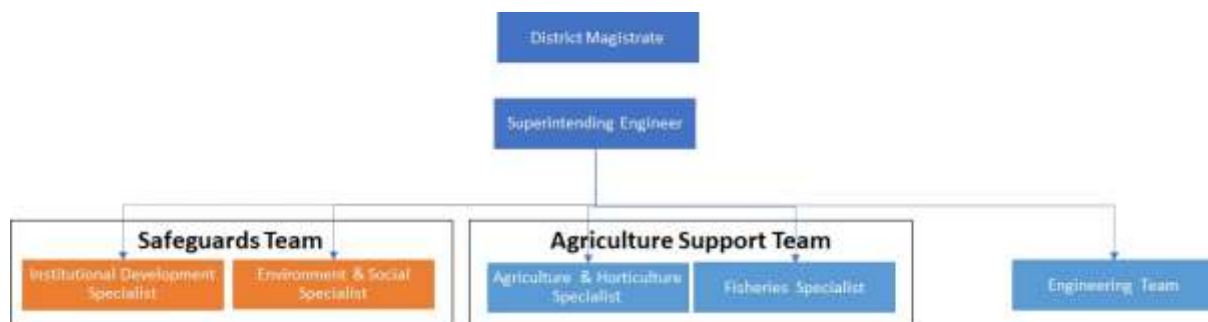


Figure 5: Organogram for DPMU for ESMF Implementation at District Level



The E&S institution would help integrate the sustainability principle in the ESMF into the agriculture, horticulture and fisheries interventions planned under this project. The DPMU and Support Organisation would ensure the effective engagement of stakeholders and handhold them through the project cycle at the district level. The SPMU will have a dedicated Environment Officer responsible for the technical guidance to all sectoral specialists in the projects on the process of ESMF implementation. He would also be responsible for providing input on the environmental aspects. The Institutional Development Specialist at the SPMU would be responsible for anchoring a similar role for the social aspects. The external monitoring and evaluation (M&E) agency will be placed under SPMU to conduct concurrent monitoring of environmental parameters quarterly and periodic monitoring and evaluation of safeguard implementation. The SPMU and DPMUs will be staffed with the engagement of consultants, experts, and various other categories of contractual staff to support the project. The roles and responsibilities of the different staff members are presented in the section below:

12.1 PROJECT DIRECTOR/ DEPUTY PROJECT DIRECTOR

The Project Director / Deputy Project Director is responsible for the overall implementation of the ESMF. They would be supported by the SPMU and DPMU teams. The key responsibilities include:

- Oversight of the ESMF process
- Ensure staffing as per the Implementation arrangement agree
- Review of the finding of the Internal and External Auditing
- Reporting to all stakeholders, including the World Bank

12.2 ROLES AND RESPONSIBILITIES OF SPMU

Environment Specialist at SPMU

The Environmental Officer at the SPMU level will look after environmental issues in line with the ESMF. The Key responsibilities:

- Guide the entire team at SPMU and DPMU on the process of Implementation of the ESMF
- Guide the project team on the integration of environmental aspects in the planning, designing and implementation
- Verify the Go-No Go and Screening Questionnaire
- With the assistance of the rest of the team, verify the Scoping questionnaire
- Verification of the adequacy of the E&S Assessment and the EMP measures for each scheme
- Review the bidding documents and work order to ensure specific environmental measures mentioned in the EMP are integrated into the bid document and work order.
- Guide the DPMU and support organization to monitor the works of the Contractor
- Undertake Capacity Building of the team at DPMU
- Carry out the Reporting for the Implementation of the ESMF.
- Collate the Environmental and Social Monitoring findings and present them to the Superintending Engineer.
- With the help of the GIS Unit, spatially analyse data of the Internal Monitoring and Auditing
- Coordinate the development of the Corrective Action Plan with the support of the Institutional Development Specialist (Social, Gender and Tribal issues), Agriculture Specialist, and Fishery Specialist.
- Disclosure of the information (ESMF, Corrective action plan prepared during project implementation (English), Semi-annual Environmental Monitoring Reports (English))
- Preparation of the Report for the World Bank

