

**SOCIALIST REPUBLIC OF VIETNAM
MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT**



**Mekong Delta Integrated Climate Resilience and
Sustainable Livelihood Project**

**ENVIRONMENTAL AND SOCIAL MANAGEMENT
FRAMEWORK**

(Final)

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ABBREVIATIONS

CPO	Central Project Office
CPMU	Central Project Management Unit
DARD	Department of Agriculture and Rural Development
DONRE	Department of Natural Resource and Environment
DPC	District People's Committee
EA	Environmental Assessment
ECOP	Environmental Codes of Practice
EM	Ethnic Minority People
EMDP	Ethnic Minority Development Plan
EMPF	Ethnic Minority Planning Framework
EPP	Environmental Protection Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMF	Environmental and Social Management Framework
GoV	Government of Vietnam
ICMB 10	Infrastructure Construction Management Board No. 10 (ICMB 10)
MARD	Ministry of Agriculture and Rural Development
MONRE	Ministry of Natural Resource and Environment
PMU	Project Management Unit
PPC	Provincial People's Committee
RAP	Resettlement Action Plan
REA	Regional Environmental Assessment
RPF	Resettlement Policy Framework
RSA	Regional Social Assessment
SIWRR	Southern Institute of Water Resource Research
WB	The World Bank

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1. INTRODUCTION

1.1 Project Overview

1. The Mekong Delta (about 40,000 km²) is an important economic and ecological region of Vietnam and is located in the lower part of the Mekong River and bordered by the East Sea (with a coastline of about 700 km) along the West, the Southwest, and the South. The Mekong Delta has 1 city (Can Tho City) and 12 provinces with a population of about 17.5 million in 2014 (about 19.8% of the national population) comprising Kinh (90%), Khmer (6%), Hoa (2%), and Cham people. The Mekong Delta is the main area for rice production, aquaculture development, and shrimp farming; however nearly half of the area will be flooded for 3 to 4 months every year causing difficulties to agriculture activities and lives of people. Nonetheless, water and sediments as well as changes in climate are the critical elements of agriculture development in the Mekong Delta. Due to its low lying area, the Mekong Delta is also considered as a high risk area for sea level rise impacts.

2. The Government of Vietnam (GoV) through the Ministry of Agriculture and Rural Development (MARD) and the Ministry of Natural Resources and Environment (MONRE) has been preparing an investment project, namely the Mekong Delta Integrated Climate Resilience and Sustainable Livelihoods Project (MD-ICRSLP or the Project), with an aim *to enhance tools for climate-smart planning, and improve climate resilience of land and water management practices in selected provinces of the Mekong Delta in Vietnam*. The project activities will comprise a number of water infrastructure investments as well as non-structural activities and technical assistance and they will be implemented through 5 components: (1): Enhancing Monitoring, Analytics, and Information Systems, (2) Managing Floods in the Upper Delta, (3) Adapting to Salinity Transitions in the Delta Estuary, (4) Protecting Coastal Areas in the Delta Peninsula; and (5) Project Management and Implementation Support and details are provided in Section II. The Project is being proposed for possible financing by the World Bank (WB) over a period of 7 years (2016-2022) with the financing of US\$ 376 million (\$300 million from IDA; \$76 million from GoV).

1.2 Purpose of the ESMF

3. To comply with the WB's Operational Policy on Environmental Assessment (OP/BP 4.01), as the proposed project is adopting a programmatic approach consisting of investment activities that could not be identified by appraisal, preparation and disclosure of an Environment and Social Management Framework (ESMF) is required before WB appraisal. This is to ensure that the proposed project has a concrete plan and process in place to avoid, minimize, and/or mitigate adverse environmental and social impacts of project investments and interventions when they are identified, planned, and implemented. The MD-ICRSLP is classified by OP/BP 4.01 as Environmental Assessment Category A and nine of the ten WB safeguard polices are triggered (see Section III). The ESMF describes policies, procedures, and processes to be considered and followed during the implementation of the proposed project and it will be applied to all the activities and subprojects to be financed by the MD-ICRSLP. The ESMF was developed based on desk reviews of the government relevant laws and regulations as well as various reports and documents related to environmental and social conditions in the Mekong Delta and the proposed provinces and/or project sites, field visits to some of the proposed subprojects sites including meetings with local authorities and communities, and review of the key findings and recommendations from the Regional Environmental Assessment (REA) and Regional Social Assessment which was conducted by MARD with assistance from international consultant firms.

4. The specific objectives of this ESMF are:

- to assess the potential environmental and social impacts of the proposed project, whether positive or negative and propose mitigation measures which will effectively address these impacts;
- to establish clear procedures for the environmental and social planning, review, approval and implementation of subprojects to be financed under the project;
- to specify appropriate roles and responsibilities, and outline the necessary reporting procedures, for managing and monitoring environmental and social concerns related to subprojects;
- to consider different alternatives, options, and relevant mitigation measures during project preparation and implementation;
- to determine the training, capacity building and technical assistance needed to successfully implement the provisions of the ESMF;
- to address mechanisms for public consultation and disclosure of project documents as well as redress of possible grievances; and
- to establish the project funding required to implement the ESMF requirements and to provide practical resources for implementing the ESMF.

1.3 Scope of the ESMF

5. Following the WB guideline for preparation of an ESMF for WB financing project in Vietnam, the ESMF describes the project description (Section II); the policy, legal, and administrative framework (Section III); the potential project impacts and mitigation measures (Section IV); the procedures for review, clearance, and implementation (Section V); the ESMF implementation arrangements (Section VI); capacity building, training, and technical assistance (Section VII); ESMF implementation budget (Section VIII); grievance and redress mechanism (Section IX); and ESMF consultation and disclosure (Section X). Annexes provide more details on locations of the project and first year subprojects (Annex 1); safeguard screening, checklist, and forms (Annex 2); guideline for ESIA/ESMP preparation (Annex 3); ECOP (Annex 4); pest management framework (Annex 5); sample grievance registration form (Annex 6), and organization and reporting (Annex 7).

6. In addition to the ESMF, there are two other related safeguard instruments which will be applied during implementation of the proposed project. The first is the Resettlement Policy Framework (RPF) which provides guidelines for preparation and execution of a Resettlement Action Plan (RAP) in compliance with the Bank Policy on Involuntary Resettlement (OP/BP 4.12) and it will be applied when the project activities/subprojects involve land acquisition, resettlements, and/or limited access to natural resources. The RPF was prepared in compliance with OP/BP 4.12. The second instrument is the Ethnic Minority Policy Framework (EMPF) which provides guidelines for undertaking free, prior and informed consultation with ethnic minorities in the project area and the preparation of Ethnic Minority Development Plan (EMDP) in compliance with Bank Policy on Indigenous Peoples (OP/BP 4.10) and it will be applied when the project activities and/or subprojects are implemented in area inhabited by ethnic minorities that meet the definitions of OP/BP 4.10. The EMDP was prepared in compliance with OP/BP 4.10. The ESIA, RAP, Ethnic Minority Development Plans (EMDPs) of the first year subprojects have been prepared separately and submitted to the Bank. The safeguard screening and preparation of ESIA, EMPs, RAPs, and EMDPs for the future subprojects will be carried out during implementation. These instruments are presented separately.

2. PROJECT DESCRIPTION

2.1 Project Objective and Components

7. The project development objective (PDO) is to enhance tools for climate-smart planning, and improve climate resilience of land and water management practices in selected provinces of the Mekong Delta in Vietnam. The objective would be achieved through the provision of capital investments, technical assistance and capacity building for farmers in the selected provinces of the Mekong Delta in Vietnam and government institutions at national and sub-national levels.

8. The project development objective of the additional financing (AF) under the Global Environment Fund (GEF) is the same as that of the parent project. The GEF grant aims to help strengthen research capacity, and innovation to build climate resilience of key livelihoods, and reduce greenhouse gas emissions in Project provinces.

9. The Project activities will be implemented through the following five components:

Component 1: Enhancing Monitoring, Analytics, and Information Systems (Estimated US\$61.29 million, of which US\$56.427 million will be financed by IDA). Proposed activities/investments under Component 1 are as follows:

10. *Sub-component 1.1. Monitoring Systems to Enhance Mekong Delta Knowledge Base:* This subcomponent upgrades and expands MONRE's monitoring systems for groundwater and surface water, and enhances its remote sensing capacity. MONRE will also undertake studies on specialized topics including river and coastal morphology, and groundwater management. MARD will develop a computer based operations system for hydraulic infrastructure which will improve the operation of the complex network of gates and canals in the Delta. MARD will also undertake an inventory of sea dykes and mangrove belts along the 700 km Delta coastline.

11. *Subcomponent 1.2. Infrastructure and Information Systems for Enhanced Decisions.* This subcomponent finances the establishment of the Mekong Delta Center, which will serve as a hub for Delta-wide information, including water, land use, environmental and climate change information, education and outreach. A Mekong Center business plan will be developed which examines options for sustainable funding and possible expansion. The foundation of the Center will be a “knowledge management platform” (KMP) which will be a GIS-based computer system providing MONRE and other stakeholders with the capability to integrate various data bases and models to help investigate the environmental and socio-economic impacts of climate change and basin developments. A Mekong Delta Resiliency Assessment Report will also be formulated which will provide a set of recommendations to help guide planning at the regional, provincial, and sectoral levels.

12. *Subcomponent 1.3: Mainstreaming Climate Resilience into Planning Processes.* This sub-component will provide the linkages between the data and information systems with Vietnam's planning processes in the Mekong Delta. Led by MPI, this subcomponent will seek to collaborate with line ministries (primarily MARD and MONRE), sectors and provinces to draft regulations on pilot regional coordination for climate change adaptation, and climate-resilient solutions in the Mekong Delta. It will also finance reports to advise on land-use planning, spatial and territorial development, and identifying priority low-regret and climate resilient investments. Using the Mekong Climate Resilience Assessment, the subcomponent will seek to update the Mekong Delta Socioeconomic Master Plan, relevant sectoral master plans, and provincial SEDPs.

13. The GEF grant component (*Estimated US\$1.1 million*) will support the following activities under this component:

- Analytical work including market research including identifying export potential, developing value chains, enhancing branding and extension services for local products generated from a shift to climate smart/climate resilient livelihoods;
- Supporting a Delta Research Consortium Partnership (DRCP) –as a mechanism to ensure coordination and collaboration across government research agencies and universities;
- Preparing and delivering customized short courses and curriculum development on adaptive delta management – including through twinning arrangements between Mekong provincial universities (e.g. Can Tho university and An Giang university, and international universities); and
- Designing communication/media products and events to raise national public awareness of livelihood transition models for Vietnam’s adaptation to climate change.

Component 2: Managing Floods in the Upper Delta (Est. US\$ 101.009 million, of which US\$ 79.238 million will be financed by IDA).

14. The Upper Delta area is characterized by natural occurring deep floods in the wet season. The development of an extensive agricultural flood control system has shifted the flood waters to other areas in the Delta and also reduced the beneficial effects of flooding including replenishing soil fertility, groundwater recharge, and sustaining aquatic ecosystems.

15. The primary objective of this component is to protect and/or reclaim the benefits of controlled flooding (flood retention) measures while increasing rural incomes and protecting high value assets in An Giang and Dong Thap provinces. This will potentially consist of: i) modifying water and agricultural infrastructure to allow for more beneficial flooding (expanding flood retention capacity) in rural areas and offer new agricultural/aquaculture cropping alternatives; ii) providing livelihoods support measures to farmers so they have alternatives to the wet season rice crop, including aquaculture; iii) constructing/upgrading infrastructures for protecting select high value assets; and iv) facilitating agricultural water use efficiency in the dry season.

16. Sub-projects selected to be financed under this component include infrastructure schemes aimed at increasing water retention, irrigation and upgrading of reservoirs, livelihoods improvement (i.e. demonstration and agriculture extension support for transition from triple rice to alternative cropping), and ecosystem restoration.

17. The GEF grant (*Estimated US\$1.6 million*) may be used under this component to (i) identify, evaluate and select climate smart and climate-resilient AAWF practices that helps to address the challenges in the upper delta; (ii) identify models of climate smart and climate resilient AAWF practices (flood-based models) and flood retention measures tested and assessed for their economic, social and environmental impacts; and (iii) develop specific knowledge products on climate-smart, climate-resilient AAWF practices for scalability and replication across the upper delta

Component 3: Adapting to Salinity Transitions in the Delta Estuary (Est. US\$ 108.705 million, of which US\$ 81.592 million will be financed by IDA)

18. The Mekong River divides into 9 distributaries which flow into the East Sea through the Estuary zone. This area is naturally characterized by low flows during the dry season which allow saline water to extend far inland. Over the past twenty years, closed freshwater systems designed for rice production have been developed in this area consisting of large polders ringed

by dikes and with sluice gates to control saline water intrusion. The long-term sustainability of this strategy is questionable due to reduced dry season water availability and sea-level rise. In addition, farmers are rapidly converting to more profitable shrimp farms along the coast, often accompanied by destruction of mangrove forests.

19. This component aims to address the challenges related to salinity intrusion, coastal erosion, sustainable aquaculture and improved livelihoods for communities living in the coastal areas of Ben Tre, Tra Vinh, and Soc Trang provinces. This will potentially consist of: i) construction of coastal defenses consisting of combinations of compacted earth embankments and coastal mangrove belts; ii) modification of water and agricultural infrastructure along the coastal zone to allow flexibility for sustainable aquaculture activities and adapt to changing salinity levels; iii) support to farmers to transition (where suitable) to more sustainable brackish water activities such as mangrove-shrimp, rice-shrimp, and other aquaculture activities; and iv) supporting climate smart agriculture by facilitating water use efficiency in the dry season.

20. Sub-projects to be financed under this component will include restoration of mangroves along the provincial coastline, construction/upgrades of river and coastal embankments, and sluice gates to improve water quality, efficiency and sustainability of aquaculture in the brackish water zone, and supporting a gradual transition from rice and other freshwater crops in the saline intruded zone to a brackish water economy including aquaculture through demonstration and aquaculture extension together with necessary adjustments to land-use plans in a longer term.

21. The GEF grant (*Estimated US\$1.6 million*) will be used under this component to (i) identify, evaluate and select climate smart and climate-resilient AAWF practices that helps to address the challenges in the delta estuary; (ii) pilot models of climate smart and climate resilient AAWF practices relating to salinity transitions that are assessed for their economic, social and environmental impacts; and (iii) develop specific knowledge products on climate-smart, climate-resilient AAWF practices for scalability and replication across the estuary sub-region.

Component 4: Protecting Coastal Areas in the Delta Peninsula (Est. US\$ 101.148 million, of which US\$1.893 million will be financed by IDA)

22. In contrast to the adjacent estuary zone, there are no distributaries of the Mekong River flowing through the peninsula and historically the peninsula was covered by dense mangroves sustained by localized rainfall. In recent decades, there has been an explosion of shrimp farming along the coast which relies heavily on groundwater abstraction to maintain the proper salinity level. The over-abstraction of groundwater has resulted in significant land subsidence. The natural mangrove forest has been significantly reduced, although there are still significant protected mangrove zones. An extensive canal network has also been developed to bring freshwater from the Mekong River into the peninsula to allow rice production.

23. This component aims to address the challenges related to coastal erosion, groundwater management, sustainable aquaculture, and improved livelihoods for communities living in the coastal and river mouth areas of Ca Mau and Kien Giang. This will potentially consist of: i) restoration of coastal mangrove belts and construction/ rehabilitation of coastal dikes in erosion areas; ii) modification of water control infrastructure along the coastal zone to allow flexibility for sustainable aquaculture activities; iv) control of groundwater abstraction for agricultural/aquaculture and development of freshwater supplies for domestic use; v) support to farmers to practice more sustainable brackish water activities such as mangrove-shrimp and other aquaculture activities; and vi) supporting climate smart agriculture by facilitating water use efficiency.

24. Sub-projects to be financed under this subcomponent include restoration of mangroves to enhance coastal defense, transition of shrimp farming into integrated mangrove-shrimp, construction/ upgrades of river and coastal embankments, and sluice gates to manage water conditions and demonstration and aquaculture extension to improve efficiency and sustainability of brackish water aquaculture.

25. The GEF grant component (*Estimated US\$1.6 million*) will (i) identify, evaluate and select climate smart and climate-resilient AAWF practices that helps to address the challenges in the delta peninsula; (ii) pilot models of climate smart and climate resilient AAWF practices relating to coastal erosion, water scarcity, and salinity intrusion assessed for their economic, social and environmental impacts; and (iii) develop specific knowledge products on climate-smart, climate-resilient AAWF practices for scalability and replication in the peninsula sub-region.

Component 5: Project Management and Implementation Support (Est. US\$ 14.457 million, of which US\$10.85 million will be financed by IDA)

26. This component will be split into project management support and capacity building for Ministry of Natural Resources and Environment (MONRE) and Ministry of Agriculture and Rural Development (MARD). This component is expected to provide incremental running costs and consultant and advisory services for overall project management, financial management, procurement, safeguards and monitoring and evaluation.

27. The GEF grant (*Estimated US\$0.2 million*) will utilize the same CPMU being used to manage the parent IDA project. As such, this component will finance additional staffing for the parent PMU to specifically supervise the GEF grant activities.

2.2 Project target areas

28. The project area will cover 9 provinces: Dong Thap and An Giang (the Upper Delta), Ben Tre, Tra Vinh, Vinh Long and Soc Trang (the Delta Estuary), and Bac Lieu, Kien Giang and Ca Mau (the Delta Peninsula) (see *Annex 1*). The locations of the proposed subprojects under Components 2, 3, 4 are indicated in Figure 2.1.

2.3 Anticipated Subprojects Types

29. Component 1 focuses on (i) creating a knowledge management platform for Mekong Delta, (ii) developing a delta planning and management coordination mechanism, (iii) developing/ updating a Regional Mekong Delta Master Plan, and (iv) strengthening Provincial-level Natural Resources and Environment Departments (DONREs) and Departments of Agriculture and Rural Development (DARDs), (v) advice on land-use planning, spatial and territorial development, and update of the Mekong Delta Socioeconomic Master Plan, relevant sectoral master plans, and provincial SEDPs. Small civil works in construction of water resources monitoring stations and a regional coordination center may be anticipated.

30. Components 2, 3, and 4 of the project will support investments for (i) improving water resources management and flood retention; (ii) supporting adaptive and resilient agricultural/aquacultures systems; (iii) mangrove restoration and coastal protection; and (iv) improving coastal livelihoods. A subproject would involve two or more of the following typical small to medium scale investments below:

- Upgrading of provincial and community and rural roads for community resilience.
- Rehabilitation and reinforcement of low dikes in the floodplain, sea and river dikes to create a sediment area for mangrove/for flood/salt intrusion regulation and control, and embankments to prevent high tides.

- Construction of infiel sluice gates and culverts through the sea dykes to control salinity intrusion/shrimp-rice farming.
- Construction of weighbridge and flood spillways for enhancing flood drainage capacity.
- Construction and rehabilitation of irrigation systems including dredging canals for water regulation and water quality improvement.
- Construction of two reservoirs for freshwater water supply and a water treatment plant.
- Mangrove planting, restoration, and protection.
- Sustainable agriculture systems focused on land use/zoning and water resources. Management.
- Development of livelihoods models that are climate change (CC) resilience in the three zone of the project, including floating rice farming, conversion of rice to other high economic value crops, aquaculture and rice-shrimp and mangrove forest-shrimp models.
- Capacity building on specific livelihood activities.



Figure 2.1. Locations of the proposed subprojects under Components 2, 3, 4 of the project

31. The GEF component will support the following main activities under Component 1 through 4: i) Analytical studies, market research, Delta research consortium partnership

certification courses under Component 1; ii) Research and innovation grant to improve flood retention and water management (e.g. as flood base agriculture, floating rice, AWD practices, appropriate land-use, transitions 3 rice to 2 rice crops, etc.) under Component 2; iii) Research and innovation grant to address salinity intrusion, coastal erosion, water pollution (e.g. mangrove rehabilitation, saline tolerance rice, saline based cropping, aquaculture support, land-use adjustments etc.) under Component 3; and iv) Research and innovation grant to address salinity intrusion, coastal erosion, land subsidence, water shortage (e.g. mangrove-shrimp, bamboo T fences, water management for aquaculture etc.) under Component 4.

32. Components 2, 3, and 4 will comprise the subprojects which will be implemented in 3 phases, and the first phase subprojects (4 subprojects) have been identified. *Table 2.1* presents a list of proposed subprojects (10 subprojects); however, additional subprojects of the same nature may be considered and selected in close consultation between the Government (GoV) and the WB. The activities under the GEF component will be implemented within the same geographical areas of the project.

Table 2.1. Summary of subprojects including the 4 first phase subprojects (The names of the subproject are to be updated in line with the final FS, PAD, ESIAs).

Table 2.1: Summary of subprojects (with 4 first phase subprojects)

No.	Name of subproject	District	Province	Budget (10 ⁶ USD)	Remarks
	Component 1: Enhancing Monitoring, Analytics, and Information Systems				61.290
	Component 2: Managing Floods in the Upper Delta				101.009
SP1	Enhancing the ability of flood drainage and climate change adaptation for the Long Xuyen Quadrangle		An Giang, Kien Giang	40.573	
SP2	Enhancing the ability of adaptation and water management for the upper part of Bassac River in An Phu district An Giang province	An Phu	An Giang	30.482	First Phase Subproject
SP3	Improving the ability of flood drainage and developing stable livelihoods, climate change adaptation in the Plain of Reed (the northern districts of Dong Thap province)		Dong Thap	29.912	
	Component 3: Adapting to Salinity Transitions in the Delta Estuary				108.705
SP4	Infrastructure to develop stable livelihoods for people in the coastal area in Ba Tri, Ben Tre to adapt to climate change	Ba Tri	Ben Tre	14.209	First Phase Subproject
SP5	Infrastructure to improve livelihoods for people to adapt to climate change in the North Thanh Phu district, Ben Tre province	Thanh Phu	Ben Tre	25.301	
SP6	Control water resources to adapt with climate change in south Mang Thit, Tra Vinh and Vinh Long provinces	Cau Ke Tra On Vung Liem	Tra Vinh. Vinh Long	35.986	First Phase Subproject
SP7	Infrastructure for production transition in accordance with ecological conditions, improving livelihoods, adaptation to climate change in Dung island		Soc Trang	33.581	
	Component 4: Protecting Coastal Areas in the Delta Peninsula				101.148
SP8	Infrastructure to prevent coastal erosion, supply fresh water and for production of shrimp - forest model to improve livelihoods and adapting to climate change in the coastal area of Ca Mau Province		Ca Mau	33.148	

SP9	Infrastructure to prevent coastal erosion and to support aquaculture production in An Minh and An Bien districts, Kien Giang province	An Minh An Bien	Kien Giang	35.122	First Phase Subproject
SP10	Infrastructure for ecological forest protection and development, livelihood improvement, and climate change adaptation in Hoa Binh, Dong Hai, Phuoc Long, and Hong Dan districts		Bac Lieu	33.070	
Component 5: Project Management and Implementation Support				14.457	
Total				386.609	

2.4 Project Implementation Arrangement

33. **Overall Project Management:** The project implementing agencies will be MARD, MONRE, and the provincial People's Committees (PPCs) of the eight project provinces. The implementation arrangement is as follows (see *Figure 2.1*):

- MARD is the central Line Agency responsible for overall project implementation. MARD is responsible for: (a) approving the general investment plan of the entire project including subsequent reallocations, and delegating to MONRE and the Project Provinces to approve their respective annual work plans and budgets; (b) reporting to the government on implementation progress and effectiveness; and (c) coordinating the concerned ministries, such as Ministries of Finance, Planning and Investment, and the SBV to process necessary legal amendments or project restructuring to facilitate project implementation, enhance disbursement, and improve the efficiency of the use of IDA/IBRD funds.
- **Project Oversight.** A Project Steering Committee (PSC) would be established and comprise representatives from Ministry of Finance (MOF), Ministry of Planning and Investment (MPI), Office of the Government (OOG), State Bank of Vietnam (SBV), MARD, MONRE and the Provincial People's Committees (PPCs). The PSC will be chaired by a leader of MARD and co-chaired by MONRE. The PSC will organize meetings to review the project implementation, provide policy guidance and assist in coordination on a needed basis. The PCSC will provide policy guidance to the implementing agencies in solving problems or constraints faced during project implementation. The PCS will report to the MARD/MONRE Ministers.
- At Provincial level, the PPC is responsible for project implementation in the respective province. The PPC is responsible for: (a) approving the annual work plans and budgets for the province; (b) reporting to the government/MARD on implementation progress and effectiveness; and (c) providing necessary support to the DARD and DONRE to facilitate project implementation, enhance disbursement, and improve efficiency in the use of IDA/IBRD funds.

(a) For Component 1

34. MONRE is the executing agency for Component 1 of the Project. MONRE has appointed the MONRE Project Management Unit (PMU) to be responsible for management and implementation. A designated account for MONRE PMU will be opened and maintained throughout the project and to be managed by MONRE on a daily basis. Coordination with MARD and MPI will be in the form of information sharing, activity alignment and report consolidation.

(b) For Component 2, 3, 4

35. For Components 2, 3, and 4, MARD has assigned the central project office for irrigation projects (CPO Irrigation) in Hanoi to be responsible for overall implementation and management of the project, and will be the project owner. For these components, MARD will use the already established Central Project Management Unit (CPMU) under the CPO and create a Technical Working Group (TWG) made up of irrigation, agriculture, forestry, aquaculture specialists from technical departments, and related research institutes.