Institutional Development Specialist

The Institution development specialist at the SPMU will be responsible person to:

- Guide the overall process related to social and gender aspects.
- Guide the DPMU and Support Organisation to execute and monitor the social / gender components
- Verify the Scoping Checklist and ensure inclusivity with a gender perspective and involvement of tribals
- Oversee the execution of the planned activities and realisation of the social / gender inclusion parameters.
- Undertake Capacity Building of the team on the Gender and tribal aspects
- Guide the DPMU and Support Organisation in ensuring the effective involvement of Women and Tribal Groups in the functioning of WUA
- Carry out the Internal Monitoring and Auditing for the Implementation of the ESMF

GIS Specialist

The GIS team plays an integral part in the implementation of the ESMF. They would be instrumental during the Feasibility, Technical Review and Operation and Maintenance Phases of the project. The key responsibility includes:

- Assist the Environment Office in the verification of the Go – No Go Checklist
- Assist the Environment Officer in verifying the Scoping checklist, especially assessing the sustainability of the surface water schemes based on the micro watershed.
- Help the Environment Officer with the spatial interpretation of the monitoring results and findings

Engineering Team

The Engineering Team is responsible for developing the DPR and preparing the Tender documents. They would also be involved in the supervision of the construction activities: The key responsibilities include:

- Verification of the Scoping checklist
- Ensuring that the environment and social safeguard measures are included in the Tender Document
- Coordinate with the Contractor and ensure the ESMP measures are implemented during the construction by the Contractor

Agriculture Specialist/ Horticulture Specialist

The responsibility of implementing the environmental safeguards measures related to agriculture and horticulture rests with the agricultural specialist and Horticultural specialist, respectively. He would be responsible for:

- Integrating sustainable agricultural practices into the project design,
- Assist the Environment Officer in the verification of the E&S Scoping Checklist and ensuring that Sustainable Agricultural/ Horticultural practices are included
- Assist the Environment Officer in verifying the E&S Assessment Format that all impacts from agricultural interventions have been adequately assessed and suitable mitigation measures commensurate with the ESMF are included.
- Capacity Building of Agricultural Officer at DPMU and Support Organization in each district for ensuring environmental safeguards measures are implemented
- Guide the DPMU in raising farmers' awareness of Good and Sustainable Agriculture Practices.
- Providing handholding support to farmers, addressing their queries on agricultural practices on Krishi Katha
- Assist the Environmental Officer in monitoring the implementation of Sustainable Agricultural Practices.
- Assist the Environment Officer in developing a Corrective Action Plan

Fisheries Specialist

The responsibility for implementing the environmental safeguard measures related to fisheries activities. He would be responsible for:

- Integrating sustainable fisheries practices into the project design,
- Assist the Environment Officer in the verification of the E&S Scoping Checklist and ensuring that Sustainable Fisheries practices are included
- Assist the Environment Officer in verifying the E&S Assessment Format that all impacts from fisheries interventions have been adequately assessed and suitable mitigation measures commensurate with the ESMF are included.
- Capacity Building of Fisheries Officer at DPMU and Support Organization in each district for ensuring environmental safeguards measures are implemented
- Guide the DPMU in raising farmers' awareness of Good and Sustainable Fisheries Practices.
- Providing handholding support to farmers, addressing their queries on fisheries practices on Krishi Katha
- Assist the Environmental Officer in monitoring the implementation of Sustainable Fisheries practices.
- Assist the Environment Officer in developing a Corrective Action Plan

12.3 ROLES AND RESPONSIBILITIES OF DPMU

Superintending Engineer

The Superintending Engineer is responsible for the overall implementation of the ESMF. The team would support him at the DPMU in these aspects. The SPMU would extend all possible technical assistance in this regard. The Key responsibility would include the following:

- Oversight of the ESMF process in the district
- Ensure adequate staffing and capacity as per the Implementation arrangement are present
- Ensure that the Contractor implements the EMP provisions
- Review of the finding of the Internal and External Auditing findings
- Coordinating the development of the Action Plan