- Specific responsibilities of the CPO include, but are not limited to, the following: (a) providing technical support to the DARDs in project implementation and management, including preparing and implementing annual work plans, procurement plans, disbursement plans, M&E, ESMPs, EMDPs, RAPs, etc.; (b) developing and maintaining a sound project accounting system in accordance with the procedures required by government and IDA; (c) handling all ICB packages and the selection of international consultants, as well as all other procurement matters for which central management is more efficient compared to provincial level management; (d) monitoring the progress and quality of implementation, safeguards compliance, and project impact to report to MARD and IDA; and (e) preparing proposals for project restructuring and legal amendments, when necessary, for submission to government and IDA. The CPMU, assisted by the TWG, is responsible for implementing the components in accordance with the framework documents for determining the eligibility, prioritization and readiness of the sub-project investments, as well as in compliance with the safeguards framework, and the sub-project assessments. In addition, the CPMU will be responsible for the overall project level administration, including oversight procurement, financial management, monitoring and evaluation, and communications.
- At provincial level, the subprojects under Components 2, 3 and 4 would be implemented by provincial project management units (PPMUs) in the respective provinces. The Provincial People's Committee (PPC) will appoint existing Provincial Project Management Units (PPMU) under the Department of Agriculture and Rural Development (DARD) to be the implementing agency. Subprojects involving more than one province would be implemented by Infrastructure Construction Management Board No. 10 (ICMB 10) under the direct management of MARD. The main tasks of the PPMU and ICMB10 will be in charge of day-to-day implementation activities including: (i) preparation and processing of sub-project investments; (ii) preparation of detailed technical engineering design, safeguards mitigation documents, implementation and procurement plans; (iii) carrying out fiduciary (procurement and financial management) and safeguards activities at the subproject level; (iv) operating and maintaining the project account; and, (v) monitoring and evaluating of implementation of the sub-projects. Each of the PPMUs and ICMB10 will be fully staffed with qualified and experienced staff in all areas particularly on fiduciary and safeguards aspects.
- **Technical Oversight.** At the provincial level, the CPMU, located in Can Tho, will (i) provide technical inputs for preparing/reviewing complex or interprovincial projects which will be managed by CPO Irrigation; and (ii) extend technical assistance to DARDs, when required, to support implementation of non-complex sub-projects which are decentralized to the project provinces. The CPMU will also help manage the sub-projects at the provincial level, and will include technical specialists from various technical departments including agriculture, forestry, aquaculture, climate change, water, and environment, as needed.

MARD		
Project Steering Committee (MARD, MONRE, PPCs, MPI, MOF, SBV, OOG, WB)		
MARD	MONRE	PPCs
CPO (Approval role)	MONRE Construction Investment PMU (Approval role)	Provincial DARDs (Approval role)
CPMU Hanoi (Comp 2, 3, 4, 5 & part of Comp 1)	Sub-Departments of PMU (Comp 1, 5)	Provincial PMUs (All components)
CPMU Can Tho (Comp 2, 3, 4, 5 and part of Comp 1)	ICMB 10 in Can Tho (In charge of interprovincial projects except ICB packages)	

Figure1. Proposed Implementation Arrangements

3. POLICY, LEGAL, AND ADMINISTRATIVE FRAMEWORK

3.1 Applicable National Laws and Regulations

36. In Vietnam, there are national laws, regulations, and policies related to implementation of safeguard related activities and measures including and the key ones related to the project are briefly summarized as follows:

- Environmental Protection Law No. 55/2014/QH13 of the National Assembly of Vietnam dated June 23, 2014. This law enacted policies and regulations on environmental safeguards, and rights and obligations of organizations, households and individuals related to environmental protection activities.
- Land Law No. 45/2013/QH13 of the National Assembly of Vietnam dated November 29, 2013 prescribes the regime of land ownership, powers and responsibilities of the State in representing the entire-people owner of land and uniformly managing land, the regime of land management and use, the rights and obligations of land users involving land in the territory of the Socialist Republic of Vietnam.
- Law on Natural Disaster Prevention and Control No. 33/2013/QH13 of the National Assembly of Vietnam dated on June 19, 2013 provides natural disaster prevention and control activities; specifies the rights and obligations of agencies, organizations, households and individuals engaged in natural disaster prevention and control activities; and details the state management of, and assurance of resources for, natural disaster prevention and control.
- Law on water resources No. 17/2012/QH13 of the National Assembly of Vietnam dated June 21, 2012 provides on management, protection, exploitation and use of water resources, as well as the prevention of, combat against and overcoming of harmful effects caused by water in the territory of the Socialist Republic of Vietnam.
- Law on amending and supplementing a number of articles of the law on cultural heritages No. 32/2009/QH12 of the National Assembly of Vietnam dated June 18, 2009 to amend and supplement a number of articles of the Law on Cultural Heritages.
- Law on biodiversity No. 20/2008/QH12 of the National Assembly of Vietnam dated November 13, 2008 provides for the conservation and sustainable development of biodiversity; rights and obligations of organizations, households and individuals in the conservation and sustainable development of biodiversity.

- Law on Forest Protection and Development No. 29/2004/QH11 of the National Assembly of Vietnam dated December 03, 2004 provides for the management, protection, development and use of forests; and forest owners' rights and obligations.
- Law on Fisheries Land No. 17/2003/QH11 passed by the National Assembly of the Socialist Republic of Vietnam on 26 November 2003 and took effect since 01 July 2004;
- Decree No. 38/2015/NĐ-CP of 24 April 2015 of the Government on management of waste and discarded materials;
- Decree No. 39/2015/NĐ-CP of the Government dated 27 April 2015 on assistance policy applied to ethnic minority and poor women who comply the population policy will take effect as from 15 June 2015.
- Decree No. 18/2015/NĐ-CP dated February 14, 2015 of the Government on environmental protection planning, strategic environmental assessment, environmental impact assessment, and environmental protection commitment.
- Decree No.19/2015/NĐ-CP of 14 February 2015 of the Government detailing the implementation of a number of articles of the Law on Environmental Protection;
- Decree No.43/2014/NĐ-CP dated May 15, 2014 of the Government providing guidance on detailed implementation of some articles from the Land Law 2013.
- Decree No.44/2014/NĐ-CP dated 15 May 2014 of the Government providing regulations on land prices.
- Decree No.47/2014/NĐ-CP dated 15 May 2014 of the Government on compensation, support, and resettlement when land acquisition is required by the State.
- Decree No. 179/2013/NĐ-CP dated 14 November 2013 of the Government prescribing administrative sanctions for environmental protection.
- Decree No. 25/2013/NĐ-CP of 29 March 2013 of the Government on environmental protection charges for wastewater;
- Decree No. 67/2012/NĐ-CP of the Government dated 10 September 2012 on the amendment of Decree No. 143/2003/NĐ-CP of the Government dated 28 November 2003 on detailing the implementation of a number of articles of the ordinance on exploitation and protection of irrigation works
- Decree No. 113/2010/NĐ-CP dated 3 December 2010 of the Government on valuation of damages caused to the environment.
- Decree No. 174/2007/NĐ-CP of 29 November 2007 on environmental protection charges for solid waste;
- Circular No. 27/2015/TT-BTNMT dated 19 May 2015 of the Ministry of Natural Resources and Environment on strategic environmental assessment, environmental impact assessment, and environmental protection plan.
- Circular No. 36/2014/TT-BTNMT dated 30 June 2014, specifying detailed methods of valuation of land prices, construction, adjustment of land prices; specific land prices valuation and land prices valuation consulting service.
- Circular No.37/2014/TT-BTNMT dated 30 June 2014, providing detailed regulation compensation, assistance, and resettlement when the State acquires land.
- Circular No. 30/2014/TT-BTNM, regulating the records for land allocation or land lease, the change of land use purposes, land acquisition
- Circular No. 12/2011/TT-BTNMT dated 14 January 2011 of the Ministry of Natural Resources and Environment on hazardous waste management.

- Circular No. 19/2011/TT - BYT of 06 June 2011 of the Ministry of Health guiding labor hygiene, laborers' health and occupational diseases.
- Circular No 13/2007/TT-BXD of December 31st 2007. Providing guidance on a number of articles of decree no. 59/2007/nd-cp dated 09/4/2007 by the government on solid waste management
- Decision No. 1956/2009/QD-TTg, dated November 17, 2009, by the Prime Minister approving the Master Plan on vocational training for rural labors by 2020.
- Decision No. 52/2012/QD-TTg, dated November 16, 2012 on the support policies on employment and vocational training to farmers whose agricultural land has been recovered by the State.

37. There are also a number of regulations and technical guidelines related to environmental quality and other requirements that need to be observed during the assessment of potential impacts as well as during implementation of the project and the key ones are highlighted as follow:

- QCVN 01:2009/BYT: National technical regulation on drinking water quality.
- QCVN 02:2009/BYT: National technical regulation on domestic water quality.
- QCVN 08:2008/BTNMT: National technical regulation on water surface quality.
- QCVN 09:2008/BTNMT: National technical regulation on underground water quality.
- QCVN 10:2008/BTNMT: National technical regulation on water quality in coastal areas.
- QCVN 14:2008/BTNMT: National technical regulation on domestic wastewater.
- QCVN 40:2011/BTNMT: National technical regulation on industrial wastewater.
- QCVN 39:2011/BTNMT: National technical regulation on Water Quality for irrigated agriculture.
- QCVN 38:2011/BTNMT: National technical regulation on Surface Water Quality for protection of aquatic lives
- QCVN 03:2008/BTNMT: National technical regulation on permitted limit of heavy metal in land.
- QCVN 15:2008/BTNMT: National technical regulation on the pesticide residues in the soils.
- QCVN 43:2012/BTNMT - National technical regulation on sediment quality in fresh water areas.
- QCVN 05:2013: National technical regulation on ambient air quality.
- QCVN 06:2008: National technical regulation on hazardous substances in ambient air.
- QCVN 26:2010/BTNMT: National technical regulation on noise.
- QCVN 27:2010/BTNMT: National technical regulation on vibration.
- QCVN 07:2009/BNM: National Technical Regulation on Hazardous Waste Thresholds
- QCVN 17:2011/BGTVT: National technical regulation on Rules for Pollution Prevention of inland waterway ships.
- Decision 3733/2002/-BYT October 10, 2002: Promulgating 21 labor hygiene standards, 05 principles and 07 labor hygiene measurements
- Other relevant sector technical regulation and standards.

3.2 World Bank Safeguard Policies Triggered

38. The MD-ICRSLP triggered the following nine WB safeguard policies: (i) Environmental Assessment (OP/BP 4.01); (ii) Natural Habitats (OP/BP 4.04); (iii) Pest Management (OP/BP 4.09); (iv) Forests (OP/BP 4.36); (v) Dam Safety (OP/BP 4.37); (vi) Indigenous Peoples

(OP/BP 4.10); (vii) Physical Cultural Resources (OP/BP 4.11); (viii) Involuntary Resettlement (OP/BP 4.12); and (ix) Projects on International Waterways (OP/BP 7.50). Rationale for safeguard triggering is provided below. Although most subprojects are expected to have moderate adverse impacts on the environment, the project is proposed as Category A for environmental assessment due construction and operation of an 140-hectar water reservoir for water supply and fire prevention and a water supply system which would be located adjacent to U Minh Ha National Park in Ca Mau province, and thus would have significant impact on natural habitats and biodiversity of the national park. The complicity of water resources issues and the significant impacts of land acquisition due to project activities are also anticipated.

*Environmental Assessment (OP/BP 4.01)*¹

39. Environmental Assessment (EA) is an umbrella policy for the Bank's safeguard policies. The overarching objective is to ensure that Bank-financed projects are environmentally sound and sustainable, and that decision-making is improved through appropriate analysis of actions and of their likely environmental impacts. The EA process is intended to identify, avoid and mitigate potential impacts of Bank operations. It is important to note that EA takes into account the natural environment (air, water, and land); human health and safety; social aspects (involuntary resettlement, indigenous peoples, and physical cultural resources); and transboundary and global environmental aspects. EA considers natural and social aspects in an integrated way.

40. The project triggers the policy on Environmental Assessment (OP/BP 4.01) because it involves the construction, rehabilitation, and operation of climate change water resources infrastructures and demonstration and scaling up of sustainable climate resilience livelihood models in the Regional Coordination Mekong Delta Center, requiring the identification, mitigation and monitoring of potential adverse environmental and social impacts. The majority of the potential adverse impacts relate to land acquisition and clearance, construction related impacts, operation the water regulation infrastructures, and operation of the livelihood models under Component 2, 3, 4. The impacts associated with Component 1 activities are anticipated to be small and mainly relate to small-scale construction of the Mekong Delta Center in Can Tho and the water resources monitoring stations.

41. Since about 30-40% of the subprojects were selected during project preparation, an ESMF will be developed by the client to guide the environmental assessment process and ensure compliance with the government's environmental management regulation and the World Bank's safeguards requirements during the selection of the remainder of the sub-projects. All subprojects under Component 2, 3, 4 identified to be implemented during the first year would need to prepare Environmental and Social Impact Assessments (ESIAs) and Environmental and Social Management Plans (ESMPs) that meet the Government's and the World Bank's safeguards requirements.

*Natural Habitats (OP/BP 4.04)*²

42. Natural Habitats Policy is intended to prohibit Bank financing of projects that degrade or convert critical habitats. The Bank supports projects that affect non-critical habitats only if no

¹The full treatment of OP/BP 4.01 can be found at

<http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTSAFEPOL/0,,contentMDK:20543912~menuPK:1286357~pagePK:64168445~piPK:64168309~theSitePK:584435,00.html>

²Full description of OP/BP 4.04 is available at

<http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTSAFEPOL/0,,contentMDK:20543920~menuPK:1286576~pagePK:64168445~piPK:64168309~theSitePK:584435,00.html>

alternatives are available and if acceptable mitigation measures are in place. Local people should be consulted in planning, designing and monitoring projects.

43. The environmental and social screening and the first phase subprojects confirmed that natural habitats are present in the project areas. Certain proposed project activities could impact the water quality and flow of the rivers and canals in the Mekong Delta, impacting aquatic flora and fauna. Changes in the ecological flow of the rivers and canals in project areas may result due to the installation of sluice gates and other flood/salinity control measures, leading to a reduction in the diversity and quantity of fish populations. Therefore, this policy is triggered for the project.

Forests (OP/BP 4.36)³

44. Forests Policy is intended to support sustainable and conservation-oriented forest management. The Bank helps borrowers harness the potential of forests to reduce poverty in a sustainable manner, integrate forests into sustainable economic development, and protect vital local and global environmental services and values of forests. Local people, the private sector and interest groups in the affected forest area should be consulted.

45. There are indigo forests in Ca Mau, Kien Giang, An Giang, and Dong Thap. This policy is triggered considering that the activities to restore coastal landscapes to enhance resilience of inland farming systems, reduce vulnerability to the impacts of sea-level rise and coastal erosion including mangrove reforestation in targeted areas may have the potential to have adverse impacts on the rights and welfare of local people and their level of dependence upon natural and plantation forests. Impacts on forests and associated mitigation measures will need to be included in the subproject ESIA. Forest Management Plans will be prepared for all mangrove reforestation undertaken as part of the Project, and for any subprojects that may affect the indigo forests.

Pest Management (OP 4.09)⁴

46. The more reliable irrigation water would induce increased irrigated agricultural activities which may involve in the use of agricultural chemicals. In order to mitigate these environmental impacts, an integrated pest management plan (IPM) program will be implemented for each applicable subproject as a part of the ESMP. A Pest Management Framework (PMF) will be developed and included in the ESMF as a guideline for preparation of an IPM program. The PMF stipulates: prohibition of the use of very toxic chemicals, and provides directions and approach for IPM.

Physical Cultural resources (OP/BP 4.11)⁵

47. Physical Cultural Resources Policy (PCR) is intended to ensure that projects identify and inventory cultural resources that are potentially affected by the project. PCRs include resources of archaeological, paleontological, historical, architectural, religious, aesthetic or other cultural significance. Projects should include mitigation measures when there are adverse impacts on physical cultural resources. Appropriate agencies, NGOs and universities should be consulted.

³ OP/BP 4.36 is described in detail at

<http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTSAFEPOL/0,,contentMDK:20543943~menuPK:1286597~pagePK:64168445~piPK:64168309~theSitePK:584435.00.html>

⁴ OP 4.09 is fully described in detail at

<http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTOPMANUAL/0,,contentMDK:20064720~menuPK:64701637~pagePK:64709096~piPK:64709108~theSitePK:502184.00.html>

⁵ OP/BP 4.11 is accessible at

<http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTSAFEPOL/0,,contentMDK:20543961~menuPK:1286639~pagePK:64168445~piPK:64168309~theSitePK:584435.00.html>

48. It is not expected that the project will necessitate relocation of PCRs such as monuments, temples, churches, religious/spiritual and cultural sites. Should this be unavoidable, all effort will be made to limit impacts on such PCRs. In such a case, a PCR management Plan will be prepared in consultation with local stakeholders and religious/cultural authorities. The project will involve relocation of graves which are also considered PCRs, and thus this policy is triggered. Since the project includes dredging and excavation activities, which may result in chance finds, chance find procedures will be included in contracts and ESMPs.

*The Indigenous Peoples policy (OP/BP 4.10)*⁶

49. -The Indigenous Peoples policy is designed to ensure that the development process fully respects the dignity, human rights, economies and cultures of Indigenous Peoples. The policy requires projects to identify impacts on indigenous peoples and develop a plan to address the impacts, both positive and adverse. Projects should be designed with benefits that reflect the cultural preferences of indigenous peoples. The borrower should carry out free, prior, and informed consultation and obtain broad community support for the project.

50. The project will entail multiple subprojects in a large geographical area of Mekong Delta Region where ethnic minority communities (Cham and Khmer) are likely to be present. Therefore, this policy is triggered. Since the presence or collective attachment of the Ethnic Minority (EM) People cannot be determined until the subprojects are identified, the borrower will need to prepare an Ethnic Minority Planning Framework (EMPF) to guide the preparation of individual EMDPs for subprojects identified during the project implementation. The EMPF will sets out guidelines to: (a) ensure that the EM people receive social and economic benefits that are culturally appropriate; (b) avoid potentially adverse effects on the ethnic minority communities; and (c) when such adverse impacts cannot be avoided, minimize, mitigate, or compensate for such effects.

51. The application of OP 4.10 at the subproject level will be identified on a case by case basis with support from early screening exercises. Once the policy application is confirmed, MARD will conduct social assessments (SA) – at subproject level as part of subproject Environmental and Social Impact Assessment (ESIAs) - to confirm if affected ethnic minorities (EMs) provide their broad support to the project, including by: (i) identifying potential benefits and negative impacts of the project; (ii) defining the recommendations (including mitigation measures) to ensure free, prior and informed consultations with the EMs (especially, their participation in the project design and monitoring during the implementation phase); and (iii) defining the measures required to provide culturally appropriate benefits (e.g. tailored information disclosure, consultation, and community support activities). By appraisal, Ethnic Minority Development Plans (EMDP) of relevant subproject (s) will be prepared. The EMDPs will include a summary of the SA, consultations, the scope of impacts and mitigation measures, activities for the enhancement of project implementing agencies and estimated costs for the Plan.

*Involuntary Resettlement (OP/BP 4.12)*⁷

52. OP 4.12 seeks to prevent severe long-term hardship, impoverishment, and environmental damage to the affected peoples during involuntary resettlement. It applies whether or not

⁶ Full treatment of OP/BP 4.10 can be consulted at

<http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTSAFEPOL/0,,contentMDK:20543990~menuPK:1286666~pagePK:64168445~piPK:64168309~theSitePK:584435,00.html>

⁷ Detail of OP/BP 4.12 is available at

<http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTSAFEPOL/0,,contentMDK:20543978~menuPK:1286647~pagePK:64168445~piPK:64168309~theSitePK:584435,00.html>

affected persons must move to another location. The Bank describes all these processes and outcomes as “involuntary resettlement,” or simply resettlement, even when people are not forced to move. Resettlement is involuntary when the government has the right to expropriate land or other assets and when affected people do not have the option to retain the livelihood situation that they have.

53. The Bank’s policy requires a RPF to be prepared and submitted by the borrower prior to appraisal, conforming to the policy. The purpose of the RPF is to clarify resettlement principles, organizational arrangements, and design criteria to be applied to subprojects. The Bank’s policy also requires a RAP for any subproject that involuntarily displaces people from land or productive resources, and the displacement results in: i) relocation, the loss of shelter, the loss of assets or access to assets important to production; ii) the loss of income sources or means of livelihood; or iii) the loss of access to locations that provide higher incomes or lower expenditures to businesses or persons.

54. Project activities are likely to involve some land acquisition resulting in physical land take and impacts on livelihoods and resources under Components 2, 3, 4. It may be necessary to compensate local communities for lost homes, immovable assets, and/or lost revenues/livelihoods as a result of any flood control/ saline intrusion measures or changes in fishing and farming practices and/or changes in cropping. Additional assistance to farmers who may have changes in their current livelihoods may also be needed, and is being identified through a social analysis. The social assessment will be the initial instrument that will determine the scope of these impacts. A Resettlement Policy Framework will be developed to guide land acquisition impacts.

55. By appraisal, the Borrower will need to prepare a Resettlement Policy Framework (RPF) for guiding the preparation of RAPs for investments identified during project implementation. Individual RAPs for the subprojects will also need to be prepared.

Safety of Dams (OP/BP 4.37)⁸

56. The project may fund construction of a water reservoir for water supply and fire prevention. Given that no structure will be higher than 10 meters, and the dam and reservoir are not anticipated to pose any hazards. Therefore, in line with OP/BP 4.37, the Bank team will agree on appropriate safety measures with the Borrower and to ensure the involvement of qualified engineers, and will confirm that the ESIA for this subproject has determined that there would be no risk or negligible risk of significant adverse impacts due to potential failure of the structure to local communities and assets, including assets to be financed as part of the proposed Project.

Projects on International Waterways (OP/BP 7.50)⁹

57. Projects on international waterways may affect the relations between the World Bank and its Borrowers, and between riparian states. Therefore, the World Bank attaches great importance to the riparian states making appropriate agreements or arrangements for the entire waterway, or parts thereof, and stands ready to assist in this regard. In the absence of such agreements or arrangements, the World Bank requires, as a general rule, that the prospective Borrower notifies the other riparian states of the project. The policy has detailed procedures

⁸ Detail of OP/BP 4.37 is available at

<http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTSAFEPOL/0,,contentMDK:20543999~menuPK:1286674~pagePK:64168445~piPK:64168309~theSitePK:584435,00.html>

⁹ Detail of OP/BP 7.50 is available at

<http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTSAFEPOL/0,,contentMDK:20544007~menuPK:1286706~pagePK:64168445~piPK:64168309~theSitePK:584435,00.html>

for the notification requirement, including the role of the World Bank in affecting the notification, period of reply and the procedures if there is an objection by one of the riparian states to the project.

58. Since the project is located in the Mekong Delta, and may include flood retention and fisheries sub-projects that may have an impact on upstream riparians, OP 7.50 – International Waterways - is triggered. The project activities fall under the exceptions to the riparian notification requirements set out in paragraph 7(a) of OP 7.50.

*Projects in Disputed Areas (OP/BP 7.60)*¹⁰

59. Projects in disputed areas may affect the relations between the World Bank and its Borrowers, and between the claimants to the disputed area. Therefore, the World Bank will only finance projects in disputed areas when either there is no objection from the other claimant to the disputed area, or when the special circumstances of the case support World Bank financing, notwithstanding the objection. The policy details those special circumstances. In such cases, the project documents should include a statement emphasizing that by supporting the project, the World Bank does not intend to make any judgment on the legal or other status of the territories concerned or to prejudice the final determination of the parties' claims.

60. OP 7.60 is not triggered because none of the proposed project sites are in a Disputed Area. Screening will be undertaken to ensure any additional sites proposed lie outside a Disputed Area as defined by OP 7.60.

*The World Bank policy on Access to Information*¹¹

61. The World Bank Access to Information Policy is intended to ensure that persons and groups affected by the project are kept informed of the project objectives and impacts, and are consulted throughout the project to ensure that their interests are represented. Safeguards documents are disclosed locally in the project areas and the World Bank InfoShop, which includes a resource center in Washington DC and an electronic database, offering access to information on World Bank projects and program to the public.

62. The Bank policy requires that during EA process the Government conducts meaningful consultations with stakeholders such as project-affected groups and local NGOs about the project's environmental and social aspects, and takes their views into account in the design of the project. All draft safeguard instruments have been disclosed locally in an accessible place and in a form and language understandable to key stakeholders, and in English at InfoShop before the project appraisal.

*World Bank Group Environmental, Health, and Safety Guidelines*¹²

63. World Bank-financed projects should also take into account the World Bank Group Environmental, Health, and Safety Guidelines (known as the "EHS Guidelines"). The EHS Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice. It contains the performance levels and measures that are normally acceptable to the World Bank Group and are generally considered to be achievable in new facilities at reasonable costs by existing technology. The environmental assessment process may recommend alternative (higher or lower) levels or measures, which, if acceptable

¹⁰ Detail of OP/BP 7.60 is available at

<http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTSAFEPOL/0,,contentMDK:20544003~menuPK:1286689~pagePK:64168445~piPK:64168309~theSitePK:584435,00.html>

¹¹ Detail of World Bank Policy o Access to information is available at <http://www.worldbank.org/en/access-to-information>

¹²The EHS Guidelines can be consulted at www.ifc.org/ifcext/enviro.nsf/Content/EnvironmentalGuidelines.

to the World Bank, become project- or site-specific requirements. The EHS Guidelines apply to the MD-ICRSLP and this has been incorporated into the ESMF (Annexes 3 and 4).

3.3 Gap Analysis and Gap Filling Measures

64. The application of environmental assessment policies in Vietnam, as well as various efforts directed to policy harmonization between GoV and donors, has gradually narrowed the gap between the two systems. However, significant differences remain between GoV environmental safeguard policies and those of the World Bank. These differences and proposed gap filling measures are listed in Table 3.1 below.