Engineering Division

The Engineering Team, assisted by the Support Organisation, would be responsible for the scheme selection, preparation of DPR, tendering process, and construction of the minor irrigation structures. Thus, they would be responsible for

- Authenticate the Go-No Go and Screening Questionnaire
- Authenticate the Scoping questionnaire prepared by the Support Organisation

- Authentication of the E&S Assessment and the EMP measures for each scheme
- Include the environment and social safeguard measures are included in the Tender Document
- Coordinate with the Contractor and ensure the ESMP measures are implemented during the construction by the Contractor
- Collate the Environmental and Social Monitoring findings and present them to the Superintending Engineer.
- With the help of the GIS Unit, spatially analyze the data of the Internal Monitoring and Auditing
- Coordinate the development of the Corrective Action Plan with the support of the Institutional Development Specialist (Social, Gender and Tribal issues), Agriculture Specialist, and Fishery Specialist.

Institutional Development Officer

The Institution development specialist at the DPMU will be responsible person to:

- Guide the overall process related to ESMF, including social and gender aspects.
- Guide the DPMU and Support Organisation to execute and monitor the social / gender components
- Work with the Support Organisation to ensure that gender and tribal aspects are effectively included in the formation and operation of the WUA. Ensure that the Scoping Checklist reflects this inclusivity
- The Support Organisation effectively plans the activities to include social / gender inclusion parameters.
- Guide the Support Organisation on the Gender and tribal aspects
- Guide the DPMU and Support Organisation in ensuring effective involvement of Women and Tribal Groups in the functioning of WUA
- Carry out the Internal Monitoring and Auditing for the Implementation of the ESMF.

Agricultural Officer

The Agricultural Officer at DPMU is responsible for implementing the interventions in agriculture and horticulture. His key responsibilities during the ESMF implementation would include:

- Ensure that the schemes developed integrate sustainable agricultural practices,
- With the help of the Support Organisation, ensure that the E&S Scoping Checklist includes Sustainable Agricultural/ Horticultural practices. Validate the Scoping Checklist before the same is sent to the SPMU.
- With the help of the Support Organisation, ensure that the E&S Assessment Format reflects all impacts from agricultural interventions and suitable mitigation measures commensurate with the ESMF are included. Validate these before they are sent to the SPMU along with the DPR.
- Motivate the farmers to adopt sustainable agricultural practices.
- Providing handholding support to farmers, addressing their queries on agricultural practices on Krishi Katha
- Assist the Environmental Officer in monitoring the implementation of Sustainable Agricultural Practices.
- Assist the Environment Officer in developing a Corrective Action Plan

Fisheries Officer

The Fisheries Officer would be instrumental in guiding the implementation of fisheries interventions on the ground. The Fisheries officer would be responsible for

- Ensuring sustainable fisheries practices are built into the project schemes. All the guidance in the ESMF is followed.
- Guide the support organizations to ensure that all relevant provisions of the ESMF are captured in the E&S Scoping Checklist and E&S Assessment Format. Validate the documents before they are sent to the SPMU for verification.
- Raise awareness of the farmers regarding Good and Sustainable Fisheries Practices.
- Providing handholding support to farmers, addressing their queries on fisheries practices on Krishi Katha

Environment &IDS at DPMU

The Environmental Officer at the DPMU level will look after the environmental issues, and IDS will be responsible for social issues in line with the ESMF. The Key responsibilities:

- Guide the DPMU team on the Implementation of the ESMF
- Guide the engineering / agriculture/ horticulture / fisheries teams in the integration of environmental and social aspects in the planning, designing and implementation

- Prepare the Go-No Go Questionnaire
- With the assistance of the rest of the team, prepare the Scoping questionnaire
- With the assistance of the rest of the team, prepare the E&S Assessment and the EMP measures for each scheme
- Support in building environmental parameters in the bidding documents.
- Guide the DPMU and support organization to monitor the works of the Contractor
- Undertake Capacity Building of the team
- Carry out the Internal Monitoring and Auditing for the Implementation of the ESMF.
- Collate the Environmental and Social Monitoring findings and present them to the Project Director.
- With the help of the GIS Unit, spatially analyze the data of the Internal Monitoring and Auditing
- Coordinate the development of the Corrective Action Plan with the support of the Institutional Development Specialist (Social, Gender and Tribal issues), Agriculture Specialist, and Fishery Specialist.
- Disclosure of the information (ESMF, Corrective action plan prepared during project implementation (English), Semi-annual Environmental Monitoring Reports (English))
- Preparation of the Report for the World Bank

12.4 CAPACITY BUILDING STRATEGY

The concerned officials at the SPMU and DPMU will be oriented on different social and environmental aspects by which they will be equipped well to manage the related issues effectively and efficiently. The capacity building would consider the current issues that may influence the project activities and the required measures to ensure greater involvement of socially and economically backward families and deprived sections of society. A capacity-building plan on social and environmental aspects is suggested for concerned officials carrying out the project activities. The Capacity Building Plan Include the following components, and the Training Plan is presented in Table 12-1:

- **Sensitization Training;** Familiarizing the Key official of SPMU and BPMU with the ESMF processes
- **District Wise ESMF Training:** The training on the ESMF process and social and environmental safeguards measures in the ESMF would be communicated to the district officials at the district-wise training programs
- **Training on Monitoring and Auditing:** The Internal Monitoring and Auditing Framework will be explained
- **Sustainable Agricultural and Fisheries Training:** The sustainable agricultural and fisheries practices would be explained to the district officials and the support Organisation
- **Gender Sensitization Training:** the measures to be taken to ensure the involvement of women in the WUA and the strategies to ensure their effective involvement will be discussed.
- **SEA/SH Sensitization Workshop:** The measures to be taken to ensure that all workers are well aware of code of conduct; have signed the CoC; and are aware of GRM available for reporting of any incident of SEA/SH
- **Tribal Development Plan training:** the measures to be taken to ensure the involvement of tribal members in the WUA and the strategies to ensure their effective involvement will be discussed.
- **Refresher Training:** The training would be discussed the outcomes of the Audit and develop a corrective action plan for each district
- **Annual Review workshop:** Intended to discuss the challenges faced and the development of Way Forward
- **WUA Training on Good Agricultural Practices:** The WUA would be trained on Good Agricultural Practices, and the benefits of the same would be explained
- **Sustainability of the WUA:** A programmatic approach must be adopted for the sustainability of the WUA beyond the project life. The workshop would be conducted to develop these strategies

Type of Training	Participants	Expected outcomes	Resource person	Frequency														
				Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q 9	Q1 0	Q1 1	Q1 2	Q1 3	Q1 4	Q1 5
1 and Fisheries Practices																		

Environment Specialist: EnvS, Institutional Development Specialist: IDS, Engineering Team (SPMU)EngS, Agricultural Specialist: AgS, Horticultural Specialist HorS, Fisheries Specialist: FisS, GIS Specialist (GIS)

Institutional Development Officer: IDO, Engineering Division (DPMU) EngD, Agricultural Officer: AgO, Fisheries Officer: FisO, Support Organisation: SO

13 BUDGET FOR THE IMPLEMENTATION OF ESMF

As the technical details have not yet been finalized for the project investments, an estimated amount has been identified for ESMF implementation. This budget primarily includes softer components like Training and Capacity Building, awareness development, and Information Disclosure. Additional budget required would be included in the Detailed Project Report. An implementation period of 72months is considered for preparing the following costs.

Table 13-1: Indicative Cost of Environmental and Social Management Framework Implementation

SN	Budget Heads	Unit	Unit	Unit Cost (INR)	Total Cost (INR)
A	Human resources				
	Salaries of Staff (to be included in the project budget)				0
	Sub Total (A)				0
B	Training and Capacity Building				
	Sensitization Training	No of Person (SPMU 20 Staff + 23 DPMU one from each district)	TA, DA, and other expenses	As per the project	300,000