Table 3.1: Summary of the World Bank and National EA Processes and proposed gap mitigation for the project

EA Process Stage	WB (stipulating in OP/BP 4.01 on Environmental Assessment)	Viet Nam (stipulating in Decree 18/2015/NĐ-CP, Circular 27/2015/TT-BTNMT)	Gap Filling Measures
Screening	<ul style="list-style-type: none"> - Categories (A, B, C, FI) - Non-prescriptive on a case by case basis for categorization, safeguards policies application, and EA instrument identification. - The World Bank will classify the project as category A, B, C, FI according to the nature and magnitude of potential environmental and social impacts. <ul style="list-style-type: none"> ▪ Category A: Full EA required ▪ Category B: EA, ESMF, or EMP required ▪ Category C, no EA required. ▪ Category FI: EA or ESMF or both required. 	<ul style="list-style-type: none"> - Categories: I, II, III and IV of Decree 18/2015. - Prescriptive, fixed regulated in Annex I, II and III – List of projects subject to requirements of SEA and EIA report submittal and approval. - All projects are not listed. - Normally the project owners self-screen the project based on the categorization indicated in Decree 18/2015 and consult the Provincial Department of Natural Resources and Environment (DONRE) or Vietnam Environment Administration (VEA) for the appropriate classification and EA report requirement of the project, such as: <ul style="list-style-type: none"> ▪ Project falls into Annex I, II, III: SEA or EIA required ▪ Project falls into Annex IV: no EIA and Environmental Protection Plan (EPP) required ▪ Project is not I, II, III and IV: EPP required 	<ul style="list-style-type: none"> - Use the World Bank's discretionary (on a subproject-by-subproject basis) approaches in screening projects the significance of its impacts, and subsequently to ascertain the project's EA category. - Examine the magnitude and significance of the project impacts based on the project type and scale, project location, sensitivity of environmental and social issues, and nature and magnitude of potential impacts.
EA instrument	<ul style="list-style-type: none"> - Depending on the project impact, a range of instruments are used to meet the World Bank's requirement, these include: ESMF, specific EA; ESMPs, sectoral & regional EA; SEA; hazard or risk assessment; environmental audits. The World Bank provides general guidance for implementation of each instrument. 	<ul style="list-style-type: none"> - The type of EA instruments such as SEA, EIA or EPP is decided based on Annex I, II, III and IV of Decree 18/2015. 	Follow the World Bank requirements on the type of EA instrument needed
Scope	<ul style="list-style-type: none"> - The World Bank helps Borrower draft the TOR for EA report and identify the scope of EA, procedures, schedule and outline of the EA report. 	<ul style="list-style-type: none"> - TORs for EA are not required. - Normally after consultation with the local DONRE or VEA for the EA category, the project owner will proceed with EA report preparation. 	TORs for REA, SEA, ESMF, ESIA, and ESMP are a good practice to follow. <ul style="list-style-type: none"> - Follow the World Bank's TORs, scoping, and consultation requirements.

	<ul style="list-style-type: none"> - For Category A projects, ESIA TORs is required, and scoping and consultation are conducted for preparation of the TORs for the EA report. 		
Public consultation	<ul style="list-style-type: none"> - During EA process, the Borrower consults project affected groups and local NGOs about the project's environmental aspects and takes their views into account. - For Category A projects, the Borrower consults these groups at least twice: (a) shortly after environmental screening and before the TORs for the EA are finalized; and (b) once a draft EA report is prepared. In addition, the Borrower consults with such groups throughout project implementation as necessary to address EA-related issues that affect them. For Category B project at least one public consultation needs to be conducted. - For meaningful consultations, the Borrower provides relevant project documents in a timely manner prior to consultation in a form and language that are understandable and accessible to the group being consulted. - Minutes of the public meetings are included in the reports. 	<p>The project owner shall consult with the People's Committee of communes, wards and towns (hereinafter referred to as communes) where the project is carried out, with organizations or community under the direct impact of the project; research and receive objective opinions and reasonable requests of relevant entities in order to minimize the negative effects of the project on the natural environment, biodiversity and community health.</p> <ul style="list-style-type: none"> - The People's Committee of the commune where the project is carried out and the organizations under direct impact of the project shall be consulted. The project owner shall send EIA reports to the People's Committee of the commune where the project is carried out and organizations under the direct impact of the project together with the written requests for opinions. Within 15 working days, from the date on which the EIA reports are received, the People's Committee of the commune and organizations under the direct impact of the project shall send their responses if they do not approve the project. - The consultation with the community under the direct impact of the project shall be carried out in the form of community meeting co-chaired by project owner and the People's Committee of the commune where the project is carried out together with the participation of representatives of Vietnamese Fatherland Front of communes, socio-political organizations, socio-professional organizations, neighborhoods, villages convened by the People's Committee of the commune. All opinions of delegates attending the meeting must be sufficiently and honestly stated in the meeting minutes. 	<ul style="list-style-type: none"> - EA consultation as per government EA regulation is not enough and the Borrower and its consultant need to follow the World Bank's requirements on consultation and disclosure of information during ES process. - Good consultation bring benefits to the project design and contributes to project environmental outcomes
Disclosure	Before the World Bank proceeds to project appraisal the EA report must be made available at public place	<ul style="list-style-type: none"> - After an EIA report is approved, the project owner shall formulate, approve and publicly display its EMP 	Follow the World Bank's Policy on Access to Information Policy in

	<p>accessible for project-affected groups and local NGOs. Once the World Bank officially receives the report, it will make the EA report in English available to the public through the Infoshop.</p>	<p>at the office of the commune-level People's Committee of the locality in which consultation of the community is made for people's information, examination and oversight. (Article 16, Decree 18/2015).</p>	<p>disclosure of project information, including EA instruments.</p>
Independent Expert	<ul style="list-style-type: none"> - For category A project, the Borrower retains independent EA experts not affiliated with the project to carry out EA. - For category A projects of high risk or multi-dimensional environmental concerns, the Borrower should also engage an advisory panel of independent, internationally recognized environmental specialists to advise on aspects of the project relevant to EA. - Experts/consulting firm will be selected through bid process under strict observation of the World Bank. 	<ul style="list-style-type: none"> - Not regulated in Vietnam policies. - Project owner shall make, or hire an institution meeting the conditions provided in Clause 1, Article 13 (Decree 18/2015) to prepare an EIA report. Project owner or consulting service provider must fully meet the following conditions: (i) Having staff members in charge of EIA must obtain at least Bachelor's degrees and Certificate in EIA consultancy; (ii) Having specialist staff members related to the project obtaining at least Bachelor's degrees; (iii) Having physical-technical foundations and special-use devices for measuring, taking, processing, and analyzing environmental samples, which meet technical requirements. In case of unavailability of qualified special-use devices, having a contract to hire a capable institution. 	<p>Follow the World Bank requirements to avoid conflict of interest</p>
Clearance procedure	<p>Review responsibility is internal to the World Bank. If the EA report is satisfactory, the World Bank will issue its clearance memo. If the EA report needs to be improved the World Bank will issue a conditional clearance with the understanding that the Borrower will revise the EA to satisfy the World Bank for the final clearance.</p>	<ul style="list-style-type: none"> - The Ministry of Natural Resources and Environment shall assess and approve the EIA reports on projects prescribed in Appendix III of this Decree, except for projects subject to national defense and security secrets. - Ministries, ministerial agencies shall assess and approve the EIA reports on projects under their competence in approval for investment, except for projects in Appendix III of this Decree; - The People's Committee of the province shall assess and approve EIA reports on projects in the province, except for projects prescribed above. - The appraisal will take place no later than working 45 days at MONRE level and 30 working days at DONRE level and 5 working days at district level for after receipt of a full eligible EIA or EPP. 	<p>- In addition to the Government requirements, follow the World Bank's review and clearance procedures.</p>

Number and language of EIA required for appraisal	<ul style="list-style-type: none"> - Number of copies not specified. - Language requirement: English for Vietnam with an Executive Summary in English for a Category A project. - No requirement for feasibility survey: the World Bank does not advance discussions on any investments without the preparation by the Borrower of the minimum required technical studies that prove the investments are feasible from socio-economical and technical point of view. 	<ul style="list-style-type: none"> - The project owner has to submit at least seven copies of EIA report (depend on the number of appraisal council members) and one copy of the Feasibility Study or the Economic-Technical argument for the proposed project. 	Follow the World Bank's guidance and the Government requirements
Content of EIA report	<p>Category A project contains the following major contents:</p> <ul style="list-style-type: none"> - Should be in line with OP 4.01, Annex B - Content of an Environmental Assessment Report for a Category A Project. - Category B EIA reports typically follow similar table of contents as Category A. 	<p>EA report should be in line with Circular 27/2015/TT-BTNMT</p>	<p>For first years subprojects: prepare both ESAs and ESMPs for WB and EIA/EPP for Viet Nam.</p> <p>For remaining subprojects:</p> <ul style="list-style-type: none"> - Category B subprojects: ESAs or ESMPs for WB and EIA/EPP for Viet Nam. - Category A subprojects: two options exist: i) follow two separate EIA outlines of the World Bank and the Government; ii) follow the government EIA format with incorporation of the World Bank requirements in alternative analysis, cumulative impact assessment, public consultation and disclosure, and ESMP requirements.
EA supervision	<ul style="list-style-type: none"> - During project implementation, the World Bank supervises the project's environmental aspects on the basis of the environmental provisions and the Borrower's reporting arrangement agreed in the loan agreement and described in the other project documentation, to determine whether the Borrower's compliance with environmental covenant (primarily with EMP) is satisfactory. If compliance is not satisfactory, the World Bank will discuss with the Borrower action necessary to comply. 	<ul style="list-style-type: none"> - The local DONRE is entrusted to supervise the environmental compliance of the project. - By the end of project construction stage, the Environmental Management Agencies will coordinate with Construction Management Agencies to supervise the compliance of environmental management activities stated in EA study. 	<ul style="list-style-type: none"> - Project environmental management system needs to be established to monitor and supervise safeguards compliance during implementation. - Follow requirements in project Loan Agreement, EMP, and contract with contractor to monitor and supervise safeguards compliance.

4. PROJECT POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS

4.1 REA and RSA Summary

65. Given the types and locations of the proposed subprojects and the nature of social conditions and water resources management in the lower part of Mekong Delta, a Regional Environmental Assessment (REA) and a Regional Social Assessment (RSA) were conducted to provide strategic recommendations to guide the Project design and ways to enhance potential positive impacts and mitigate potential negative impacts.

66. The REA¹³ confirmed that rapid population growth and intensive agricultural and aquaculture development over the past decades have significantly reduced the natural values in the delta area and key lessons include (a) highly controlled multi-crop farming systems have depleted soil fertility and cut off agricultural areas from natural fertilization processes of the Mekong River, (b) shrinking Mekong Floodplain area has exacerbated flooding in unprotected areas, (c) draining of wetland depressions in the delta for agricultural expansion; (d) dry season agriculture is shifting the delta's balance between fresh and marine environments; and (e) centralized water control initiatives such as the saline control structures in the coastal areas of the delta often limit the livelihood and economic opportunities for farmers seeking to take advantage of market driven opportunities. Based on the key basin-wide drivers of change (rainfall and temperature, hydropower development, land use, and sea level rise) it was found that key changes in the Mekong Delta will be an increase in flood magnitude and volume and duration, shortening of transition seasons, and increase dry season water levels. In this context it is concluded that (a) the Mekong Delta is particularly vulnerable to the impacts of climate change due to the impacts of increased flooding and sea level rise; (b) rising sea levels compounded by a shrinking delta land mass will alter the delicate balance between freshwater and estuarine conditions in the delta; and (c) groundwater abstraction in coastal area will create significant impacts on land subsidence (0.5 – 3.3cm/year) with hotspots on the Cau Mau peninsula and the central floodplain areas of Can Tho, Vinh Long, and Tien Giang.

67. The REA recommended that the MD-ICRSL project should implement measures to monitor and manage the potential regional/subregional impacts by: (a) enhancing monitoring of surface water, groundwater and fisheries in project areas during construction and operation of water control infrastructure, supported by groundwater use studies; (b) monitoring of riverbank and coastal changes to determine the effectiveness of investments in coastal protection; (c) establishing zones and flexible management for freshwater and brackish aquaculture considering participatory approach for determining operating schedules of water control infrastructure; (d) step-by-step implementation of livelihood models including agricultural extension and market services; (e) involve MONRE and other agencies to use the modeling developed for the project (MDS) for coastal erosion, salinity intrusion and the transport of sediments and nutrients to the upper delta floodplains; (f) incorporating lessons learned from ongoing WB projects in the Mekong Delta¹⁴; and (g) apply the lessons from the implementation of the three first-year subprojects into the design and operation of subprojects

¹³ The REA was conducted by a team of national and international consultants collecting information from document review as well as development of a Decision Support Framework (DSF) under the World Bank '*Building Resilience in the Mekong Delta*' project. The project, also known as DELTA (Developing Long Term Adaptation) Tools for the Mekong Delta while the DSF provides an evidence-based process for integrated regional investment decisions in agriculture, water resource and transport development in the Mekong Delta.

¹⁴ This include CRDSP- improve coastal management to protect biodiversity in mangrove areas; VNSAT- climate smart agriculture and integrated pest management (IPM); UUP- flood retention, drainage and water and sanitation facilities; Mekong Delta Water Management for Rural Development- constructing and operating water control infrastructure; Mekong IWRM- improve hydro-met and water monitoring to inform future investments.

in Phase II. Key follow-up activities may involve Project area environmental and social surveys; GIS mapping of any problem areas or hotspots; hydrological modeling to determine changes in flow in the upper delta, estuary, and peninsula; hydraulic modeling to determine effectiveness of sluices, canals and water control infrastructure; reviewing yield (t/ha), price and farm-based income for alternative cropping; and enhance flood and drought early warning systems in relation to agriculture and aquaculture in the three hydro-ecological zones.

68. The RSA¹⁵ reported that there are 9 community livelihood models in the proposed subproject areas in Dong Thap (DT), An Giang (AG), Ben Tre (BT), Kien Giang (KG), CaMau (CM), and Travinh (TV): (a) Triple rice cropping (DT, AG, BT); (b) Double rice cropping (DT, AG, BT); (c) Floating rice (AG); (d) Rice and Giant Freshwater Prawn (DT), (e) Rice and lotus (DT), (f) Rice and brackish water shrimp (KG, BT), (g) Extensive shrimp (KG, CM, BT), (g) Intensive shrimp (KG, CM, BT), and (h) Mangrove shrimp (KG, CM, TV, BT). The RSA's recommendations for livelihoods support are highlighted as follows:

- *Addressing Climate and Environmental Vulnerability* by (a) Requesting the expertise of agricultural and aquaculture specialists to review and optimize the structural works designed for supporting livelihood models; (b) Conducting water quality studies for aquaculture models, Revising Land Use Plans in Ba Tri District, and Assessing the impacts of effluent discharges from behind coastal dykes and sluices on aquaculture in the EIA; (c) Conducting studies on groundwater extraction and land subsidence in Cuu Lao Dung; and (d) developing and integrating real-time environmental monitoring tools into the livelihood component of the project and developing predictive decision support tools that can provide early warning of droughts and floods.
- *Addressing Social Vulnerability* by (a) Locating pilot livelihood demonstrations near successful models in order to change farmer's perceptions and promote farmer willingness to adopt livelihood adaptation models; (b) Reducing the market risk of over-supply by working with agribusinesses on a staged incremental approach; (c) Increasing the diversity of adaptation models, sharing and transfer lessons and experience between sub-projects, and developing organic products to diversify markets; (d) securing farmer supports by using farmer cooperatives or collective groups to implement livelihood adaptation models, starting-up capital needs to be provided to fund the livelihood investments, hiring aquaculture and agriculture specialists to support cooperatives/collective groups, mass organizations should play a central role in supporting farmers, and establishing hatcheries capable of producing high quality aquaculture seed as close as possible to the sub-project sites; (e) addressing poverty and landlessness by establishing livelihood support for the landless in the sub-project areas or extended from existing development programs by Encouraging agribusiness (particularly vertically integrated companies) companies to extend their value chains to create employment opportunities for the poor; (f) undertaking extensive public consultation and participation with farmers, water users, and key stakeholders with effective communications and extension training programs and ensure active participation of women, etc.; and (g) ensuring that the sluice gate is designed so that boats can move in and out optimally and its operational schedule for proposed sluice gates should be developed with community input.

¹⁵ The RSA was conducted by IUCN team using a combination of document review and focus group workshops and household questionnaires in the subproject areas. Reference: Mekong Delta Integrated Climate Resilience and Sustainable Livelihoods Project, Background Report for the Regional Social Assessment, Draft 14 Jan 2015

69. Key recommendations have been considered during the finalization of the Project design as well as during the preparation of this ESMF.

4.2 Potential Positive Impacts

70. The Project is expected to directly or indirectly benefit over one million people living in the three sub-regions: (a) the upper delta (An Giang, Dong Thap and Kien Giang); (b) the peninsula (Ca Mau, Bac Lieu and Kien Giang); and (c) the coastal estuary (Ben Tre, Tra Vinh, Vinh Long and Soc Trang). Additional rural and urban households and agribusiness in upstream and downstream regions also directly or indirectly benefit from the project intervention. The Mekong Delta is critical for socioeconomic development and food security of Vietnam, but it is facing a very high risk of climate change impacts and sea level rise. Adaptation to climate change in the Mekong Delta, like other vulnerable deltas, requires an integrated, multidisciplinary approach and the coordinated participation of all disciplines, sectors, and stakeholders as well as making “no regret” investments through structure and no-structure measures to address the challenges on flood, salinity intrusion, and coastal protection are necessary.

71. Key positive impacts are highlighted as follows:

- Implementation of Component 1 activities will strengthen country capacity for effective adaptation with evidence base. Updating and sharing information, knowledge, and data among stakeholders (researchers, policy makers and decision makers, planners and between administrative agencies and levels are critical for resilient decisions. Although abundant, such data, information, and research relevant to the Mekong Delta are scattered across different institutions and research agencies with no mandates for data sharing, nor for managing and systemizing knowledge about delta systems. There is also no single and open-access knowledge platform for the varied stakeholders to use for evidence-based decision making for greater climate resilience. *To enhance regional impacts, it is necessary to forge a real change in perspectives from the farm to the delta level, from short-term infrastructure-oriented solutions to longer-term adaptive management ones, and from historic climate variability to specific climate impacts.* However, this will require strong leadership and commitment of GoV as well as effective coordination among agencies and cooperation of farmers.
- Implementation of Component 2 (Managing Floods in the Upper Delta) will reduce potential negative impacts of the development of an extensive agricultural flood control system that has shifted the flood waters and also reduced the beneficial effects of flooding (including replenishing soil fertility, groundwater recharge, and sustaining aquatic eco-systems) in the proposed subproject area aiming to protect and/or reclaim the benefits of controlled flooding (flood retention) measures while increasing rural incomes and protecting high value assets. This will potentially consist of: i) modifying water and agricultural infrastructure to allow for more beneficial flooding (expanding flood retention capacity) in rural areas and offer new agricultural/aquaculture cropping alternatives; ii) providing livelihoods support measures to farmers so they have alternatives to the wet season rice crop, including aquaculture; and iii) constructing/upgrading infrastructures for protecting select high value assets. *To enhance potential regional impacts, experience from the implementation of the proposed subproject should be periodically shared and discuss with the local authorities and communities for possible replication and/or scale up.*
- Implementation of Component 3 (Adapting to Salinity Transitions in the Estuary) will assist farmers in the subproject area to enhance the benefits of brackish/saline water during dry season while avoiding further destruction of mangrove forests. To enhance

the *regional impacts*, this component has been designed to address the challenges related to salinity intrusion, coastal erosion, sustainable aquaculture and improved livelihoods for communities living in the coastal areas. The subproject investment will potentially consist of: i) construction of coastal defenses consisting of combinations of compacted earth embankments and coastal mangrove belts; ii) modification of water and agricultural infrastructure along the coastal zone to allow flexibility for sustainable aquaculture activities and adapt to changing salinity levels; iii) support to farmers to transition (where suitable) to more sustainable brackish water activities such as mangrove-shrimp, rice-shrimp, and other aquaculture activities; and iv) supporting climate smart agriculture by facilitating water use efficiency in the dry season. *To enhance potential regional impacts, experience from the implementation of the proposed subproject should be periodically shared and discuss with the local authorities and communities for possible replication and/or scale up.*

- Implementation of Component 4 (Protecting Coastal Areas in the Peninsula) will assist local authority to address the issues related to coastal erosion, groundwater abstraction, and degradation/reduction of mangrove forests while enhancing local livelihoods and where possible reduce the potential conflict between rice production (freshwater) and shrimp farming. Potential investment include: i) construction/ rehabilitation of coastal defenses consisting of combinations of compacted earth embankments and coastal mangrove belts; ii) modification of water control infrastructure along the coastal zone to allow flexibility for sustainable aquaculture activities; iv) control of groundwater abstraction for agricultural/aquaculture and development of freshwater supplies for domestic use; v) support to farmers to practice more sustainable brackish water activities such as mangrove-shrimp and other aquaculture activities; and vi) supporting climate smart agriculture by facilitating water use efficiency. *To enhance potential regional impacts, experience from the implementation of the proposed subproject should be periodically shared and discuss with the local authorities and communities for possible replication and/or scale up.*
- Moreover, the project *will also increase employment or livelihood benefits from employment of local people*. Contractors will use local laborers for simple works such as smooth the road, moving soil, give priority to poor families, female householders, woman if they need jobs. It aims to raise their income, create more jobs and contribute to hunger elimination and poverty alleviation for community. But this impact will be minor because the number of local workers who have qualified skills that satisfy requirements of work is not many. The local workers can mainly implement some simple tasks such as material transportation.
- Implementation of the GEF Component will help strengthen research capacity, and encourage innovation to build climate resilience of agriculture and aquaculture livelihoods, and reduce greenhouse gas emissions for selected provinces in Vietnam's Mekong Delta.

4.3 Potential Negative Impacts

72. Implementation of the Project will also create potential negative impacts during preconstruction, construction, and operations and effective implementation of mitigation measures will be necessary to avoid creating adverse impacts on local communities and environment. Key generic impacts are highlighted in the following paragraphs while specific impacts and mitigation measures for each subproject will be prepared as part of the ESIA preparation for the subproject.

(a) During preconstruction phase:

73. From the social prospective, the main negative impacts of the Project would be appropriation of the lands for structure. These impacts are considered significant, long term, unavoidable, and need to be mitigated through effective consultation and adequate compensation. The project sites do not include physical cultural properties; however throughout the implementation of subprojects, a relocation of graves would be necessary. However, relocation of the graves is not uncommon issue in the infrastructure projects in the Mekong Delta, and it would not be an issue if proper procedures, including compensation, restoration, and undertaking of reburials are conducted in agreement with affected households. This suggests a preparation of graveyard removal plan during the implementation of individual subproject. While a number of households may be affected, there are few permanent relocation needed, and the mitigation can be carried out at the subproject level. Affected on ethnic minorities, mainly Hoa (e.g. Chinese originated) and Khmer people in Tra Vinh, An Giang provinces would be of small scale. Mitigation of these impacts will be made through effective implementation of RPF/RAP and EMPF/EMDP of the subproject. Main impacts would include:

- *Loss of land:* Total permanent land acquisition is estimated at 1,250,654 m² (respectively 132,240, 1,100,00, 680 and 17,734 in Kien Giang, An Giang, Ben Tre and Tra Vinh/Vinh Long sub-projects). Temporary land acquisition, for the purpose of work space during construction, is estimated at 274,253 m². It is estimated that the total number of household affected by these subprojects is 825 (respectively 58, 752, 2 and 13 in Kien Giang, An Giang, Ben Tre and Tra Vinh/Vinh Long sub-projects), of which 70 HHs (respectively 58 and 12 in Kien Giang and Tra Vinh/Vinh Long sub-projects) will need to be relocated. Vulnerable groups (poor, women head of households, disabled head of households) are also present and will receive special assistance. Basedon the above, social impacts are significant for the An Giang and Kien Giang sub-projects and not significant for sub-projects in Ben Tre and Tra Vinh/Vinh Long. Minor impacts on Ethnic Minority are expected for these 4 subprojects and Ethnic Development Plan (EMDP) will be prepared as appropriate. RAP will be prepared in line with WB OP/BP4.12.
- *Ethnic minority:* Of the 4 sub-projects selected for the first year implementation, two (Kien Giang and Tra Vinh/Vinh Long) have EM peoples present in the subproject areas. Most of the EM households are Khmers and a little Hoa and Cham. Among the three groups, the Khmer is the poorest and most vulnerable group, followed by the Cham while the Chinese have an equal standing with the Kinh. Khmers make up a large proportion of the poor and landless, and often work as hired laborers on the rice and aquaculture farms as well as collecting natural aquatic resources to sell to aquaculture farmers as feed stock for shrimp. In both subproject, no EM will be affected through land acquisition and no adverse impact is anticipated during subproject preparation. However, with the proposed investments EM households, as Kinh, may have to adapt or change their current livelihood models. Being more vulnerable than Kinh, due to high rate of illiteracy and low skills, these groups (especially the Khmers) will need additional support.
- *Safety risk due to UXO.* One of the ongoing consequences of the War of the 1960s and 1970s is unexploded ordnance (UXO). UXO is uncovered throughout Viet Nam and there are casualties from accidents involving these materials. Mortar shells, aerial bombs, and other unexploded ordnance may all be found within the Project Area. Of particular concern is the hazard posed by unexploded ordinance left from war, if the

construction work will require entering into previously undisturbed areas in the construction sites. Unexploded Ordnance (UXO) may be concerned for some subprojects. To mitigate the risk, the subproject owner will contact the GoV agency responsible for UXO clearance to assess the risk and provide confirmation on UXO safety before any construction/survey could be conducted.

(b) During construction phase

74. During construction, potential negative impacts on the local environment and the community will be moderate, localized, temporally, and could be mitigated and/or reduced. Main impacts will include increases in air pollution, noise, vibration, water pollution, waste generation, land and temporary interference with waterway transport, safety risks, and potential disturbance to local residents and other social impacts. Main sources of impacts will be due to preparation of land (clearance and land filling); transportation of materials and construction equipment, excavation of soil; construction of sluice gates; dike and embankment; installation of over-sludge structural bridges; and activities of contractor staff and workers at the work site and/or work camp. Key specific issues may include:

- *Impacts on biodiversity and landscape.* Land clearance activities, dredging digging, excavating, waste, domestic water waste may effect to biodiversity and landscape.
- *Sedimentation and temporary and permanent drainage.* Surface erosion and erosion of materials and soil piles and the sediment carried in surface run-off from work sites can cause small to moderate adverse impacts on land and water bodies close to these sites.
- *Acid Sulfate Soil (ASS).* Excavation for construction of sluice gates and dredging of canals may expose acid sulfate soil; however, acid from ASS may not be a serious problem along the project alignments. Should acid soils be encountered they could seriously affect the surrounding land through acidic run-off from the removed soil. The acid may kill soil dwelling organisms, plants and fish. Sediment in the run-off from stockpiles may smother adjoining farmland when improperly stockpiled during the wet season and emit foul odor that may cause nuisance to nearby residents. The acid can also produce aggressive soil conditions detrimental to concrete and steel.
- *Wastes.* Construction generates many different types of waste each requiring different methods to ensure its proper management. Waste can pose threats to the environment, may contain chemical or biological elements injurious to health and living organisms, and impairs aesthetics. Waste types under the project include: (i) Wastes from construction site preparation (cut-down trees and vegetables, demolished debris); (ii) Domestic solid wastes from worker camps (kitchen waste, food waste, dirty paper, ashes, etc.); (iii) Sewage and grey water; (iv) Hazardous waste (chemicals, paint waste & containers, waste oil, oily rags); and (v) dredged materials.
- *Interruption in irrigation and/or domestic water supply.* Water supply interruption is likely during construction. This effect occurs due to constructions of sluice gates, spillway, and embankment. Most of the residents in the local living in rural areas and base on agricultural practices and aquatic cultivation. Therefore, the interruption of water irrigation is the main issue to the local person and leads to reduce their incomes. The impact is assessed small to moderate level and only occurs during construction and can be overcome or mitigated.
- *Risks to health and safety of local people and construction workers.* Dust, air pollutants, disease, accidents at work and traffic has direct effects on health of workers and local residents. Material transport and construction activities on the existing road may create

the risk of effects on traffic safety and houses structure on road sides. Sewage from construction activities and domestic use of workers. This causes some respiratory diseases for local people as well as workers. Accidents may occur if during the construction, workers are not provided with safety equipment and obey construction regulations.

- *Local traffic may be disturbed during construction.* There are waterway transport network in the project area which can be disturbed during construction of the sluice gates and canal dredging. During consultation with local authorities and peoples, there are concerns on the need for construction of temporary bridge and/or bypass road during dredging would be needed.
- *Noise and air quality issues.* Earthmoving activities and operation of machineries in the construction sites will generate dusts and exhaust fumes. Construction activities, operation of heavy equipment will produce noise and vibration and will be a nuisance to residents near the site. During the construction phase, dust will be generated by material transportation, clearing, grading, excavation, leveling, truck hauling, stockpiling, waste disposal, road development. In addition, the emission is also expected from construction machineries and transportation vehicles, especially during dry season. Noise will be produced by vehicular movement, excavation machineries, concrete mixing and other construction activities. It contributes an inconvenience condition to the people living around the sites and to the workers. The impacts are likely to be moderate. But these impacts are most likely to be reduced by applying an appropriate mitigation measures.
- *Possible spread of communicable diseases.* Many of the construction workers would likely come from other areas of the country and may bring in new diseases. They are also vulnerable to local diseases. Survey results to the first phase subprojects suggested that at present about 13% of the households around the construction site have problems with their health. According to the result of social survey data (medical sector) in the areas, local households of about 373,000 have problems of breathing, diarrhea, skin diseases, HIV, hepatitis higher than previous years. Water, air, or contacts between worker and local person are most likely. The additional work force in the construction site may cause spreading of communicable and sexually transmitted diseases such as HIV/AIDS. Domestic waste generates from the camping site and constructing site without proper management and treatment is the main issue to local health (mosquitoes, flies). The hazardous material such as termite chemicals, oil leaking can direct affect to and water resources.
- *Loss/Alteration of culturally significant areas (if any).* Damage or destruction of newly discovered sites by chance may result from construction and transportation related activities. During clearing activities, there is also the potential of discovering unknown archaeological, historical or cultural site as well. A chance finds procedures has been prepared and included in the ESMF for subproject application.

(c) Potential impacts during operation phase

75. *Impacts on water quality, safety, and waterway traffic interruption during operation depending on type of infrastructure and (design) of sluice and its operation schedule/procedures.* Size of the sluice has been calculated to assure not only effective management of irrigation system (provide adequate water supply while reducing water level difference) and economically viable but also guarantee for sufficient discharge of waste and flooding water during the rainy season. Adequate operation and maintenance (O&M) of

sluices and effective communication and consultation with water users upstream and downstream of the sluice gates are therefore critical for effective water supply service as well as ensuring acceptable water quality to key water users and reduce potential water use conflicts.

76. *Impacts on increasing use of agrochemical*. Providing more freshwater for rice irrigation upstream would increase the use of agrochemicals causing impact on water quality and aquatic life in the subproject and upstream area. GoV has been promoting a number of integrated pest management (IPM) practices to reduce the use of pesticides and agrochemicals both for rice, fruit, vegetable, and shrimp farming. Promotion of the IPM practices will be continued and Project will support necessary training and scale up of the activities found to be effective in the Mekong Delta. A Pest Management Framework (PMF) has been prepared and it will be applied for the subprojects and/or activities that promote the use of toxic agrochemical to be implemented under Components 2, 3, and 4.

77. *Impacts of solid waste generation*. Solid waste from production such as: sludge from shrimp or fish farms; hazardous wastes as pesticide containers; agricultural residues could be created from project's activities.

78. *Potential impacts on structure damage, landslide, soil erosion and sedimentation*. In some areas, structure will be flooded on some time which could damage the structure components and then shorten their life time. Unproper operation of sluice gates may cause erosion or landslide in upstream and sedimentation at before and behind the sluice gates.

79. *Increase of water use conflict due to unproper sluice gate system management*. If the operation of the sluice gate system doesn't work properly, it can lead to increase of water use conflict. Especially, those impacts will become more serious when the extremely changes of climate occur. Change in water quality may also induce impacts on change in water uses as well as changes in land uses and livelihoods of local people and may affect the poor.

80. *Potential risks of project*. The project when put in operation which can be facing with environmental risks such as: epidemic of fish or shirmp desease, structure damage, loss of economic due to disasters or extreme climate events, market failure due to over production and unstable demand markets. Promoting aquacutlure farmings/activities in coastal area may create some be some risks on socioeconomic condition of poor farmers and ethnic minority as well as create nagative impacts on mogrove destruction and increasing water pollution if they area unmanaged.

81. The potential risks under the GEF Component would be inadequate, bias, or flaw analyses resulting on inaccurate finding and recommendations for tackling the issues of climate-smart and climate-resilience livelihoods, ecological based adaptations, salinity intrusion, coastal erosion, and water pollution. However, these risks are assessed as small.

4.4 Summary of regional impacts

82. As mentioned in the REA and RSA reports that the impacts of upgrading and constructing new infrastructure and dredging are likely to only have local or subregional impacts and can be managed through subproject safeguard instruments and environmental and social management plan (ESMP). Key impacts are summarized below while the guideline for the assessment at subproject level are provided in Annex 3 (b) and Annex 3 (c):

- Installing water/flood control structures in the upper delta will change the hydrological flow and is likely to have major positive regional impacts by increasing flood retention and restoring floodplain ecosystems and agriculture. Hydrological and hydraulic modeling is needed to determine the extent of flood protection in wet and average years.

Flooding will provide nutrients and sediment in the wet season reducing the use of fertilizers and pesticides. Under the new livelihood models farmers will be transitioning from triple rice cropping to double rice plus crops and aquaculture. This will be a step-by-step process that includes agricultural extension, access to markets and sustainable agricultural practices. Surface water monitoring will be important to detect whether the use of agro-chemicals, fertilizers and pesticides has increased or reduced in the project areas.

- Installing water/salinity control structures in the estuary and peninsula will have major positive impacts by increasing protection from coastal erosion, and minor negative regional impacts by blocking the movement and migration of coastal and estuarine fisheries in the in-field rivers of the Delta. The loss in capture fisheries may be offset by increasing the areas mangroves, which in combination with improved coastal management should increase biodiversity. Additional fish studies and bio-monitoring undertaken in the project areas. The combination of mangroves and sea dikes will also provide positive benefits by reducing the damages caused by storm surges and sea level rise.
- The operation of the sluice gates will need to be flexible, and incorporate hydrological modeling and surface water monitoring of salinity to determine zones for freshwater, brackish and saline farming. The operations and zones may need to be altered depending on wet, average or dry years. For example, the provinces of Vinh Long are impacted by salinity in dry years.
- The development of livelihood programs in the Delta Estuary should help farmers to transition to adapt to salinity intrusion and improve climate resilience. A step-by-step process is needed as some high value agriculture (i.e. sugar cane) in the estuary earns higher income and provides more employment opportunities than aquaculture and shrimp farming. The livelihood models will need to provide support to Khmer and other ethnic groups. Promoting sustainable aquaculture, extensive shrimp and mangrove-shrimp should lead to reduced groundwater abstraction and surface water pollution associated with intensive shrimp. Groundwater use studies and surface water monitoring is required to confirm this during and after the implementation of the project.
- Constructing the reservoir in Ca Mau and improving water and sanitation facilities in the delta peninsula is likely to have major positive regional impacts. Dry season freshwater shortages and access to water and sanitation are critical challenges in coastal areas. The reservoir, if operated effectively, and complemented by climate smart agriculture should reduce the exploitation of groundwater. Dam safety measures and further hydrological and hydraulic modeling is required to enhance the benefits and reduce any negative impacts during construction and operation of the reservoir.
- Overall the subprojects are designed to have positive environmental and social impacts and monitoring changes during construction and operation of water control infrastructure and livelihood models is required. The additional surface and groundwater monitoring and assessing changes in coastal and riverbank erosion under Component 1 will be important for measuring and managing the long term regional impacts of the subprojects 2, 3 and 4. The implementation of subprojects in Phase I will provide important insights into the design and safeguard instruments for the Phase II subprojects.
- The World Bank is also investing in a number of climate resilience, sustainable agriculture, sustainable coastal management and IWRM projects that provide important linkages to the MD-ICRSL. These investments and the relevance to the MD-ICRSL are described in the next section.

5. MEASURES TO MANAGE ENVIRONMENTAL AND SOCIAL IMPACTS

83. To mitigate the potential impacts during construction, taken comments from the local authorities and local community on negative impacts due to construction into account, the Project will closely supervise and monitor performance of contractors and ensuring that the contractors conduct the subproject activities according to the international practices for engineering and construction practices. A generic Environmental Code of Practice (ECOP) has been prepared as an annex of the ESMF and it will be included in the bidding and contract documents. The contractors will also be required to prepare Site ESMP (SEMP) for subprojects including setting up a grievance redress mechanism (GRM) and initiate and maintain close relations and consultation with local authorities and community. The subproject owners will also hire qualified consultants to conduct periodic monitoring and reporting on contractor performance as well as and safeguard issues and actions undertaken during the subproject implementation. To accommodate construction of small works (such as small office and water quality monitoring), a simplified ECOP has also been prepared. To mitigate the potential impacts during operation of sluice gates, specific plan will be prepared and finalized in consultation with local communities to ensure that sluice operations are acceptable to local authorities and communities. Safeguard training and technical assistance will also be provided during the implementation of the MD-ICRSLP. (Consider mitigation measures for Comp 1, then Comp 2, 3, 4)

(a) Mitigation measures for land acquisition, relocation, and ethnic groups

- *Land Acquisition.* The impacts of land acquisition and resettlement are considered moderate and efforts will have to be made to avoid/reduce the need for land acquisition and/or relations, and if unavoidable, the affected people will be adequately compensated in line with the Bank safeguard policy. A RPF has been developed in close consultation with local agencies and affected people, and specific policy and procedures has been finalized, including those related to grave relocation. Specific mitigation measures for land acquisition are addressed in the respective subproject RAP and in line with the policies and principles set out in the project RPF. RAPs for the first year subprojects have also been prepared, including compensation and grave relocation.
- *Relocation of graves.* During the preparation of the four subprojects, graves were identified affected. Relocation of individual graves would be carried out by households whose graves are affected (as a practice in Vietnam). Rituals for relocation of graves may be different among Kinh, and ethnic minority peoples. Affected households will receive compensation payment to conduct the relocation on their own. Payment to the grave relocation includes costs of excavation, relocation, reburial, purchasing land for reburial (if any), and all other reasonable costs associated with necessary rituals by the local practice. Local ritual means relocation of graves will be carried out in accordance with local cultural practices, taking into account cultural preferences which are typical for each ethnic group. Where graveyard - owned collectively by ethnic groups, are affected, appropriate consultation with affected groups will be conducted during social assessment under respective subproject to work out solutions acceptable to affected ethnic minorities. Relocation of graves will be done satisfactorily to the affected households prior to the commencement of construction. Grave relocation and compensation will be documented in respective subproject RAPs and Ethnic EMDPs based on the consultation with affected households and ethnic minority peoples during project implementation.
- *Ethnic Minorities.* The Project will involve ethnic minority and an EMPF has been prepared in line with the WB policy. EMDPs for the first year subprojects, which involve ethnic minority people, have been prepared.

(b) UXO risk.

84. Safety risk related to UXO is considered moderate since most of the subprojects will involve existing infrastructure with very limited number of new construction (some small rescue roads). However, UXO risk assessment will be conducted for all the subproject sites and UXO clearance (if needed) will be carried out by qualified agencies. Construction activities will not be allowed prior to UXO clearance.

(c) Mitigation measures during site clearance and construction stage

85. The project screening and ESIAAs of the first phase subprojects concluded that most of the key impacts will occur due to limited civil works and transportation of construction/waste materials. All of the potential negative impacts on physical, biological, and social environment could be mitigated through a set of general measures that are typically applied to most of construction projects to minimize impacts such as noise, dust, vibration, waste generation, traffic hindrance, public safety, etc. In this context, an ECOP has been prepared describing specific requirements to be carried out by contractor to mitigate the potential impacts considered to be general impacts(see Annex 4). The contractor will also be required to mitigate site-specific impacts which will be identified to address issues specific to the subproject.

86. The ECOP which is part of the ESMP describes typical requirements to be undertaken by the contractors and supervised by the construction supervision engineer during construction. They have been designed for this project to be applicable to the range of small to medium sized civil works. Relevant clause of the ECOPs will be included as an annex in the bidding and contract documents during detailed design stage. Scope and content of the ECOPs is as follows:

87. Scope: Construction activities for small works governed by these ECOPs are those whose impacts are of limited extent, temporary and reversible, and readily managed with good construction practices.

88. The typical mitigation measures have been identified for the following aspects:

- Dust generation
- Air pollution
- Impacts from noise and vibration
- Water pollution
- Drainage and sedimentation control
- Management of stockpiles, quarries, and borrow pits
- Solid waste
- Management of dredged materials
- Disruption of vegetative covers and ecological resources
- Traffic management
- Interruption of utility services
- Restoration of affected areas
- Worker and public safety
- Communication with local communities
- Chance findings

89. For each subproject, there will be site-specific impacts that require site-specific measures both during construction and operation stages such as site-specific mitigation measures for UXO clearance, for impacts on irrigation canals, agricultural and aquaculture activities, and those related to ancillary and associated facilities at the subproject level such as disposal sites for dredged materials, quarries, access roads, etc. These measures are to be identified in the ESIA and incorporated into the subproject ESMPs. These specific measures

should be used in conjunction with relevant government technical regulations and the ECOP of the subproject.

90. Monitoring of environmental quality during construction can be useful in ensuring adequacy of the mitigation measures being implemented by contractor. However, the monitoring parameters, locations, and timing should be designed in line with the subproject activities, locations, and nearby water uses. The ESMP will clearly define the need for environmental quality monitoring with specific locations, monitoring parameters, frequency, and an estimated cost.

(d) Measures to address impacts during operation phase

91. The measures to mitigate the main impacts during operation of the subprojects would also be included in the designing phase to avoid and minimize impacts on local waterway transportation, community health risks associated with exposure to biochemical used in the aquaculture demonstration models. Possible induced negative impacts during operation of the facilities, especially sluice gates; potential negative impacts on mangrove and water quality in coastal area; and possible socio-economic impacts on poor farmers due to the technical, management, and financial risks associate with aquaculture farming and/or activities should also be considered. A capacity building will need to be developed and implemented technical staff and community who would be involved in operation of the sluice gates and sustainable livelihood models.

(e) Mitigation Measures for Component 1 Activities

92. As mentioned before the potential negative impacts of component 1 will be limited to very small civil works of construction of the Mekong Delta Center and installing water resources monitoring stations, and the potential impacts can be mitigated through adoption and implementation of a simple ECOP, which is included in Annex 3. It will be applied to all the bidding and/or contract documents of the activities to be implemented under Component 1.

93. Any Technical Assistance (TA) activities under Component 1 and the GEF Component will be reviewed for their potential environmental and social implications, risk and impacts and therefore, subject to Bank safeguard policies when applicable. The Bank is responsible for reviewing the TORs for the research and studies under the AF component for the screening; environmental categorization and the selection of safeguard instruments of each proposed TA and GEF activity. Processing the TA and GEF will follow the interim guidelines of the Bank's Operations Policy and Country Services, Operational Risk Management (OPSOR), effective January 2014: "*Interim Guidelines on the Application of Safeguard Policies to Technical Assistance (TA) Activities in Bank-Financed Projects and Trust Funds Administered by the Bank*".

6. PROCEDURES FOR REVIEW, CLEARANCE, AND IMPLEMENTATION OF SUBPROJECT SAFEGUARD INSTRUMENTS

6.1 Objective and Approach

94. Main objective of the ESMF process is to ensure that the subprojects and other project activities to be financed by the MD-ICRSLP will not create adverse impacts on the local environment and local communities and the residual and/or unavoidable impacts will be adequately mitigated in line with the WB's safeguard policies. The ESMF comprises 4 steps and the process is schematically shown in *Figure 5.1*. This section briefly describes key steps while more details are provided in annexes. *Table 5.1* summarizes the application of annexes in the ESMF process.

- Step 1: Safeguard screening and impacts assessment;
- Step 2: Preparation of safeguard documents as required including development of mitigation measures and public consultation;
- Step 3: Safeguard clearance and information disclosure; and
- Step 4: Implementation, monitoring, and reporting.

95. The first phase subprojects of Components 2, 3, and 4 have gone through the first two steps and the subproject mitigation plans (RAPs, EMDPs, ESAs and ESMPs) have been prepared and they will be submitted to WB for public disclosure and clearance. The safeguard screening, impact assessment, and preparation of safeguard documents for all subprojects to be implemented during the second and follow-on phases will be carried out during the Project implementation and the safeguard documents (RAPs, EMDPs, ESAs and ESMPs) will be submitted for WB clearance before their approval and implementation.

37. Small works to be carried out under Components 1 and 5 will incorporate the simplified ECOP in to the bidding documents and consultant contracts and contractor performance will be closely monitored by field engineers.

Table 5.1 Applications of ESMF Annexes

Annex	Content	Application
2	Safeguard Screening, Checklist, and Forms	All subprojects and activities
3	Guideline for Subproject ESIA/ESMP Preparation	All subprojects
4 (a)	Environmental Code of Practice (ECOP)	All civil work contracts
4 (b)	Simplified ECOP	All small works contracts
5	Pest Management Framework (PMF)	All subprojects related to irrigation and agriculture production including aquaculture and shrimp farming
6	Sample Grievance Registration Form	All subprojects
7	Organization and Reporting	Whole project

6.2 Safeguard Screening and Impact Assessment

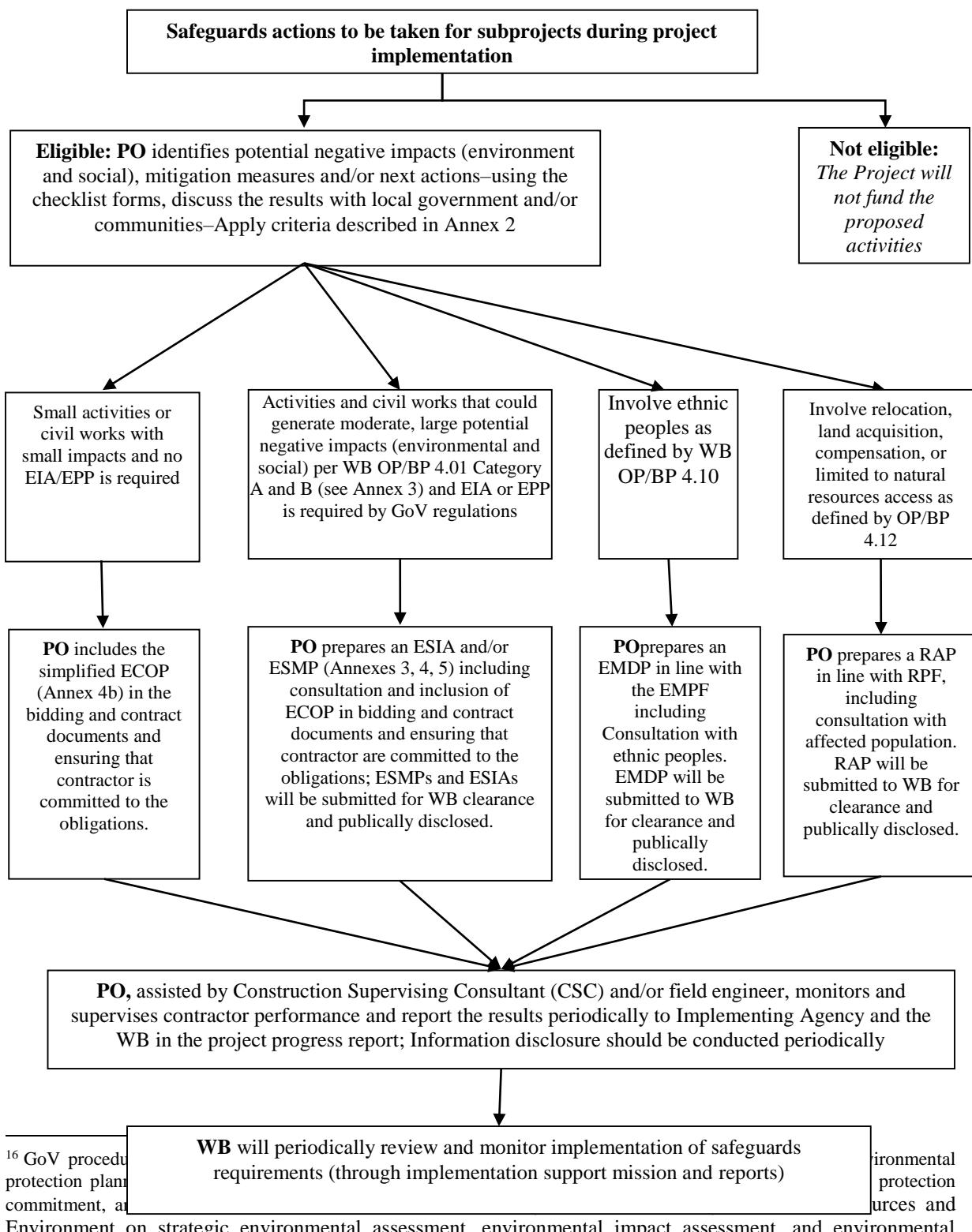
96. This step (Step 1) aims to confirm the eligibility of subproject and/or activities to be financed by the Project as well as identify the potential environmental and social impacts of the subprojects/activities including categorization of the subproject into A, B, or C, identification of WB safeguard policy to be triggered, and identification of safeguard documents to be prepared in as required by OP/BP 4.01, OP/BP 4.10, and OP/BP 4.12 (see details in Annex 2). PMU/MONRE, CPMU/MARD, and PMU/MPI will be responsible for signing the screening form for Component 1 while CPMU will be responsible for the Component 2, 3, and 4 subprojects. Consultation with WB safeguard specialist for a complex subprojects will be made as needed.

6.3 Development of Safeguard Documents

97. This step (Step 2) aims to prepare safeguard documents in line with the issues identified in Step 1. Guideline for the preparation of ESIA and ESMP are provided in Annex 3 while those for RAPs and EMDPs are provided in RPF and EMPF respectively. PMU/MONRE, CPMU/MARD, and PMU/MPI will be responsible for preparation of safeguard documents for Component 1 while CPMU and/or PPMUs/ICMB10 will be responsible for their owner subproject under Component 2, 3, and 4. Consultation with WB safeguard specialist for a complex subprojects will be made as needed.

98. It is also necessary that PMU/MONRE, CPMU/PPMUs, ICMB10 will also prepare documents (EPP, EIA, etc.) as required by the GoV EIA regulation¹⁶ and secure approval of responsible agencies.

Figure 5.1. Schematic Flowchart for Safeguard Actions for Subprojects [PO means project owner]



6.4 Review, Approval, and Disclosure of Safeguard Documents

99. **WB review and clearance:** Before approval and commencement of subproject works, all safeguards documents of the subproject will be submitted to the WB for safeguard clearance and public disclosure. For the MD-ICRSLP, WB will review the ESIAAs of all category ‘A’ subprojects and also the ESIA or ESMP of first subproject (irrespective of category) of each province. However, this approval process will be reviewed from time to time and once the safeguard capacity of the implementing agencies (IA) has been built with the support of the environmental and social safeguard consultants, the WB will randomly review some ESIAAs.