SN	Budget Heads	Unit	Unit	Unit Cost (INR)	Total Cost (INR)
	District wise, ESMF Training	No of Workshops 23; No of Participants (10 people from DPMU and 10 people from SO,6 trainers)	TA, DA, and other expenses	As per the project	300,000
	Training on Monitoring & Auditing	No of Workshops 23; No of Participants (5 people from DPMU and 5 people from SO,6 trainers)	TA, DA, and other expenses	As per the project	250,000
	Training on Sustainable Agriculture and Fisheries	No of Workshops 23; No of Participants (5 people from DPMU and 5 people from SO,6 trainers)	TA, DA, and other expenses	As per the project	250,000
	Gender Sensitization training	No of Person (SPMU 10 Staff + 23 DPMU two from each district)	TA, DA, and other expenses	As per the project	300,000
	Tribal Development Training	No of Person (SPMU 10 Staff + 23 DPMU two from each district)	TA, DA, and other expenses	As per the project	300,000
	Refresher Training (to be held in each district)	No of Workshops 23 one in each year (3 years); No of Participants (5 person from DPMU and 5 people from SO,6 trainers)	TA, DA, and other expenses	As per the project	300,000
	Half Yearly Review workshop (to be held in each district)	No of Workshops 23; No of Participants (10 people from DPMU and 10 people from SO,6 trainers)	TA, DA, and other expenses	As per the project	250,000
	Sustainability of the WUA (to be held in each district)	No of Person (SPMU 10 Staff + 23 DPMU two from each district)	TA, DA, and other expenses	As per the project	250,000
	WUA Training on ESMF Good Agricultural, horticultural and Fisheries Practices	1 training workshop per year in each district (55 members from WUA and 5 from DPMU)		As per the project	350,000
	Sub Total (B)				25,50,000

SN	Budget Heads	Unit	Unit	Unit Cost (INR)	Total Cost (INR)
C	Demonstration Project				
	Good Agricultural Practices Demonstration Project			As per the project	500,000
	Sustainable Fisheries Project			As per the project	500,000
	Sub Total (C)				10,00,000
D	Awareness Building				
	Training Booklet on Agriculture	1000 booklet in each district	Per booklet	As per the project	300,000
	Booklet on IPM and INM	1000 booklet in each district	Per booklet	As per the project	300,000
	Support and Handholding of farmers (Training of Support Organisation)	Include as part of the Capacity Building			500,000
	Publicity Campaigns	Included under the Project budget			500,000
	IPM and INM Practices	Lumpsum per district per year	per district per year	As per the project	500,000
	Sub Total (D)				21,00,000
E	Information Disclosure & Dissemination				
	Key elements of the ESMF	10 booklets for each district	Per Booklet	As per the project	350,000
	Handout on ESMF	2000 Pamphlet in each district	Per pamphlet	As per the project	350,000
	Sub Total (E)				700,000
F	Studies and Pilots				
	Field trial of technologies for removal of Arsenic from	One pilot program to be carried out in Nadia and Murshidabad			16,00,000

SN	Budget Heads	Unit	Unit	Unit Cost (INR)	Total Cost (INR)
	irrigation water and assessing the safety of soil and crops				
	Identification of alternate materials to be used in Poly houses and poly-mulch	One pilot project in each agro-climatic Zone			10,00,000
	Sub Total (F)				26,00,000
	Sum (A+B+C+D+E+F)				8,95,000,000

13.1 OBLIGATIONS OF WBADMIP PHASE II

Several measures have been specified In the ESA and ESMP for safeguarding the environmental and social aspects. The SPMU and DPMU, with the help of support organisations and WUA, would ensure these are implemented. The key obligation of WBADMI:

- Ensure E&S Screening, Scoping and Assessment of all subprojects are completed at the respective stage of the project cycle;
- Ensure that the ESMP (both general and Specific) conditions are included in the design and Tender conditions
- Ensure sufficient budget has been allocated in the DPR and the Bill of Quantities for ESMP implementation
- Ensure that adequately trained professionals are available at each level to implement and oversee the E&S activities.
- Ensure training is provided to all employees on ESMF and specific training on functional aspects.
- Maintain oversight on the implementation of the ESMP and report back to stakeholders, including the World Bank
- In case of any accident, the same should be reported back to the World Bank within 24 Hours.