100. All safeguard documents will be posted in the official website MARD and the project provinces and hardcopies will be available at CPMU, PPMU/ICMB10 and the subproject site in Vietnamese. A notification will be published about the disclosure and comments will be sought within one month of the disclosure date. The English and Vietnamese version of the ESIA will be disclosed in the VDIC of the World Bank office in Hanoi and English version of category ‘A’ subproject will be disclosed at the Infoshop of the WB.

101. **Government approval:** The WB also required that the ESIA or EPP documents as required by the GoV will be approved by responsible agencies. The ESIA in Vietnamese as well as the approval conditions will be provided to the Bank for information. The ESIA report and approval condition will also be disclosed to the public.

6.5 Implementation, Supervision, Monitoring, and Reporting

102. Safeguard implementation, supervision, monitoring, and reporting is an integral part of the Project and subproject implementation and specific safeguard staff will be assigned to be responsible for the activities. The WB safeguard specialists will also supervise and monitor the implementation of safeguard as part of the WB implementation support mission. Details on responsibility of agencies are described below.

103. **WQ monitoring and networking:** To avoid potential land/water use conflicts during wet season and dry seasons, in addition to the technical training mentioned above, awareness creation and consultation mechanism/network on potential water quality issues during construction and operation of sluice gates should be established. The activities should be participated by staff from local authorities; provincial and district Environment Officers; Technical staff of MARD, CPO, CPMU, PPMU and their environmental and social consultants (including extension staff); representatives from local NGOs, Cooperatives and Associations; and community mass organizations such as Social Groups, women’s Unions, youth unions. A number of study visits should also be carried out to enhance the potential positive impacts of the Project, specialized training program and/or a series of study visits among local agencies and communities to exchange knowledge and experience on critical environmental issues and sustainable agriculture in the Mekong Delta (such as coastal erosion, plantation/rehabilitation of mangrove forest, promotion of sustainable shrimp farming and/or aquaculture, etc.). At least the study visits should be conducted at least 1 time per year during year 3 to year 6.

7. IMPLEMENTATION ARRANGEMENTS

7.1 Responsibility for ESMF Implementation

104. In line with the implementation arrangement discussed in Section II, the Project owner and subproject owner considered as the implementing agency (IA) are responsible for implementation of the ESMF (see *Table 6.1* in Annex 7).

105. At Project level, for Component 1, PMU of ICD/MONRE, PMU/MPI will be responsible for ensuring effective application of ESMF for all activities. For Components 2, 3, 4, and 5 CPMU will be responsible for overall planning and supervision of safeguard activities including hiring of qualified national environmental and social safeguard consultants (individual or firm) to provide safeguard training and technical assistance including supervision, monitoring, and reporting of safeguard to the World Bank every 6 months. CPMU will also mobilize a qualified national firm to be an Independent Monitoring Agency for RAP (IMA) which is mandatory for OP/BP 4.12.

106. At subproject level, the subproject owners (ICMB10 and PPMUs) will be responsible for hiring of a qualified national consulting firm to prepare safeguard documents (RAP, EMDP, ESIA, ESMP) including finalization of ECOP, secure WB clearance of safeguard documents and approval of GoV, and effectively implement the ESMP. A qualified national consultant firm (called the Environmental Monitoring Consultant or EMC) will be hired to assist during the implementation of the ESMP including monitoring of environmental quality and preparation of safeguard report to CPMU. The subproject owner will also ensure that the final design has incorporated measures to mitigate potential negative impacts during construction and operations and that ECOP is incorporated into the bidding and contract documents and the contractor are aware that the safeguard management actions are part of the contract cost.

107. After the approval of the ESIA/ESMP, the subproject owner is responsible for ensuring that the ESMP is effectively implemented and that for all works contract, the ECOP are included in the Bidding Document and Contract Document and that contractor is aware and committed to effectively implement ECOP and the cost is part of the contract cost. Before construction, the subproject owner will assign the Construction Supervision Consultant (CSC) and/or field engineer to be responsible for day-to-day supervision of contractor performance on safeguard and report the results in the subproject progress report. CPMU/ICMB10/PPMUs will work closely with DONRE during implementation of the subprojects. CPMU which is responsible for overall implementation of the Component 2, 3, and 4 subprojects will ensure that the ECOP has been included in the bidding document and the subproject owner is effectively implemented the ESMP and adequate budget has been allocated.

7.2 Reporting Arrangements

108. The safeguard performance will be included in the subproject and Project progress reports PPMUs/ICMB10 with assistance from the CSC will submit safeguard performance at subproject level to CPMUs on a monthly basis. At the project level, CPMU will prepare safeguard performance report twice per year for submission to the World Bank describing the Project progress and compliance with the ESMF and other safeguard requirements. The reporting requirement is described in *Table 6.1* below.

109. The progress report submitted to the CPMU must include sufficient information on subproject implementation progress and implementation and/or issues related to ESMF/safeguards. The progress report for CPMU to be submitted to WB must have adequate information regarding: i) preparation and disclosures of environmental safeguards instruments for subprojects; ii) incorporation of new subproject ESMPs in the bidding and contractual documents; iii) monitoring and supervision of ESMP implementation by the contractor, the

construction supervision engineer, and the PPMUs; iv) any challenges in safeguard implementation, solutions, and lessons learned.

Table 6.1 Reporting Procedures

	Report Prepared by	Submitted to	Frequency of Reporting
1	Contractor to the Employer	PPMU/ICMB10	Once before construction commences and monthly thereafter
2	Construction Supervision consultant (CSC)	PPMU/ICMB10	Weekly and monthly
4	Community Monitoring	PPMU/ICMB10	When the community has any complaint about the subproject safeguards implementation
5	PPMU/ICMB10	CPMU	Monthly
6	CPMU	WB	Every six-month

7.3 Incorporation of ESMF into Project Operational Manual

110. The ESMF process and requirements will be incorporated into the Project Operation Manual (POM) and CPMU will provide training to ensure that the subproject owner (PPMU and ICMB10) understand them as well as will supervise and monitoring the ESMF implementation periodically. The safeguard section in the POM will also make reference to the ESMF annexes as needed.

8. CAPACITY BUILDING, TRAINING, AND TECHNICAL ASSISTANCE

8.1 Institutional Capacity Assessment

111. PMU/MONRE is new to WB financing project and safeguard requirements however most activities are technical assistance and small works and safeguard risk is not high. For the subprojects under Component 2, 3, 4 will involve major infrastructure and non-structural measures and has high safeguard risks. At project level, CPO/CPMU of MARD (for irrigation) with assistant from national consultants has extensive experiences in preparation and implementation of international and national investment projects¹⁷. Safeguard activities and preparation of documents is the responsibility of the Resettlement and Environment Division (ESD) of CPO will consult and implement environmental and social safety policies of CPO. The ESD has 09 staffs with their major as hydrology-environment, environment and social. The staffs have experienced in the preparations and implementation for environmental and

¹⁷ There are 09 large projects funded by the World Bank, 07 projects financed by ADB, 04 projects funded by JICA and 01 projects cooperated which Korean Exim Bank financing. Within 5 years, CPO has successfully prepared 04 projects that's funded by the World Bank, include: Vietnam Water Resources Assistance Project (WB3), done in 2013, disaster management project (WB5), Irrigation Management serves rural development in the Mekong River Delta Project (WB6) and irrigated agriculture improvement project (WB7). The projects (WB3, WB5 and WB7) related to the reservoir and dam safety are under implementation.

social safety policies. The staffs of the department are participating in short-term training courses on the environment, society specialized workshops in the overall training program which conducted by World Bank, ADB and internal department. However, due to increasing requirements on the management and implementation of safety environmental and resettlement policies, the staffs of CPO still need to improve their knowledge and skill as well as languages proficiency to meet the conditions. However given limited English writing capacity, assistant from international consultants will be necessary for preparation of safeguard documents and reports that could meet expectation of international financing agencies.

112. At subproject level, CPMU, ICMB10, and PPMUs of An Giang, Kien Giang, Ca Mau, Bac Lieu, and Soc Trang provinces may have some experience with WB safeguard requirements however their capacity remain limited. Moreover, most national consultants and local authorities also do not have adequate knowledge on WB safeguard requirements therefore safeguard training program will be necessary during the implementation of the Project. For CPMU, it is expected that at least two senior safeguard officers of ESD/CPO (one for social and one for environment) will be assigned as safeguard officers while there is one junior fulltime safeguard officer at CPMU in Can Tho with some experience on implementation of safeguard. It is anticipated that CPO/CPMU safeguard staff are capable of provide training on the ESMF process, RAP, and EMDP preparation however assistance of national qualified specialists will be necessary to enhance their capacity to adequately address specific social and environment issues and scope of the safeguard documents.

8.2 Training and Technical Assistance

113. During implementation of MD-ICRSLP, safeguard training and technical assistance will be provided both for PMU/MONRE as well as CPMU and PPMU/ICMB10. During the first 3 years CPO/CPMU will conduct at least 2 safeguard training workshops (one on environment and one on social) per year during the first 3 years to the subproject owners and PMU/MONRE regarding the ESMF process and needs for preparation of safeguard documents, especially those related to ESIA/ESMP/ECOP, RPF/RAP and EMPF/EMDP. WB safeguard specialist will participate in these training workshops as much as possible. Safeguard technical training on issues and other related aspects including study visits will also be made at least 1 time per year for the following years.

114. Priority for training should include, but not limited to, the followings:

- (i) The ESMF process and guidelines for preparation, implementation, and supervision of safeguard instruments (RAP/RPF, EMDP/EMPF, ESMP/ESIA) designed for the Project and subproject;
- (ii) Specific training on RAP and EMDP planning and implementation including the application of GRM that could be effective in responding to local complaints;
- (iii) specific training on supervision and monitoring of contractor performance, including forms and reporting process including basic knowledge on health, safety, and good construction practices for reducing potential impacts on local environment and local peoples, including communication and GRM procedures and other social issues related to HIV/AIDs and other communication diseases, etc;
- (iv) specific training on IPM especially on safety use and disposal of pesticides, herbicides, and other toxic chemicals being used in rice production, aquaculture, and shrimp farming and other IPM practices; and

- (v) specific training on operation of sluice gates with active participation of local authorities and community to avoid/minimize potential negative impacts on water users.

115. Specific target groups for the key training for a beginning program include:

Table 7.1: Safeguard training at the beginning of MD-ICRSLP implementation

No	Contents	Target Groups for Training
1	RPF and EMPF including RAP and EMDP preparation	CPMU, PPMUs, ICMB10, PMU/MONRE
2	ESMF and environmental and social safeguard policies including ECOP	CPMU, PPMUs, ICMB10, PMU/MONRE
3	Environmental management capacity improvement (and ECOP requirements)	PPMUs, ICMB10 and contractor
4	Environmental and society monitoring skills improvement	PPMU, construction consultant; environmental consultant, local authority
5	Training on ECOP compliance and environmental health and occupational safety measures, prevention of communicable diseases, infectious	Contractor
6	Safe use of pesticides and agro-chemicals	Farmer, local communities

116. **Technical assistance on safeguards:** Given different need of safeguard training and limited capacity of the agencies, it is expected that a qualified national firm will be mobilized by CPMU to provide safeguard training, supervision, monitoring, and reporting of safeguard to the WB. CPMU will also mobilize an independent monitoring agency (IMA) for monitoring of RAP implementation as well as an international environmental safeguard advisor to assist in providing guidance on related technical assistance and safeguards. PPMUs, ICMB10, and PMU/MONRE will also mobilize their safeguard consultants (individual or firm) to assist in the implementation of safeguard measures.

9. ESMF IMPLEMENTATION BUDGET

The ESMF implementation budget comprises (a) cost for preparation of safeguard documents (ESIA, ESMPs, RAPs, EMDPs) including consultation for new subprojects; (b) cost for supervision, monitoring, and training on environment and social safeguard issues, including independent monitoring for RAPs, EMDPs, and ESMPs; (c) cost for an international consultant for environment safeguard implementation support; (d) cost for implementation of ESMPs and environmental monitoring, (e) cost for implementation of ECOP and site specific measures; and (f) cost for compensation. Both the Government and the World Bank will co-finance the ESMF implementation budget. Indicative costs for items (a), (b), and of about \$1.54 million (M) will be allocated for implementation of the ESMF (\$0.6M for (a), \$0.8M for (b), and (\$0.14M for (c)). Costs for (d) and (e) will be included in the subproject cost while the Government will pay for (f).

10. GRIEVANCE AND REDRESS MECHANISM

10.1 Subproject Grievance Redress Mechanism (GRM)

117. Within the Vietnamese legal framework citizen rights to complain are protected. As part of overall implementation of the subproject, a Grievance Redress Mechanism (GRM) will be

established by ESU of the PPMU identifying procedures, responsible person and contact information. It will be readily accessible, handle grievances and resolve them at the lowest level as quickly as possible. The mechanism will provide the framework within which complaints about environmental and safety issues can be handled, grievances can be addressed and disputes can be settled quickly. The GRM will be in place before the subproject construction commences.

118. During construction, the GRM will be managed by the Contractor under supervision of the CSC. The Contractor will inform the communities and communes affected by the subproject about the GRM in place to handle complaints and concerns about the subproject. This will be done via the Information Disclosure and Consultation Process under which the Contractor will communicate with the affected communities and interested authorities on a regular basis: hold meetings at least quarterly, publish a monthly information brochure, place announcements in local media, post notices of upcoming planned activities, and so on (see ECOP Part A).

119. All complaints and corresponding actions undertaken by the Contractor will be recorded in the subproject safeguard monitoring report. Complaints and claims for damages could be lodged as follows:

- *Verbally*: direct to the CSC and/or the contractor safeguard staff or representative at the subproject Office
- *In writing*: by hand-delivering or posting a written complaint to the address specified
- *By telephone, fax, e-mail*: to the CSC, the contractor safeguard staff or contractor's representative.

120. On receipt of a complaint, the CSC, contractor safeguard staff or representative will register the complaint in the Complaints File and maintain a Log of events pertaining to it thereafter until its resolution. Immediately after receipt, three copies of the complaint will be made. The original will be kept in the File, one copy will be used by the contractor's safeguard staff, one copy will be forwarded to the CSC and the third copy to the PPMU within 24 hours of the complaint being made. Information to be recorded in the Complaints Log will include (see suggested form in Annex x):

- The date and time of the complaint;
- The name, address and contact details of the complainant;
- A short description of the issue of complaint;
- Actions taken to address the complaint, including persons contacted and findings of each step in the complaint redress process;
- The dates and times when the complainant is contacted during the redress process;
- The final resolution of the complaint;
- The date, time and manner in which the complainant was informed thereof; and
- The complainant's signature when resolution has been obtained.

121. Small complaints will be dealt with within one week. Within two weeks (and weekly thereafter), a written reply will be delivered to the complainant (by hand, post, fax, e-mail) indicating the procedures taken and progress to date.

122. The main objective will be to resolve an issue as quickly as possible by the simplest means involving as few people as possible, at the lowest possible level. Only when an issue cannot be resolved at the simplest level and/or within 15-days, will other authorities become

involved. Such a situation may arise, for example, when damages are claimed and the amount to be paid cannot be resolved or the cause of the damages determined.

10.2 WB Grievance Redress Service (GRS)

123. **WB's GRS:** Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanism or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaints to the WB's independent Inspection Panel which determines whether harms occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at anytime after concerns have been brought directly to the WB's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit www.worldbank.org/grs. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

11. ESMF CONSULTATION AND DISCLOSURE

11.1 ESMF Consultation

124. Public consultationson of the first phase subproject ESIAs, RAPs, EMDPs were carried twice during project preparation in September 2015 and January 2016. Consultations with people and households directly or indirectly affected by the project, local authorities, central and local state agencies, and mass organizations have been conducted at the subproject level. In the process of preparing this ESMF, a consultation workshop on the ESMF was held in January 2016. Key participants included staff of implementing CPO, CPMU, PPMUs, representatives of the project provinces and districts, and local consultants. The consultations aimed to explore the potential social and environmental impacts of the project so as to, on the basis of the findings, inform project design/intervention strategy, as well as develop appropriate safeguards instruments. The draft ESMF, RPF, and EMDF have been circulated to concerned ministries and project provinces to receive additional comments before finalization. Opinions and concerns provided during the consultations were taken into account in the preparation and finalization of the ESMF and related subproject safeguards instruments.

11.2 Public Disclosure

125. To compliance with WB's information disclosure policy, all the draft safeguard documents for the MD-ICRSLP (REA, RSA, ESMF, RPF, EMPF, ESIAs, RAPs, and EMDPs) in Vietnamese has been properly disclosed at the subproject sites and at CPO on January 26, 2015. Their English version has also been disclosed at the Bank's InfoShop on January 27, 2015. The final project safeguards instruments will be disclosed locally and at the InfoShop in March 2016 as well.

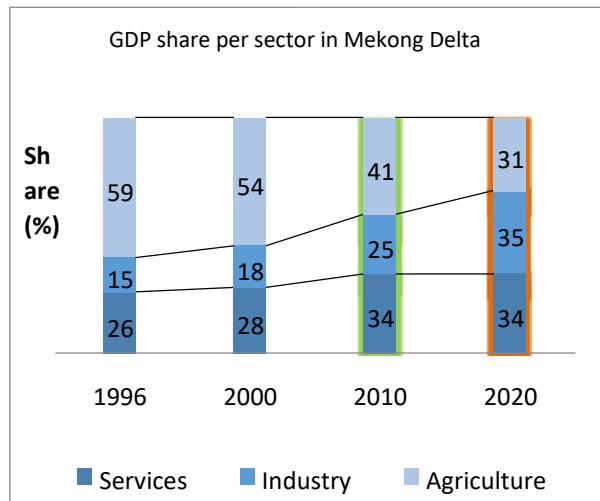
Annex 1. Project Areas and First Phase Subprojects

1. This annex briefly presents an overview and risks of the Mekong Delta (Section A1.1-1.2) as well as locations and scope of the first phase subprojects (Section A1.3) while general background on physical, biological, and social environment could be found in other related safeguard reports namely the Regional Environmental Assessment (REA), the Regional Social Assessment (RSA), and the Environment and Social Impacts Assessments (ESIA) of the first 4 subprojects.

A1.1 Overview

2. The Mekong Delta is a large triangular flat plain (about 40,000 km² or 12% of the country area) located in the lower end of the Mekong River in the southern part of Vietnam and it is important for socioeconomic development and food security of the country. The area can be divided into two parts: an inner delta plain in the upper part (connected to Cambodia) that is dominated by fluvial process and an outer delta plain along the West Sea and the East Sea that is dominated by coastal and marine environment. The inner delta plain is low-lying and close to sea level while the outer delta-plain, which is built of coastal plain deposits, is fringed seawards by mangrove swamps, beach ridges, sand dunes, spits and tidal flats. A diurnal tide is dominant in the West Sea (Gulf of Thailand), while a semi-diurnal tide is dominant in the East Sea and tidal effects extend throughout the delta area. Towards the end of the rainy season, combined floodwaters from the rivers, local rainfall and tidal inundation can result in the flooding of about 3.4 million hectare (ha) in the Vietnamese portion. Saltwater intrusion lengths into various branches of the Mekong vary from 20-65 kilometers (km), and about 500,000 ha of land are affected during the dry season. However due to the large inflow of fresh water from the Mekong, salinity levels along the eastern coast of the delta are still low, particularly during the flood season.

2. Agriculture development especially rice production is important for the Mekong Delta due to the rich natural supply of freshwater and nutrient-laden sediments and rich in coastal resources. Water resources management in the area is characterized by a complex rivers and canal systems (with sluices and embankments) that have been extensively developed during the past 20 years. Rapid development in rice production, aquaculture, and other related industries and activities however has resulted in degradation of natural resources and recent development planning of the Mekong Delta is being considered by the Government.



A1.2 Main Challenges and Risks

3. *People livelihoods:* Recognizing the need for further improving rice farmers' incomes and the importance of aquaculture and fruit production for sustainable development of the agricultural sector, there have been extensive water resources infrastructure development driven by salinization and Government policy, many farmers have shifted their production from rice mono-culture to a more diversified rice-based farming system which includes aquaculture (catfish and shrimp farming), fruits and/or vegetables and leads to higher income generation possibilities. Today some 75% of the Mekong Delta is agriculture land (mainly multiple rice cropping paddies), and at least 13,000km of dykes and 42,000km of primary and secondary canals have been constructed. Effective management of existing structures as well as new development would have significant impacts (positive and negative) to people livelihoods.

4. *Climate change and seas level rise:* The Mekong Delta is among the three mega deltas in the world that are most likely to be severely affected by climate change¹⁸. Changes in river flow and the periodicity and extent of water-related natural disasters are already occurring. In the inner delta, floods are projected to have a higher magnitude (deeper inundation of the plains) and longer duration, affecting major rain-fed rice production areas. In the outer delta (coastal zone), projections indicate that the sea level may rise 30 centimeter (cm) by 2050 and as much as 75 cm by the end of the twenty-first century. Rises of such magnitude would aggravate the saltwater intrusion problem and have impacts on agriculture and fisheries. It is estimated that a sea level rise of 20–40 cm will lead to significant losses in all rice cropping seasons and place food security of the nation at risk. Land subsidence due to long-term drainage and groundwater extraction is likely to further exacerbate the sea level rise. By mid-century portions of the Mekong Delta will likely experience 1 m (0.42–1.54 m) of additional inundation hazard due to land subsidence.

5. *Upper delta flood:* Large areas in the Plain of Reeds and the Long Xuyen Quadrangle are inundated in the flood season. The environmental, social, and economic benefits of flooding in the upstream delta area are greater than in any other river basin in the world. The annual flood pulse plays a vital role in the basin's agriculture and fisheries. Floodwaters are stored for use in the dry season, particularly for irrigation. Flood-deposited sediments improve soil fertility across the floodplains. Finally, floods flush and dilute stagnant and polluted waters, recharge groundwater tables, and maintain river morphology. Additionally, annual flood pulse sustains the world-renowned productivity of Mekong freshwater fisheries.

6. The future flood pulse is likely to have a stronger magnitude (deeper inundation) and longer duration. This may affect the livelihood of the local community & stakeholders in major rain-fed rice production areas. In addition, increased triple crop rice harvesting in the upper delta has resulted in a reduced volume of the retention areas. Combined with sea level rise this amplifies flood levels in the middle delta, and leads to increasing demand for capital-intensive protection measures in urban and industrial areas.

7. Increasing droughts together with fast urbanization and industrialization and expanding commercial aquaculture have highly increased water demand. Fresh water supply is guaranteed only to 65% of the urban population; for the rural population this percentage is considerably lower. Domestic wastes and agricultural runoff carrying pesticides and fertilizers affect water quality in the lower Mekong. Though localized at present, such problems are expected to increase. Industrial activities, such as pulp and paper mills, textile mills and chemical factories are increasing and, together with increased waste from shipping, are likely to create serious pollution problems in the future.

8. *Coastal zone: Estuary and Peninsula:* Projections indicate that the combined effect of sea level rise and changing flooding patterns could result in a direct net loss of arable land in the Delta, with an estimated sea level rise of 30 cm by 2050 and of about 75 cm by the end of the 21st century. Furthermore, a rise in sea level will increase salinity levels in the delta's river branches and its water network. A sea level rise of one meter would increase the area of 4g/l salinity with 334,000 ha in relation to the

¹⁸ Intergovernmental Panel on Climate Change (IPCC) estimated that an average annual temperatures are expected to increase by 3-5°C by mid-century with average wet season precipitation increasing by 3-14 percent.

benchmark year of 2004, a rise of 25%. It is estimated that sea level rise of 20-40cm will lead to significant losses in all rice cropping seasons. At least as important as sea level rise, is land subsidence due to long-term drainage and groundwater extraction. Limited data are available, but 1 to 2 cm/year is a common figure. In its accumulation an extreme sea level rise of 75 centimeters could be far worse in terms of relative sea level rise.

9. Groundwater levels are continuously falling due to overuse and inappropriate reprocessing. Increasingly, groundwater is being used from deep phreatic aquifers as an additional source of fresh water to control salinity levels in shrimp farming and enable the diversification of production into vegetables and homestead production (both in rice and shrimp areas). In the dry season, water levels already drop to 15-20m below the surface. There are strong indications that the deep aquifers are not (or very limited) replenished from Mekong floodwaters.

10. Healthy and well-functioning mangrove forests enhance natural resilience to the impacts of climate change and reduce the vulnerability of coastal communities. Results obtained from GIS analysis show that total coverage of mangrove forests, an important breeding ground for aquatic organisms and a barrier against typhoons, has decreased by 50% since 1965. However, the speed of mangrove forest destruction in the period from 1965 to 1995 (mainly as a result from the use of toxic herbicides and defoliants during the war) was much less than that in the period from 1995 to 2001. During the 1990s, the mangrove forests rapidly declined - both in terms of quality and amount of mature forest - due to clearing for agriculture and haphazard development of shrimp ponds as well as exploiting the mangrove itself for timber and charcoal production.

11. **Upstream developments in the Mekong Basin are impacting water resources, as well as sediment flows and fish migration.** Rapid expansion of hydropower to increase energy security, as well as large-scale irrigation, urbanization and land use changes in the upstream have put pressure on the natural resources of the Mekong Basin. Dams, dykes and other associated irrigation systems considerably affect the nature of the flood as they can fragment the floodplains and interrupt the natural flow of water, sediments, nutrients, and fisheries. These hard-structures, activities associated with urbanization and intensive agricultural practices are also contributing to the decline of water quality (i.e. surface water and groundwater) and capture fisheries in the Mekong Delta.

A.1.3 Summary of Four First Phase Subprojects

Subproject 2: Enhancing the ability of adaptation and water management for the upper part of Bassac River in An Phu district An Giang province

Introduction

The subproject “*Enhancing the ability of adaptation and water management for the upper part of Bassac River in An Phu district An Giang province*” under the project “Mekong Delta Integrated Climate Resilience and Sustainable Livelihoods – MDICRLS” is now under negotiation between Vietnamese Government and the World Bank. The CPO of MARD) is the managing agency of MDICRLS project. The subproject owner is An Giang DARD, and its An Giang Construction and Investment Project Management Unit will be responsible for the planning and construction. Upon construction completion, An Giang Irrigation Works Operated Limited Company will be responsible for the operation and maintenance. The World Bank will finance the subproject and funding for the counterpart will be from the state budget.

The objective of the subproject is through infrastructure investment, livelihood models are maintained and developed to assure that the local people can gain sustainable income even under flooding conditions, stabilize production, improve their livelihood at the present and the future, and facilitate people to live with the flood, and bring about the harmony with the nature.

Components of subproject. The subproject will be invested in structural and non-structural measures as follows:

- Construction of works in 3 communes in the East of Hau River, including: (i) Upgrade 11 low dike (August dike) sections to retain flood water and develop transport during off-flood season with a total length of 61km; (ii) Build 15 open culverts for drainage, waterway transport for production in the area.
- Development of livelihoods models for local people include 4 models for Zone 4a (area for double rice crop): (i) Model 1: Spring rice farming season (Biosafety with no use plant protection chemicals) + giant river prawn; (ii) Model 2: Winter-Spring rice + crap crop + natural fisheries; (iii) Model 3: Floating rice + freshwater aquaculture + cash crop; and (iv) Model 4: Mushrooms growing in the flood season and 2 models for Zone 4b (area for triple rice crop): (i) Model 5: Support transition from three rice crop to two rice crop in Zone 4b; and (ii) Model 6: Support for melons grown in the greenhouse.
- Develop an integrated pesticide management program for rice (IPM) in An Phu district – An Giang; Capacity building for cooperatives and for project implementation management staff; and Branding and market development for the product.

The subproject location and intervention areas are indicated in Figure 8.1

Subproject environmental and social screening

The environmental and social screening according to the criteria described in the Bank's policy on environmental assessment has been carried out, and the result shows that the WB policies on *Environmental Assessment (OP/BP 4.01)*, *Pest Management (OP/BP 4.09)*; *Physical Cultural Resources (OP/BP 4.11)*; and *Involuntary Resettlement (OP/BP 4.12)* are triggered for this subproject. The main adverse impacts of the subproject are those related to land acquisition, construction activities, and operation of livelihood models. However, these impacts are short term, localized, of small to moderate magnitudes, and readily to be mitigated by the mitigation measures developed to the subproject. Therefore, the subproject has been categorized for a Category B for environment. To meet the Bank and government requirements on environmental assessment, the Client has prepared the subproject ESIA and RAP.

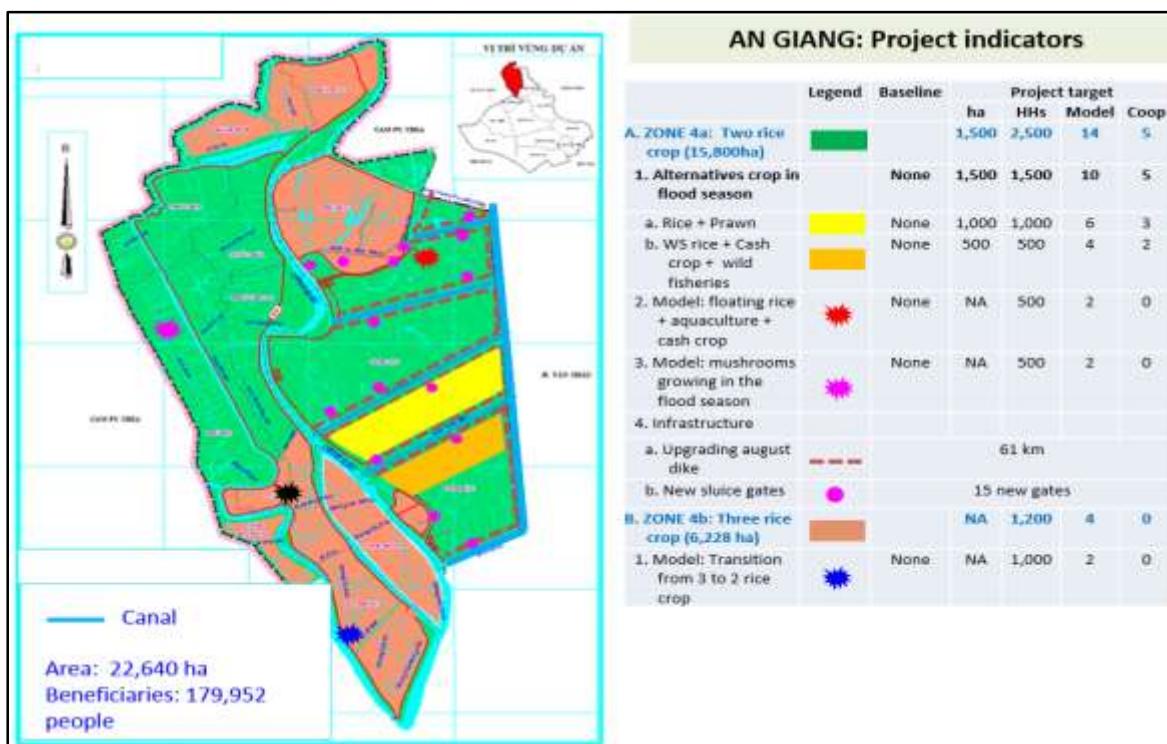


Figure 8.1. Subproject 2 locations and interventions

Subproject environmental and social baselines

An Phu district has a relatively flat topography; in the flood season (from August to December) under the natural condition, most of the district area is flooded with 2-3m deep of the water, seriously affecting the production and living conditions of the people. To mitigate the impact of flooding, many areas in the district (Vinh Truong, Da Phuoc, An Phu town, Vinh Hoi Dong, Khanh An, Khanh Binh and a part of Phu Huu commune) built complete flood protection dike, to maintain triple crop production. The remaining area does not have sufficient conditions for such flood protection dike construction; thus, the temporary flood protection embankments were built for double crop production (for Spring and Summer-Autumn seasons). Because these embankments are temporary, they are often damaged by the floods, and the local people have to spend billions of Vietnamese Dongs to repair annually. In some years, they are broken right at the beginning of the flooding season, causing damage to the Summer-Autumn rice production. In 2013, local people in the communes in the East of Hau River (Phu Huu, Vinh Loc, and Vinh Hau communes) developed a plan to build flood dikes in order to maintain triple crop rice farming. However, after considering the significant impacts of the construction that would substantially limit the flood discharge capacity and the large investment expenditures, the plan has not been implemented. If there is no solution for resilience with the flood, the local people will build their own flood protection embankments which will greatly affect the flood drainage of the area. Therefore, investment in necessary civil works to reasonably ensure production for the local people while still maintaining flood drainage capacity for this area needs to be fully considered.

Important natural habitats and nature conservation areas. An Giang houses a number of natural habitats and protected areas including four protected landscape areas under Decision No.1107/QD-BTNMT dated 12/5/2015 by the Ministry of Natural Resources and Environment, namely Sam mountain, Thoai Son, Tra Su, and Tuc Dup. Other critical natural habitats are Tram Chim forest, Cam, Tuong, Nuoc, Bay Nui, and Dai mountains, and Binh Thien lake. However, they are located within 10km-50km from the subproject area and would not be affected by the subproject activities.

Physical cultural resources. There are no important physical cultural resources within or in close proximity to the subproject areas, except the 23 graves that need to be relocated.

Ambient environmental quality. The result of environmental quality in the subproject area showed that water quality in the subproject area is relatively good, is not affected by organic pollution and acidity. Quality of Soil and sediment in the area is not seem affected by acidity and heavy metals. Air quality was very good.

Potential environmental and social impacts

Positive environmental and social impacts. The subproject is expected to bring about important positive changes to the local community in terms of (i) generation of higher income due, creation of jobs during flood season due to implementation of the climate resilience sustainable livelihood models; (ii) cost reduction for local people to maintain low dike systems after flood season and protection of shrimp farming activities; and (iii) improvement of water quality due to less soil erosion and sedimentation as a result of reinforced low dikes, and reduced use of fertilizers and plant protection agrichemicals of the livelihood models.

Negative environmental and social impacts during construction. The subproject would permanently acquire 110 ha and temporarily use 15 ha of production land in the 3 communes of the subproject. Portions of these lands are currently under agriculture land (mainly rice production). The use of land by the sub-project will not displace any house or structure. 23 graves would need to be relocated. Adverse impacts during pre-construction and construction also related to: i) risk of remaining UXOs after the war; ii) disruption of local road traffic on the dikes of Phu Huu, Vinh Loc, Vinh Loi, Vinh Hau, and Xang canals and waterway traffic safety; iii) pollution of the canals and agricultural land by construction spoils, domestic wastes and hazardous wastes; and iv) worker and community safety. However, these impacts are assessed as local, temporary, minor to moderate.

Risks associated with operation of livelihood models. The main adverse impacts as a result of implementing the livelihood models are the risks and threats to the local environment and people, including: (i) The development of large product outputs while not having a market may negatively impact the livelihood models of subproject; (ii) The locals have accustomed to rice production for many

years so they have the technical expertise, and when shifting to new farming models, an inadequate technical guidance can lead to unsuccessful production, limiting the scaling up of the models on a broader scale; (iii) The conflicts over the use of water resources can arise if the boundaries between production models are not built appropriately.

Long term impacts. Farmers may also have to change their current livelihoods from 3 crops rice to 2 crops rice (winter-spring / summer-autumn) with wild fish capture.

Mitigation Measures

Environmental and Social Management Plan (ESMP) and Resettlement Action Plan (RAP). RAP has been prepared for to address the social impacts related to land acquisition and resettlement during project implementation. The household currently using the land will be compensated and supported sufficiently to comply with the World Bank's OP/BP 4.12 through the RAP/Compensation Plan. Environmental codes of practices, a set of measures, to mitigate common construction related impacts, and site-specific mitigation measures have been developed and included on the ESMP of the subproject. These mitigation measures will be incorporated in the civil work contractual documents to be implemented by the contractor, and enforced by the Construction Supervision Consultant (CSC) and the subproject owner. The cost for ESMP implementation is 945,000,000 VND (excluding costs to be included in the civil works contract, CSC contract and RAP).

Main site-specific mitigation measures. The risk of water use conflicts in the area among the three communes on the east side of the Hau River should be managed to avoid conflict emerging. It is unable to immediately transfer the whole production area in the region into the new model “1 rice crop and 1 fishery crop” which is highly expected by the subproject. This cannot be implemented completely within the next 10 years, meaning that in the coming time, once the subproject completes the model “2 rice crops and 1 rice crop + 1 fishery crop” it will still be in practice at the same time. Apparently, the use of the flood water for these 2 production models is different. The model 1 rice crop – 1 fishery crop needs water from the beginning till the end of the flood season while the model 2 rice crops needs to control/prevent the water from entering the field at the beginning of the flooding season to protect the summer-autumn crops soon to be harvested. Apparently the difference in using water sources leads to a need of having a clear cut boundary work between the two production areas strong enough to avoid a breakage of the low dikes when the floods arrive causing water overflows from the aquaculture zone into the rice production area. The incident causing embankment breakage for Model 5 and 6: Model 5 and 6 are developed in the 3 rice crops protection high dikes. This is a piloting model so there needs to have a dike to separate the piloting area with the remaining area. If the dike separating the remaining area with the piloting area is not strong enough, the risk of dike rupture is high, and impact from this incident will heavily affect the 3-crop production area.

Resettlement Action Plan: The construction of 61 km of low dike and 15 sluice gates of the subproject will acquire permanently 110 ha of agriculture land and temporarily 15 ha of agriculture land in 3 communes of the subproject. There are 752 HHs affected through land acquisition, including 86 severely affected HHs (losing more of 20% of productive land or more than 10% for vulnerable HH) and 71 vulnerable HHs. No HH will be physically displaced and no ethnic minority people is affected. Other impacts are losses of crops (mainly rice), fruit trees and removal of 23 graves. Funding for compensation, support and resettlement: Total cost of compensation, support and resettlement for the sub-project 249,168,663,800 VND; equivalent to 11,098,827 USD.

Consultation and information disclosure.

CPO and SIWRR organized and carried out 2 public consultation meetings in September, 2015 and January, 2016 in the subproject wards and communes. Final draft of the subproject ESIA report, the EMDP, and the RAP were sent to the World Bank for disclosure at the InfoShop in Washington DC in February, 2016. The Vietnamese versions of the reports were disclosed in CPMU office in Can Tho and DARDs Office in An Giang province and subproject sites accessible to locally-affected people.

Subproject 4: Infrastructure to develop sustainable livelihoods for people in the coastal area in Ba Tri, Ben Tre to adapt to climate change

Introduction

The subproject (*Infrastructure to develop sustainable livelihoods for people in the coastal area in Ba Tri, Ben Tre to adapt to climate change*) is under Component 3 of the Mekong Delta Integrated Climate Resilience and Sustainable Livelihoods project (MD-ICRSL) which has been proposed by the Government of Vietnam and funded by the World Bank (WB). The project investment owner is the Ministry of Agriculture and Rural Development, and the representative for MARD is Ben Tre provincial Department of Agriculture and Rural Development (DARD). Ben Tre Agriculture and Rural Development Project Management Unit (PPMU) is responsible in planning and construction, Ben Tre provincial Department of Water Resources is in charge of the subproject operation. The implementing funding sources of the subproject include Vietnamese counterpart fund (central and local one) and WB loan.

The primary objective of the sub-project is to address the challenges related to salinity intrusion, sustainable and improved livelihoods for communities living in the 3 districts at the border of Ben Tre Province. The directly benefited area of the Subproject includes the 10 coastal communes of Tan Xuan, Bao Thanh, Bao Thuan, Tan Thuy, An Thuy, An Hoa Tay, Vinh Hoa, Vinh An, An Duc, Phu Ngai in Ba Tri district - Ben Tre Province. The subproject consists of the following components:

Component 1: (ZONE 1: 2,484 ha): Restoring mangrove belt

- Additional mangrove planting in shrimp ponds (250 ha)/a.
- Certification of shrimp mangrove eco-farming.
- Training for 1,000 farmer households farmers.
- Certification of shrimp-mangrove eco farming for 1000ha.

Component 2: (ZONE 2: 7,940 ha): Improving sustainability of brackish water systems

- Building 5 sluice gates to reducing economic losses caused by high tides.
- Dredging/renovating 14 water canals to improve water quality for aquaculture.
- Improving biosecurity of shrimp aquaculture of 2500ha for 8 cooperatives including establishment of 8 farmer cooperatives, demonstration models for 1 site per cooperative, and training for 300 farmer households of 2500ha.

Component 3: (ZONE 3: 5,105 ha): Adaptation and mitigation for zone 3 (Saltwater intrusion)

- Demonstration model of rice - prawn culture training for 150 farmer households of 180ha.
- Farmer field school training for rice - prawn culture model.
- Raising Climate change awareness and supporting establishment of commune climate change response teams.

Other activities: Preparing and implementing commune action plans:

- Technical assistance (TA) assessments and planning for community action plans.
- Training for extension staff and farmers on GAP.
- Preparing and implementing commune action plans.

The subproject location and intervention areas are indicated in Figure 8.2

Subproject environmental and social screening

The environmental and social screening according to the criteria described in the Bank's policy on environmental assessment has been carried out, and the result shows that the WB policies on *Environmental Assessment (OP/BP 4.01), Natural Habitats (OP/BP 4.04); Forests (OP/BP 4.36); Pest Management (OP/BP 4.09); and Involuntary Resettlement (OP/BP 4.12)* are triggered for this subproject. The main adverse impacts of the subproject are those related to land acquisition, construction activities, and operation of livelihood models. However, these impacts are short term, localized, of small to moderate magnitudes, and readily to be mitigated by the mitigation measures developed to the subproject. Therefore, the subproject has been categorized for a Category B for environment. To meet the Bank and government requirements on environmental assessment, the Client has prepared the subproject ESIA and RAP.

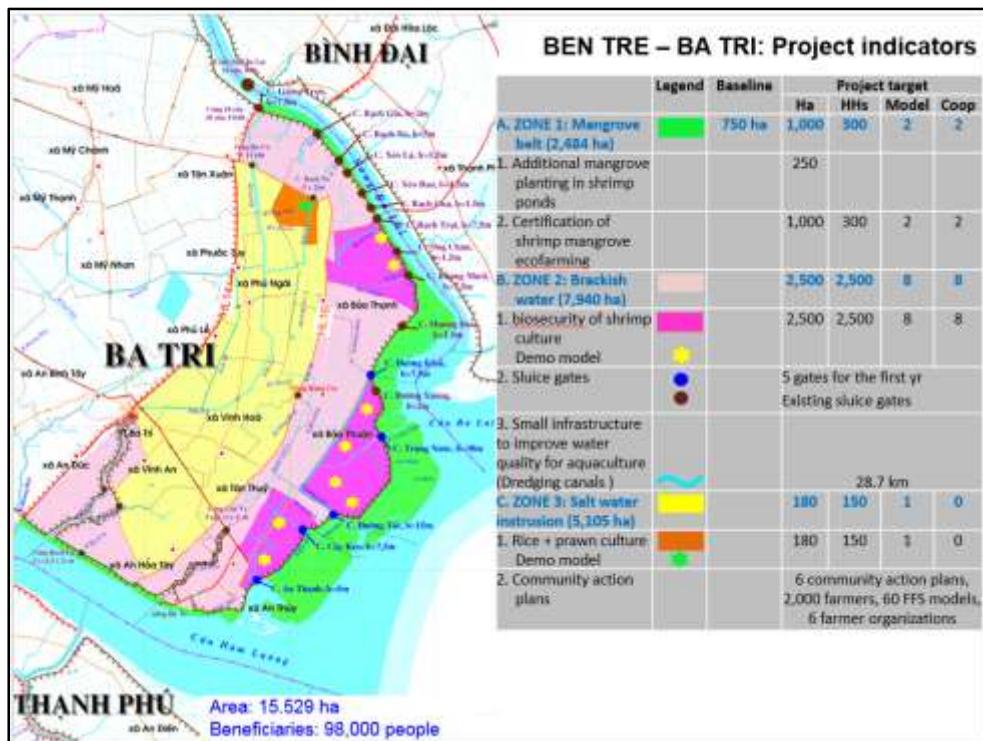


Figure 8.2. Subproject location and intervention areas

Subproject environmental and social screening

This subproject is located in Ba Tri district and in the South East of Ben Tre province. It faces the Eastern Sea, is located in between Ba Lai and Ham Luong river gates with 25 km length of coastline. There is a linked canals and rivers network which is strongly affected by the tides of Eastern sea and Ham Luong, Ba Lai rivers. The total directly impacted area of the sub-project is 15,529 ha for 98,000 people in the coastal communes of Tan Xuan, Bao Thanh, Bao Thuan, Tan Thuy, An Thuy, An Hoa Tay, Vinh Hoa, Vinh An, An Duc, Phu Ngai in Ba Tri district. **The lower elevation area** (0.6 – 0.8m) is located further inside the fields, therefore the drainage is not good when there are floods during rainy seasons. **The monthly average temperature** is rather high (26.8 – 27.3°C) and relatively stable in the year, the lowest temperature of the year is averagely 25.2 – 25.5°C in January and February. **The annual average rainfall** is 1,250 – 1,500 mm. the storms frequency is rather low, but there are probable storms during November and December. **The area salinity** may rise up to 40‰. The salinity may increase gradually and reach to maximum level in April in Ham Luong river and February, March, April in My Tho river. The salinity decreases gradually to the rather low level in June and July. The salinity decreases gradually from river mouth inward and rapidly reduces when there is water from the upstream which bring water enough to dilute and push the salinity to the river mouth area. **Results of air quality analysis** show the dust and noise levels are ranging within the acceptable limits according to the current regulations. **Water quality** in channels is quite clean and ranges within the standard limits. **The sediment** has a high salinity, heavy metal content is within the allowable limits. **The underground water** tested in the households well is highly polluted with TDS content exceeds 1 to 2.5 times of the standard, turbidity is 1.5 – 15 times higher than the standard, COD content is 10 -20 times higher, and coliform content is 1,000 times higher. **The average income** of the local citizen is around 28.70 million dong/year (equivalent to 1300USD). The poor households rate in the sub-project area accounts for 20%. Most of the laborers are the farmers. All of them are Kinh ethnic. **The economy** of the region is diverse, including key areas of agriculture (rice, vegetable, horticulture in the residential land, seed & breeding, animal husbandry of buffalos, cows, pigs, goats, chickens, ducks...); fishery (shrimp farming, sea shrimp farming, clam feeding in the seashore, fish in the ponds, dams, salt marsh, garden canals, exploitation of internal fields and rivers, sea); forestry (protection afforestation, exploitation of wood, water coconut leaves....); salt productions; industry (collecting, processing sea foods, fish ports...) and handicraft services (small business, markets, small industrial handicraft: shrimp breeding farms, fish breeding, food for shrimp).

In the subproject area, there is 31km of Ba Tri sea dyke. There are 20 sluice structures under the dykes, but only 11 sluices have been constructed, 9 sluices are pending; therefore it is impossible to control the salinity in area 2 of the sub-project.

Road transportation network in the sub-project area is not developed. The road system is low and not evenly allocated, mainly developed near the national road areas. The road quality is bad; the technical structure of most of the road network is low; road pavement and surface is narrow. Most of the bridges in the communes and district's roads have low capacity, degraded and limited the transportation speed. The water way system in the area has 31 km coastline length, the river and canal networks are diversified, therefore the waterway develops highly serving the main local transportation means.

Important natural habitats and nature conservation areas. There are no critical natural habitats and protected areas in or in proximity to and can be affected by the subproject activities.

Physical cultural resources. There are no important physical cultural resources within or in close proximity to the subproject areas.

Potential environmental and social impacts

Positive environmental and social impacts. Implementation of the subproject present the following benign impacts to the environment and local communities: i) increase in economic value of local aquaculture products as a result of sustainable livelihoods ecological mangrove-shrimp, biosecurity shrimp aquaculture, and rice-shrimp models, contributing to poverty reduction in the subproject area and enhance community resilience to climate change; ii) improve water quality environment due to application of good agriculture practices and reduced aquaculture antibiotics used in the demonstration models.

Adverse environmental impacts. The main negative environmental impacts preconstruction and construction are related to safety risk of UXOs during site clearance, increased air pollution, noise and vibration, domestic wastes, and water pollution, worker and community health and safety, localized flooding due to the narrowing of the flow, and waterway traffic congestion and safety. However, these impacts are considered small to moderate, temporary and localized and can be mitigated through the effective implementation of the good construction management practices such as ECOP, construction supervision and quality supervision of the water/ecological environment quality. The specific impacts of the dredging process of 14 channels include waterway traffic congestion at the dredging sites, potential water pollution to the adjacent agricultural land, aquaculture ponds, salt production areas, and water quality in the canals due to dredging activities and disposal of dredged materials. However, the total dredged volume is only 431,133m³; the soil analyses indicates that the dredged materials are not contaminated with hazardous wastes or sulfate acid; this activities will be carried out on 28.7km of 14 canals; and the local households are located at least 200m from the sites. Therefore, the impact of dredging would be small to moderate. Construction of the 5 sluice gates would also generate approximately 18-240m³ of spoils that can be managed through good construction management practices.

Adverse social impacts. The construction of a road connecting the sluices will permanently acquire a land area of 1239m². In which, the gardening land area is 680m² belonging to 02 households of 10 people of 6 males and 4 females; the construction area is 559m². No households are to be removed/reallocated. The concentration of workers may also lead to an instability in security at the local; increasing the risk of infectious diseases transmission.

The negative impact during the operation of the livelihood models mainly arise from: (i) The forest-shrimp model is aimed for GAP certification: the shrimp breeds are taken from the nature following in with the tides. The raising density of 1-3 fingerlings per m² is applied without additional feedstuff. The environmental impacts from this model are insignificant; (ii) The biological safety shrimp farming model: during the farming period, just adding a sufficient amount of feeding stuff, not using chemicals, only using environmental benign biological agents. The environmental impact is very small due to the compliance with the regulations and standards during the farming period. However, there are risks due to the uncontrolled situation of diseases on the shrimps; (iii) The rice – shrimp model: The impact level

of this model on the environment is considered small; however due to the inability to control the breed source, the quality of water intake into the field, there are still risks associated with this model.

The negative impacts of the operation of the sluice gates are those related to temporary closure of the sluice gates affecting waterway transportation, changing the water salinity and ecological conditions. However, the sluice gates are expected to be closed in a short duration, specifically 4-5 hours in 2-3 days in the third and fourth month of the lunar calendar to control saline intrusion and in 4-5 days during the eleven and twelfth lunar month to prevent flooding into the area.

Mitigation measures

Environmental and Social Management Plan (ESMP) and Resettlement Action Plan (RAP). RAP has been prepared for to address the social impacts related to land acquisition and resettlement during project implementation. The household currently using the land will be compensated and supported sufficiently to comply with the World Bank's OP/BP 4.12 through the RAP/Compensation Plan. Environmental codes of practices, a set of measures, to mitigate common construction related impacts, and site-specific mitigation measures have been developed and included on the ESMP of the subproject. These mitigation measures will be incorporated in the civil work contractual documents to be implemented by the contractor, and enforced by the Construction Supervision Consultant (CSC) and the subproject owner. The cost for ESMP implementation is 3,284,142,000 VND (excluding costs to be included in the civil works contract, CSC contract and RAP).

Site-specific mitigation measures. To address impacts of the dredging, the construction will not be executed during the aquaculture and salt production water intake. However, to limit the unwanted impacts during executions, the construction units must closely coordinate with the local authorities and communities to exchange information through which solutions that would be best for water intake and construction activities, such as temporarily cease the execution work when the people need to take water. Regarding disposal of the dredging spoil, the demand for uses of these earth materials for backfilling in the area is extremely high at the same time the local government commit using these soil after being dried, for backfilling in the soil shortage area. Since the dredging materials are not contaminated with pollutants and the heavy metals they can be used as backfilling materials for the banks in the areas suffering from material scarcity. To mitigate this impact of sluice gate operation, the time for closing the sluice gates will be consulted closely with the local community and informed to the local people at least 1 week in advance. A detailed sluice gate operation schedule will be developed and distributed to the community. A monitoring program for water quality and ecology will be put in place for the first 2 years of the work operation to monitor the impacts (negative and positive) caused by the subproject.

Resettlement Action Plan: The construction of sub-project will acquire permanently 680 m² of garden land assets on land owned by 2 HH of An Hoa Tay commune, Ba Tri district Ngoc Son Commune, Ba Tri District, Ben Tre province. These 2 HH will be marginally affected. 1 HH will also have his house partially affected but could reorganize on his remaining land. None of these HH are vulnerable or belong to an ethnic minority. Total cost of compensation, support and resettlement for the sub-project is VND 742,342,656 VND equivalent to 33,066 USD.

Consultation and information disclosure.

CPO and SIWRR organized and carried out 2 public consultation meetings in September, 2015 and January, 2016 in the subproject wards and communes. Final draft of the subproject ESIA report, the EMDP, and the RAP were sent to the World Bank for disclosure at the InfoShop in Washington DC in February, 2016. The Vietnamese versions of the reports were disclosed in CPMU office in Can Tho and DARDs Office in An Giang province and subproject sites accessible to locally-affected people.

Subproject 6: Infrastructure to control spring tide and salinity to support agricultural activities and adapting to climate change in district of Cau Ke (Tra Vinh province), Tra On and Vung Liem (Vinh Long province)

Introduction

This is a subproject to be implemented under Component 3 of the Mekong Delta Integrated Climate Resilience and Sustainable Livelihoods (MD-ICRSL) Project which is proposed by the Government of Vietnam (GOV) for financing from the World Bank (WB). The objective of the subproject is to address the challenges related to salinity intrusion, sustainable and improved livelihoods for communities living in the 3 districts at the border of Tra Vinh and Vinh Long provinces.

The subproject includes investment items/activities in the three 3 zones of the project area as follows:

- *Zone 2: Brackish water aquaculture:* (i) Training for famers on Good Aquaculture Practices, climate resilience models; (ii) Establishment of 30 farmer organizations for 8,921ha area of aquaculture; and (iii) Additional planting mangrove trees of 728ha in shrimp ponds and support for obtaining certification of organically shrimp - mangrove eco-farming for 1921ha of 700 households in Long Vinh, Dong Hai communes, Duyen Hai district, Tra Vinh province.
- *Zone 3a: Salt water intrusion (lower area):* (i) Conducting campaign for raising local awareness of climate change impact; (ii) Supporting establishment of commune Climate Change response teams for 20 communes; and (iii) Building capacity and necessary steps to allow smooth transition (a) from freshwater to brackish water system of 540ha by conducting 02 pilot demonstrations (1 pilot/cooperative) and field farming school for 500 households; and (b) raising aquaculture toward VietGap requirements for 2160ha by conducting 06 demonstration models (1 model/cooperative) and field farming school for 1800HHs.
- *Zone 3b: Saltwater intrusion (upper area):* (i) Conducting campaign for raising awareness of local people on climate change; (ii) Building 3 sluice gates to complete the South Mang Thit irrigation system as follows:
 - Tan Dinh sluice on Tan Dinh River: (i) two sluice gates (20m each); one transportation bridge (109.85m long and 6m wide); and (c) a management office of 120m²
 - Vung Liem sluice on Vung Lien River: (i) three sluice gates (20 m each); one transportation bridge (147.22m long and 6m wide) and (c) a management office of 120m².
 - Bong Bot sluice on Bong Lot Canal: (i) three sluice gates (20m each); one transportation bridge (147.22m long and 6m wide) and (c) a management office of 240m².
- *Other activities:* (i) Support for linking farmers to markets; (ii) Support for provincial organizations on establishing real-time water quality monitoring system to predict water quality in the canals supplying water for aquaculture; monitoring aquaculture seed quality; and monitoring aquatic animal (shrimp) disease. The subproject location and intervention areas are indicated in Figure 8.3.

Subproject environmental and social screening

The subproject has been screened for environmental and social issues in accordance with OP 4.01, and the result of the screening shows that the subproject is not located within or near critical natural habitat and there are no rare or endangered species in the area. There are also no sites, structures or monuments with cultural, religious or historical significance within and in the vicinities of the construction site. There are significant ethnic minorities and they account for 23.6% of population in Cau Khe District (Tra Vinh Province). However, they generally do not live in cluster or communities but integrated with mainstream population, and impacts caused by the project will affect overall community, but not particularly to an ethnic group. There are no graves, temples or any structure or sites with cultural, religious or historical significance in the subproject area. The subproject is determined to triggers the Bank's operational policies on *Environmental Assessment (OP/BP 4.01)*, *Forests (OP/BP 4.36)*, *Pest Management (OP/BP 4.09)*, *Indigenous Peoples (OP/BP 4.10)*, and *Involuntary Resettlement (OP/BP 4.12)*. The main adverse impacts of the subproject are those related to land acquisition, construction activities, and operation of the sluice gates. However, these impacts are short term, localized, of small to moderate magnitudes, and

readily to be mitigated by the mitigation measures developed to the subproject. Therefore, the subproject has been categorized for a Category B for environment. To meet the Bank and government requirements on environmental assessment, the Borrower has prepared ESIA, EMDP, and RAP for the subproject.

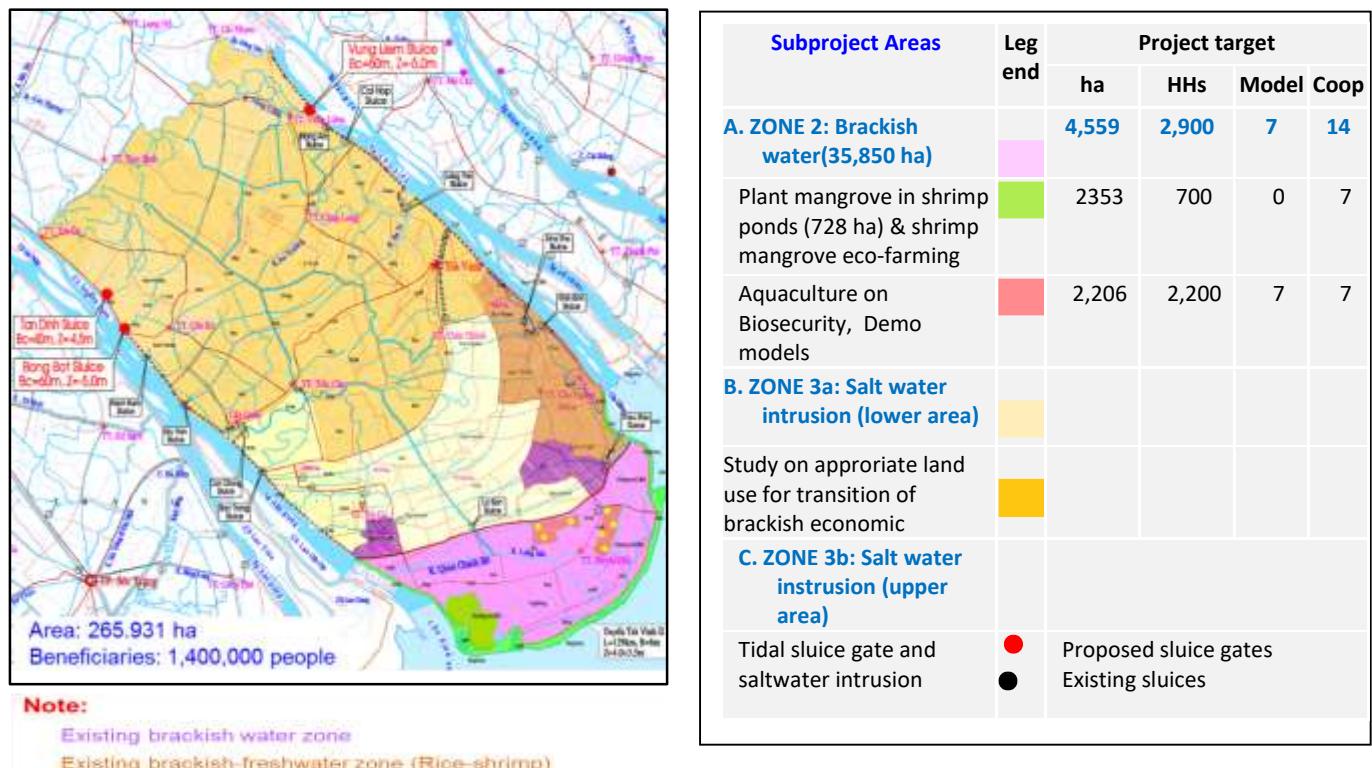


Figure 8.3. Subproject 6 locations and interventions

Summary of Environmental Baselines

The geographical scope of the subproject covers Vung Liem and Tra On district of Vinh Long province, and Tra Vinh province. The total area is approximately 265,931 hectares of natural land and 1.4 million people of influence. The boundaries of the subproject area (Figure 1.1) border Mang Thit River to the North-West, Co Chien River to the North, East Sea to the East and South - East, and Hau River to the South-West. It is the area with young alluvial soils affected by floods from the Mekong River, suitable for the development of agricultural production.

The impact of floods on the Hau River and Co Chien River deeply into the interior areas combined with high tides affect the water quality and crop cultivation. In the brackish water production (Zone 2), these areas are naturally characterized by low flows during the dry season which allow saline water to extend far inland. Over the past twenty years, closed freshwater systems designed for rice production have been developed in this area consisting of large polders ringed by dikes and with sluice gates to control saline water intrusion. The long-term sustainability of this strategy is questionable due to reduced dry season water availability and sea-level rise. In addition, farmers are rapidly converting to more profitable shrimp farms along the coast, often causing mangrove destruction, water pollution, shrimp diseases, and non-sustainability of shrimp farming. In the area of fresh water production (Zone 3b) and in the transition from freshwater to brackish water, after completion of construction in 2008, the South Mang Thit Irrigation System has been put into operation to serve for production and socio-economic development of Tra Vinh and Vinh Long province. However, in recent years, salinity of 4 g/l intrudes increasingly through the estuaries of Vung Liem river, Tan Dinh river and Bong Bot canal. In the dry season, the southern area of the irrigation system is lack of fresh water for production; environmental pollution increases; tidal erosion in some structures; salinity intrusion in some areas of the northern area of the subproject through the open gates.

Important natural habitats and reserves. In the Tra Vinh province, there are important protected areas such as Chua Hang bird sanctuary, Tra Cu bird sanctuary, Duyen Hai bird sanctuary, Long Khanh natural reserve, and Duyen Hai mangrove forest, and Ba Om lake. However, these sensitive receptors are located within 23km – 66km from the construction area and would not be affected by the subproject.

Physical cultural resources and recreational areas. The physical cultural structures in close to the subproject area include Hung Giao temple and An Tinh church which are about 300 m from Bong Bot sluice gate. The recreational beach of Ba Dong beach is located 66km from the construction area.

Ambient environmental quality. The results of environmental baseline analysis in the subproject area indicate that the air quality is quite good, the concentration of pollutants in the air such as sulfur dioxide (SO_2), nitrogen oxides (NO_x), dust are very low and meet the national technical regulation on ambient air quality. However, the noise in the area at certain times exceed the regulation by the operation of boats and ship but the average noise still within the permissible limits. Water quality in the shrimp farming areas are polluted. Soil and sediment are not affected by acidity and heavy metals.

Potential environmental and social impacts

Positive environmental and social impacts. The subproject will have significant environmental and social positive impacts including: i) increase in agricultural productivity and thus contributing to economic development due to optimum fresh water-salinity intrusion regulation and flood control; ii) increased growth and diversity of fresh water species and agricultural biodiversity due to adequate availability of fresh water sources; iii) improvement water quality due to reduced use of fertilizers, pesticides, and aquaculture chemicals; iv) enhanced capacity of the community to adapt to climate change adaptation due to implementation of sustainable climate resilience livelihoods models; v) better community health and social development due to provision of more freshwater, enhanced inland access to markets, basic services facilities such as schools and health care centers and cultural exchange in the region.

Adverse environmental and social impacts. The anticipated adverse environmental and social impacts are those related to (i) land acquisition and resettlement, loss of some vegetation cover at the construction sites; (ii) risk of unexploded ordnances (UXO) remained after the war; (iii) safety risks for workers and local community related to construction activities, operations of construction plants and vehicles; (iv) other common construction impacts such as dust, noise, vibration, solid waste, waste water and hazardous waste generation, temporary disturbances of aquatic natural habitats, and waterway safety. Most of these impacts will be minor to moderate, temporary and localized. The main concern during operation phase would be short obstruction of waterway transportation, increased water pollution near the sluice gate, and short period blockage of fish passes due to sluice operations, and increased traffic and consequent road safety issues. However, these impacts are assessed to be small.

Long term impacts. Farmers may also have to change their current livelihoods (where suitable) to more sustainable brackish water activities such as mangrove-shrimp, rice-shrimp, and other aquaculture activities; and more water use efficiency in the dry season.

Mitigation Measures

In order to address the social impacts, a Resettlement Action Plan (RAP) and an Ethnic Minority Development Plan (EMDP) have been prepared and implemented during project implementation. To mitigate the adverse environmental impacts, an Environmental and Social Management Plan (ESMP) has been prepared as a part of the subproject ESIA. The common construction related impacts during construction phase would be mitigated by the contractor through the ECOP included in the ESMP and the civil works contract, and enforced by the Construction Supervision Consultant (CSC) and the subproject owner. The ESMP is estimated at 1,070,136,000 VND, excluding costs to be included in the civil works contract, CSC contract and RAP.

Site-specific mitigation measures. To address the issues of obstruction of waterway transportation, water quality, temporary blockage of fish passes during operation, the sluice gates have been designed to ensure effective drainage and enable periodic/selective gate operation to accommodate water exchange. It is expected that the 3 sluice gates will be fully closed for approximately 4-5 hours on 2-3 days in

March and April of the lunar calendar (during the highest tides in the dry season) to regulate salt water intrusion; and 4-5 days in November and December to control flooding during high tide for the subproject area. This operation will also minimise disruptive impacts on waterway transport. Closing of the sluice gates will be made in close consultation with the local community and an announcement will be made to the public at least 1 month before the closing date. Water quality/ecology monitoring will be conducted for at least 2 years after construction to detect any unanticipated impacts. To address road safety issue, the subproject has been designed to minimize road safety hazards, and road regulations will be enforced by the local authority during operation.

Resettlement Action plan. The construction of 3 sluices gates in the subproject will acquire permanently 17,734 m² of agriculture land and temporarily 16,243 m², (mainly garden land); 3,190 m² residential land will also be acquired permanently. Among the 13 affected, 12 HHs have to be relocated. There are 5 vulnerable HHs, and no HH of ethnic minorities is affected by land acquisition. Total cost of compensation, support and resettlement for the sub-project is 15,331,488,410 VND; equivalent to 682,917 USD.

Ethnic Minority Development Plan (EMDP). Ethnic minorities (mainly Khmer) account for 23.6% of Cau Khe District (Tra Vinh Province). This represents 31,335 households. In the two districts located in Vinh Long Province, the number of EM household is very little. No EM household is affected by land acquisition. These EM households are potentially affected by the Subproject due to the proposed livelihood improving models. The consultation with EM in the FPIC manner show that there is broad community support from EM peoples for the subproject implementation. Development activities have been proposed to maximize benefits for EM. These EM development activities include: i) Training to raise awareness of the community on husbandry and agricultural production; ii) Training to raise awareness of the community on climate change and adaption to changes in water resources, ecological and social. iii) Livelihood Development Training; iv) Develop livelihood models, with the participation of organizations, social organizations, coordinate the selection of models site, support technical guidance, implementation, monitoring and replicable results; Total budget for these Development activities is 2,969,250,000 VND (132,000 USD). EMDP will be further updated on the basis of the detailed design of the subproject.

Consultation and information disclosure

CPO and SIWRR organized and carried out 2 public consultation meetings in September, 2015 and January, 2016 in the subproject wards and communes. The participant included representative of Commune People's Committee, Fatherland Front Board, social organizations, the affected households and local people in project area. Environmental and Social impact assessment consultation. The affected households desire to get updated information on implementation progress of subproject. The affected households want to be compensated adequately according to the replacement cost for damaged assets and the market price for temporary affected farming products. Both male and female participate in local organizations and propose ideas relate to subproject; hence the gender issue has been ensured, 100% agree with the measures to minimize environmental pollution as presented in the report. Propose with project owner to apply appropriate regulations with commitment to minimize the adverse impacts as well as environmental quality management and supervision. In addition, a small consultation was held earlier. Final draft of the subproject ESIA report, the EMDP, and the RAP were sent to the World Bank for disclosure at the InfoShop in Washington DC in February, 2016. The Vietnamese versions of the reports were disclosed in CPMU office in Can Tho and DARDs Office in An Giang province and subproject sites accessible to locally-affected people.

Subproject 9: Infrastructure to prevent coastal erosion and to support aquaculture production in An Minh and An Bien districts, Kien Giang province

Introduction

This is a subproject belonging to Component 3 of the Mekong Delta Integrated Climate Change Resilience and Sustainable Livelihoods project (MD-ICRSL) proposed by the Vietnamese Government to receive funding from World Bank. The Central Project Office (CPO) under Ministry of Agriculture

and Rural Development (MARD) is responsible for project management of MD-ICRSL. The subproject owner is MARD, in which the representative of the owner is PPMU. The Kien Giang Provincial Project Management Unit (PPMU) will be responsible for planning and implementing while the Kien Giang Water Resources Department will be responsible for subproject operation. The fund for subproject operation is collateral fund from Vietnam (central and local) and loan from WB.

Subproject objective and components/activity: The Kien Giang subproject objective is to ensure protection people's lives, to prevent inundation due to spring tide, to regulate salinity and to ensure flood drainage for sustainable production and livelihood in An Minh and An Bien districts, Kien Giang province. The items/investment activities of the subproject will be implemented in the 2 regions and include: i) construction of 9 open-sluice gates on the western sea dike; ii) Construction of 10km wave breakers for protection of mangrove forest and prevent coastal erosion; iii) construction of soft embankment consisting of T-shape bamboo fences; and iv) implementing sustainable livelihoods demonstration models on raising *Andara granosa* under forest canopy, Mono culture shrimp 2 crops/year, polyculture of prawn (*Penaeus monodon*), community management shrimp-rice, and polyculture of prawn (*Penaeus monodon*) - rice integrated prawn (*Macrobrachium rosenbergii*). The locations of the activities and demonstration areas are presented in Figure 8.4.

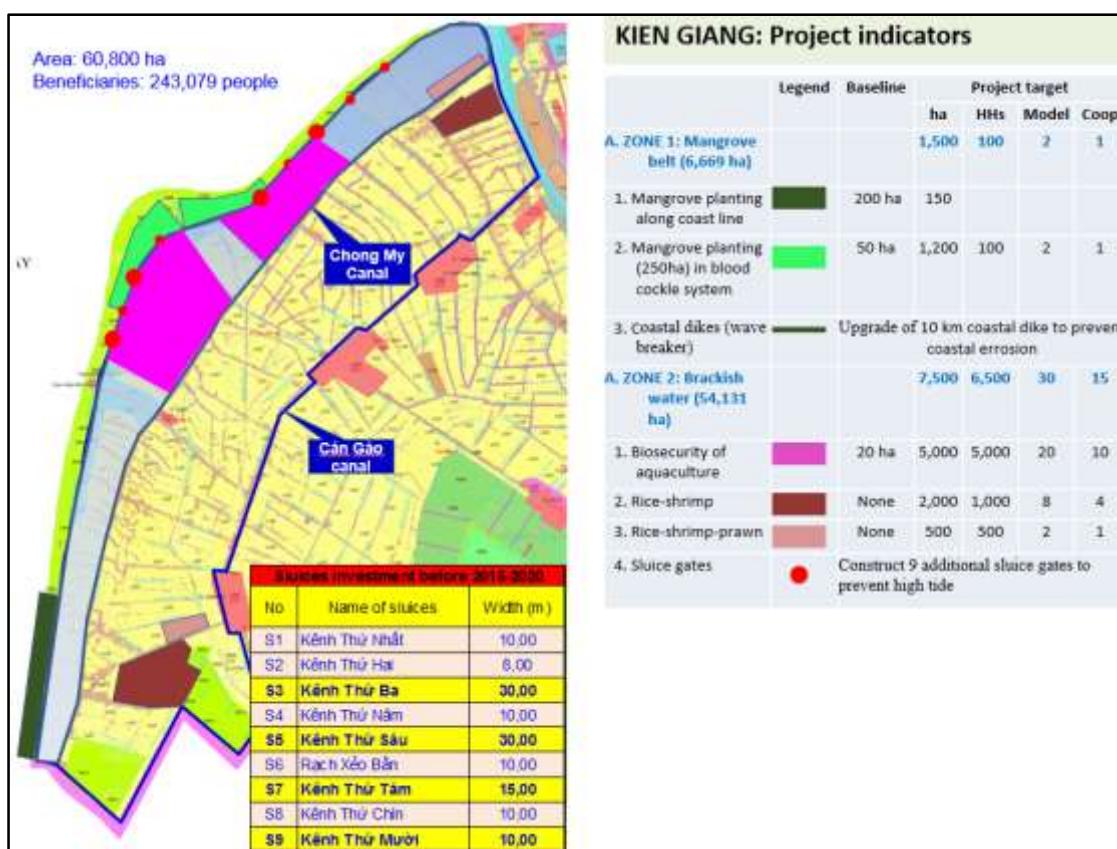


Figure 8.4. Subproject 9 locations and interventions

Subproject environmental and social screening

Environmental and social screening of the subproject was carried out in compliance with the Bank policy on Environmental Assessment (OP/BP 4.01), and the Bank safeguards policies on Environmental Assessment (OP/BP 4.01); Forests (OP/BP 4.36); Pest Management (OP/BP 4.09); Natural habitats (OP/BP 4.04); Indigenous Peoples (OP/BP 4.10); and Involuntary Resettlement (OP/BP 4.12) have been determined to be triggered for the subproject. The screening also indicates that the subproject would have potential adverse impacts that are minor to moderate, localized, temporary and can be mitigated. Therefore, the subproject has been categorized as a Category B subproject. The subproject Environmental and Social Impact Assessment (ESIA), Resettlement Action Plan (RAP), and Ethnic

Minority Development Plan (EMDP) have been prepared in line with the government Environmental Assessment (EA) regulation and the Bank safeguards policies requirements.

Summary of Environmental Baselines

The subproject region locates in the following position: from 9°28' to 10°02' Northern latitude and from 104°51' to 105°06' Eastern longitude. The subproject has a natural area of approximately 60,899ha, located within the communes of Tay Yen, Tay Yen A, Nam Yen, Nam Thai, Nam Thai A, Dong Thai, and Thu Ba town - An Bien district; Thuan Hoa, Dong Hoa, Tan Thanh, Dong Hung, Dong Hung A, Dong Hung B, Van Khanh, Van Khanh Dongg, Van Khanh Tay communes and Muoi Mot town - An Minh district, Kien Giang province. The subproject area suffers from saline intrusion frequently every year. According to the survey on the annual saline intrusion in the dry seasons for the years 2011-2012-2013 conducted by the Kien Giang Water Resources Department, it shows the salinity progressing as follows: the salinization starts from the beginning of January and ends by mid of May. The salinity level of 4g/l can intrude 8-30 km further inland. In the dry season, the salinity intrusion through the big rivers estuaries not yet having sluice gates as Cai Lon, Cai Be rivers, Can Gao channel comes in mainly with high tide, when the tide is low the salinity decreases. In recent years, the salinity intrusion has only happened at the big rivers and the branch channels connecting to the sea. In addition to some of the sluice gates having been constructed, the local government has annually invested hundreds of temporary embankments with an expenses of nearly 4 billion Dong/year aiming to help mitigate the salinity intrusion within the project region.

According to the ongoing measurements and assessment from the Southern Institute of Water Resources Research, the infield west of the Xeo Ro-Can Gao channels of the districts An Bien, An Minh, Tan Hiep has been salined with an average salinity of 18‰ in many areas within the province in the dry season, whereas the highest record measured is 25‰. Especially, from 16th to 21st February 2011, under the impact of the high tide, the salinity intrusion penetrated deeper into the new areas within the region impacting the irrigation water for production including the rice and non-rice crops. Particularly in the dry season, under long sunny drought, frequent salinity intrudes into Cai Lon, Cai Be rivers, through Xeo Ro-Can Gao channels, through Trem and Cai Tau rivers from Ca Mau, through Chu Chi, Vinh Phong, Cho Hoi channels from Bac Lieu, there were years when the project region seemed to be entirely salined. In addition, the inability to retain a fresh water source in the dry season also leads to water shortage for the summer-autumn crop causing delays in the farming schedule (due to the waiting for rains to produce),etc. tumbling the production plan and farming schedule of the Kien Giang agricultural sector.

Ambient environment quality. The results from the background environment analyses in the subproject area show that: i) The quality of air environment in the region is relatively good; ii) The soil within the subproject region is not contaminated with heavy metals; iii) The water environment of the subproject is salined with mild to moderate level of contamination, mostly with COD, BOD, nutrients and total Coliform, surface water has not been contaminated with toxic chemicals such as heavy metals and pesticides; and iv) The ecosystems in areas with high diversity mainly concentrate in the coastal mangrove forests with exploitation by people to make fish ponds, rice cultivation, non-rice crop.

Important natural habitats and reserves. In Kien Giang Province, there are some environmentally sensitive areas such as the natural wild seafood breeding area (clams, oysters, hairy cockles, etc.) in Rach Gia Bay area, U Minh Thuong National Park, coastal mangroves. However, these sensitive receptors are located within far from the construction area and subproject sites and would not affected by the subproject.

Physical cultural resources and recreational areas. There are no important physical cultural structures within or in close proximity to the subproject area that can be affected by the subproject.

Potential environmental and social impacts

Overall, the subproject will bring about big socio-economic benefits: (i) Being proactive in managing the water sources for production, expanding farming area, limited risks, enhancing productivity and yields, landuse efficiency, maximizing the potentiality and strengths of the region, creating agricultural production diversity, bringing about the plants, livestocks with high economic values and stable markets

into farming/production; (ii) Helping to improve the water supply sources, deacidification, desalination, retaining freshwater for the critical periods gradually improving the water quality for the people's water supply; (iii) Improving disaster preparedness, enhancing water and land transportation systems within the region, helping to promote services sector serving production as well as solving production outputs; (iv) Protecting ecosystem, being friendly and closely with human lives, proactively mitigating and preventing the pathogens; (v) Creating residential allocation, helping to adjust the population density, decreasing the mechanical population increase and its consequent social problems for the towns within the region. (vi) Creating income increase, improving livelihoods, lifestyles, cultures and spirits for the people, decreasing the number of poor households.

The construction of the 9 sluices along the sea dikes An Minh - An Bien will directly affect 58 households for land acquisition. An action plan for resettlement (RAP) has been prepared. There are 1,845 Khmer EM households potentially affected by the subproject, and thus an EMDP has also been prepared. Implementation and monitoring of execution of the RAP and EMDP will be carried out in accordance with safeguard policy of MD-ICRSL project. CPMU with the support of the Social Policy Coordination (SSC) and RAP and EMDP independent monitoring consultant (IMC) will monitor and report the compliance. Periodic consultation and information disclosure to the local community will be closely monitored.

Negative environmental impacts during the construction phase include:

- The sources of impact include transporting operations materials, excavation operation for site clearance preparation, construction activities for sluice foundations, formwork, construction and installation of sluices and bridges and activities of the workers. During this period, the maximum number of workers is 200 people/day, the total amount of wastewater generated is estimated 11.2m³/day, approximately 80 kilograms of garbages/day spreading over 10 construction sites and will be treated, hence the waste collection activities of workers in this period is small and localized. The volume of soil and earth materials is around 53,391.66 m³ and approximately 33,978m³ from construction materials during transportation these might generate dust and exhaust gases into the environment. At the same time, dust is also generated during construction. However, this source of pollutants only affects at the areas of operation and downwind areas, directly impacting the employees working in the area and several neighboring households. At the same time, the total volume shipped during construction will increase the density of boats in-and-out on the channels/rivers however the water navigation in the area will not be affected much.
- In addition, the environment in the region is influenced by stormwater runoff, leading to wastes, sand and dust from the construction site down the canals/channels polluting the surrounding water environments, affecting the extensive shrimp ponds near the construction locations. Sluice construction process also affects the near surface groundwater.
- In addition, the gathering of workers (up to 200 people/day) would also affect general security, might create social abuse, and consume more available resources in the subproject region.

These above impacts are temporary, localized and can be mitigated through effectively implementing good construction management practices as described in the Environment Code of Practices (ECOP) proposed for the subproject and monitoring water and ecological quality.

The negative impact of the operation: Once completed, the sluice gates will be operated for serving the production of 54,031 hectares of production land inside the dike, among which there are 18,100 hectares of land for aquaculture being converted from 2 rice-crop land and 2-rice-shrimp crop land, and 36,031ha of shrimp-rice land production being converted from 2-crop production land. The subproject area will develop in the direction of increasing aquaculture development, which will help increase the amount of waste water from fish ponds, especially the sludge from dredging operations of the pond causing water pollution, spreading disease and accumulating of the sediments in the channels. Then it is time to apply the Integrated Pesticide Management program. At the same time, once the bridges are completed, the road traffic in the region will develop causing risks in air pollution and traffic accident. To mitigate these impacts, the detailed design will include design and installation of traffic signals, street lights, signs being inconsistent with rules and regulations from the Government and international norms.

During operation the local government will implement the safety regulations according to their responsibilities.

Mitigation measures

In order to address the social impacts, a Resettlement Action Plan (RAP) and an Ethnic Minority Development Plan (EMDP) have been prepared and implemented during project implementation. To mitigate the adverse environmental impacts, an Environmental and Social Management Plan (ESMP) has been prepared as a part of the subproject ESIA. The common construction related impacts during construction phase would be mitigated by the contractor through the ECOP included in the ESMP and the civil works contract, and enforced by the Construction Supervision Consultant (CSC) and the subproject owner. The ESMP is estimated at 872,000,000 VND, excluding costs to be included in the civil works contract, CSC contract and RAP.

Resettlement action plan (RAP): The subproject will acquire permanently 132,240 m² of agriculture land, 6,882 m² of residential land and temporarily 108,000 m² of public land in 8 communes of the subproject. There are 58 HHs affected through land acquisition. All the 58 HH will need to relocate including 9 vulnerable HHs; no ethnic minority people is affected. All the 58 HH chose to self-relocate in the same commune. Other impacts are losses of crops, trees and structures. Total cost of compensation, support and resettlement for the sub-project is 39,393,725,680 VND; equivalent to 1,754,732USD

The Ethnic Minority Development Plan (EMDP): There are 1,845 EM households (6,641 people) which are potentially affected by the Sub project due to the proposed livelihood improving models. No EM household is affected by land acquisition. The consultation with EM in the FPIC manner show that there is broad community support from EM peoples for the subproject implementation. Development activities have been proposed to maximize benefits for EM. These EM development activities include: i) Supporting development and replication of pig, chicken raising model, safe vegetable planting; ii) Training on agricultural production skill and non-agricultural job which can develop in the local such as sewing, embroidery, knitting...;iii) Supporting clean water system, toilets, road, rural bridge; iv) Enhancing cultural classes, disseminating laws and policies; v) Supporting communication activities; and vi) Capacity building and training for the project implementation units. Total budget for these Development activities is 1,413,250,000 VND (151,200 USD). EMDP will be further updated on the basis of the detailed design of the subproject.

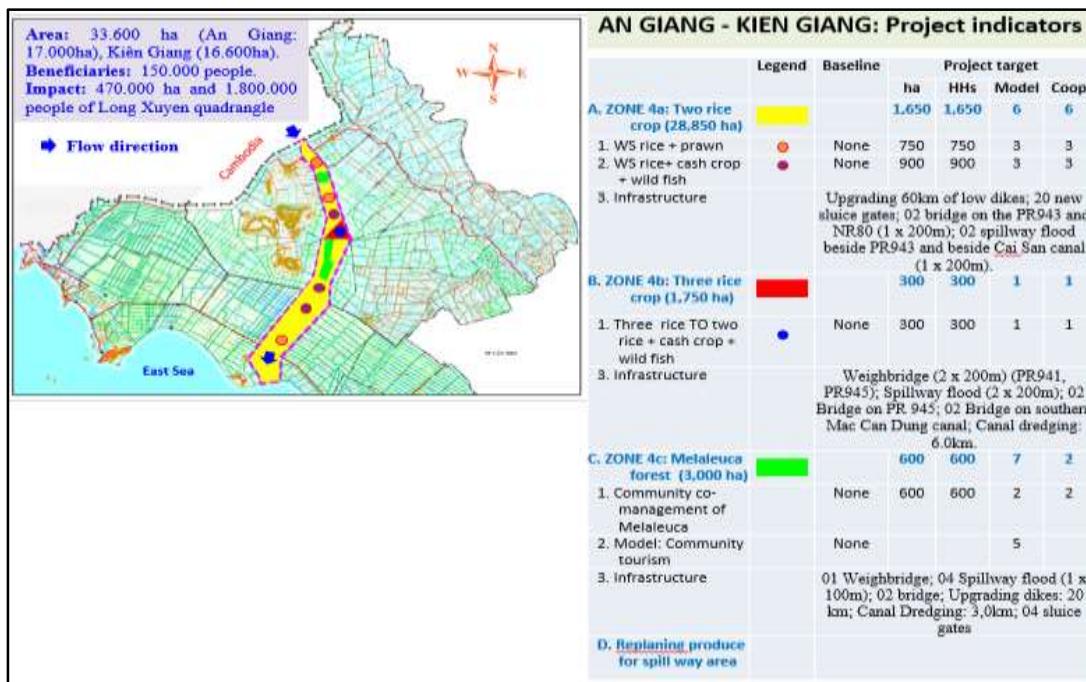
Public consultation and information disclosure

CPO and SIWRR organized and carried out 2 public consultation meetings in October 2015 and January 2016 in the subproject wards and communes. The draft subproject ESIA, EMDP, and the RAP in Vietnamese were locally disclosed at CPO, Tra Vinh and subproject district offices as well as at the subproject sites accessible to locally-affected people. Their English versions were also disclosed in January 2016 at the World Bank InfoShop. The final documents will be disclosed in February 2016.

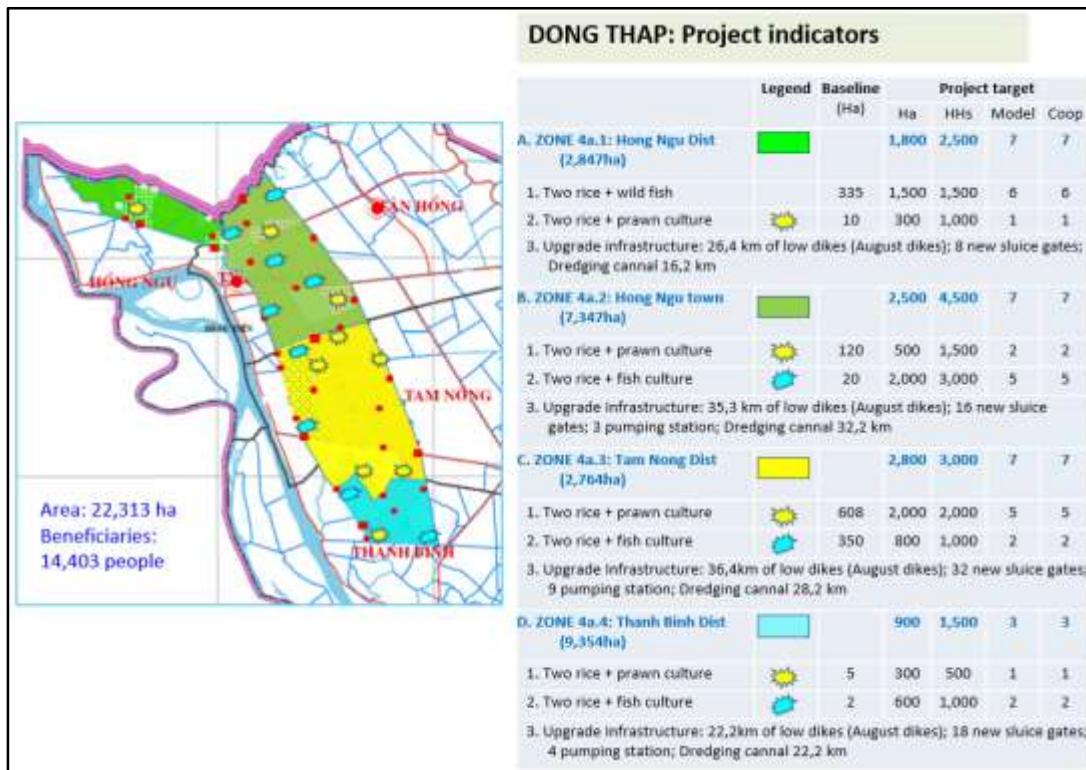
Indicative Second Phase Subprojects

The maps and table below represent locations and intervention activities and areas of the subproject to be implemented in the second phase of project implementation.

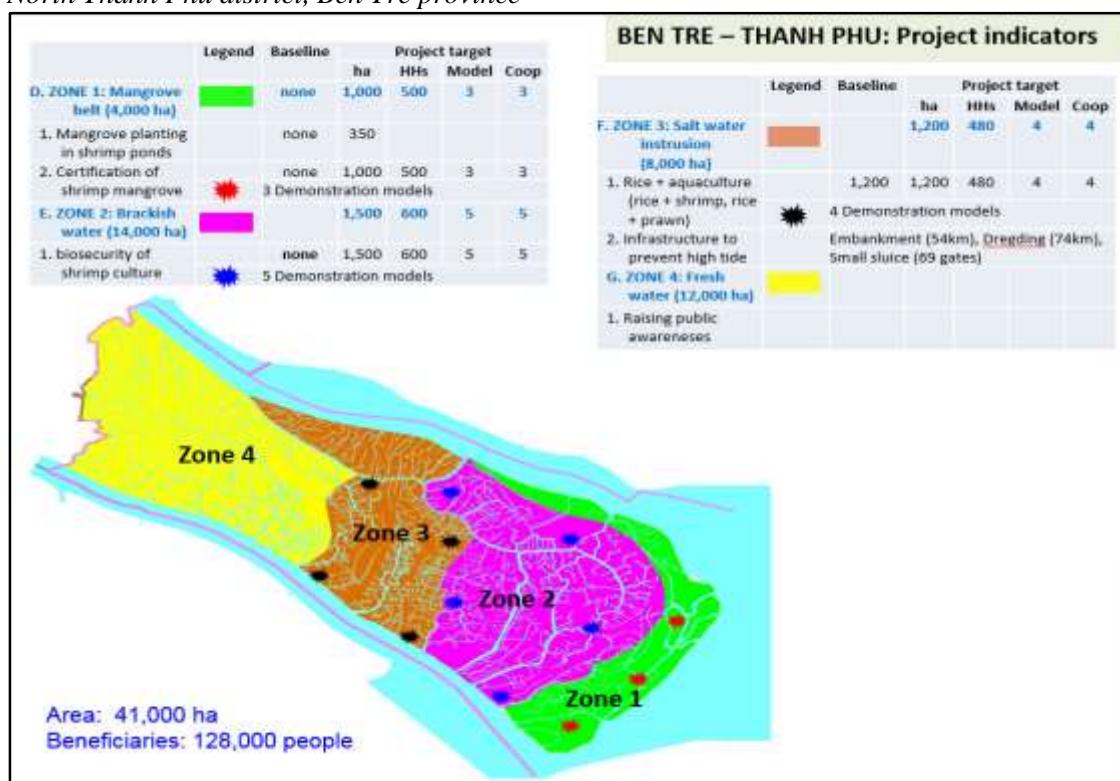
Subproject 1: Enhancing the ability of flood drainage and climate change adaptation for the Long Xuyen Quadrangle, An Giang and Kien Giang Province



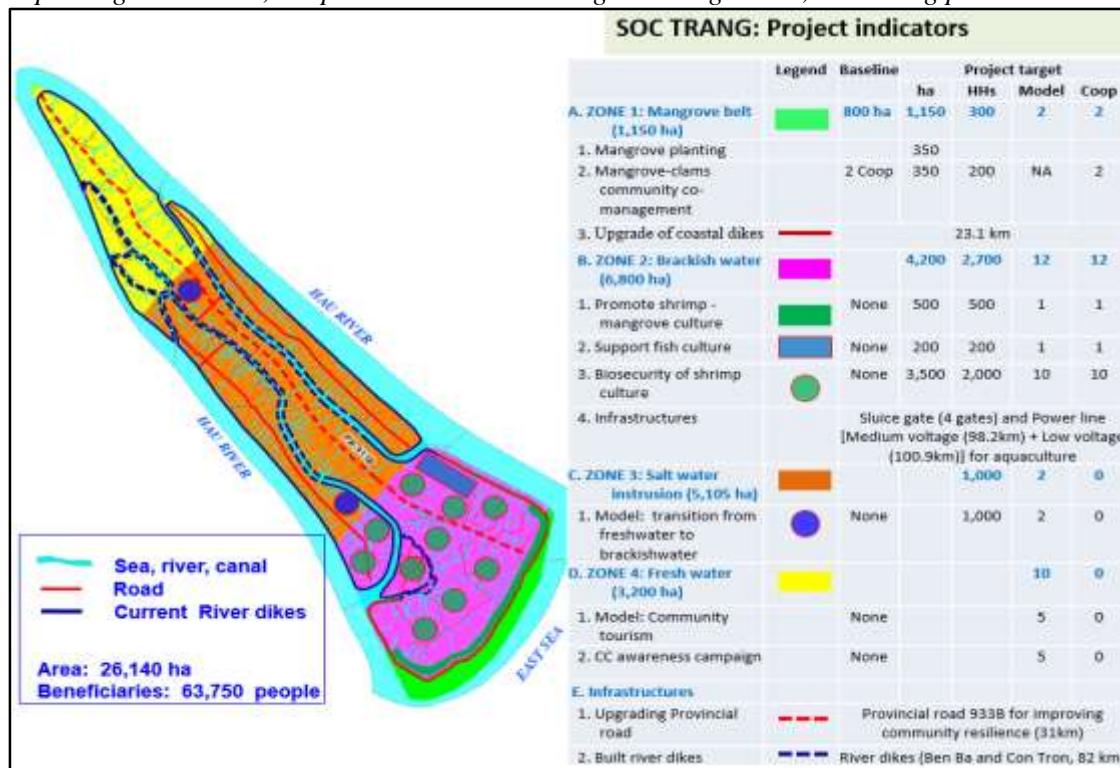
Subproject 3: Improving the ability of flood drainage and developing stable livelihoods, climate change adaptation in the Plain of Reed (the northern districts of Dong Thap province)



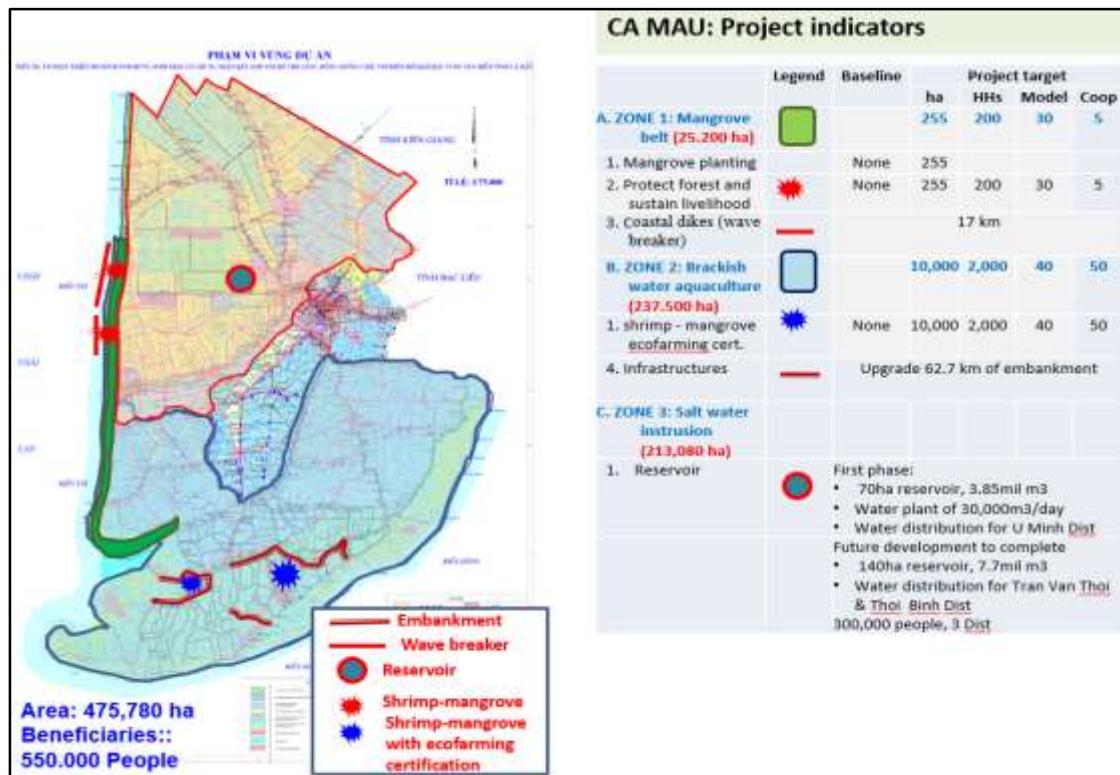
Subproject 5: Infrastructure to improve livelihoods for people to adapt to climate change in the North Thanh Phu district, Ben Tre province



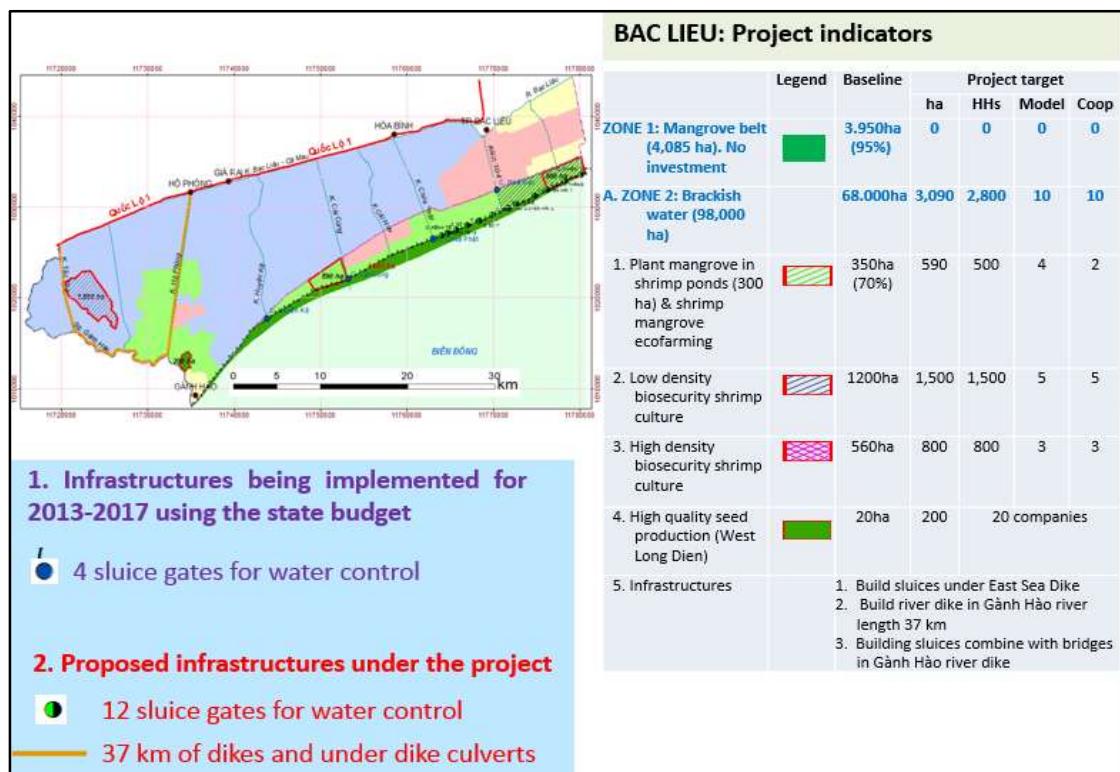
Subproject 7: Infrastructure for production transition in accordance with ecological conditions, improving livelihoods, adaptation to climate change in Dung island, Soc Trang province



Subproject 8: Infrastructure to prevent coastal erosion, supply fresh water and for production of shrimp - forest model to improve livelihoods and adapt to climate change in coastal area of Ca Mau



Subproject 10: Infrastructure for ecological forest protection and development, livelihood improvement, and climate change adaptation in Hoa Binh, Dong Hai, Phuoc Long, and Hong Dan districts, Bac Lieu



Annex 2: Safeguard Screening, Checklist, and Forms

1. This annex provides technical guidance for safeguard screening to be conducted by the subproject or the activities owner to ensure that (a) the subprojects and activities to be carried out under the Project are eligible for World Bank (WB) financing, (b) the subprojects or activities are properly categorized (A, B, C) so that appropriate measures and/or safeguard documents are prepared, and (c) appropriate results are recorded in appropriate forms. The annex presents the technical criteria to be used during the screening (Section A2.1), the screening forms to be signed by the PPMU director (Section A2.2), and the impacts assessment and preparation of safeguard documents (Section A2.3). The subproject owner or the activities owner and their consultants are responsible for implementation of these procedures.

2. Screening and impact assessment of the first phase subprojects (4) resulted in the ESIA preparation and the reports have been submitted to WB for review.

A2.1 Technical Criteria for Eligibility Screening and Categorization

(a) Eligibility Screening

3. Purpose of the eligibility screening is to avoid adverse social and environmental impacts that cannot be adequately mitigated by project or that are prohibited by the national legislation, the WB's safeguard policy, or the international conventions. The principle of avoidance usually applies for subprojects that can create significant loss or damage to nationally important physical cultural resources, critical natural habitats, and critical natural forests. Such subprojects would not likely be eligible for financing under the project. However, the ineligibility criteria and screening should not be used to avoid doing beneficial subprojects, simply because one wants to avoid triggering a WB safeguard policy.

Table A2.1: List of ineligible item for WB financing under MD-ICRSLP

1	Eligible project investments/activities cannot damage or otherwise adversely affect/impact on the national parks, natural reserves, and/or cultural property, including but not limited to, the following sites: <ul style="list-style-type: none">– Tram Chim National Park (Ramsar site in 2012) in Dong Thap province;– Kien Luong Landscape Reserve in Kien Giang province;– U Minh Thuong National Park (likely to be Ramsar site in 2015) in Kien Giang province;– U Minh Ha National Park in Ca Mau province– Mui Ca Mau National Park (Ramsar site in 2013) in Ca Mau province;– Lung Ngoc Hoang Wetland Nature Reserve in Hau Giang;– Bac Lieu Bird Colony Reserve in Bac Lieu; and– Thanh Phu Wetlands Reserve in Ben Tre province.
2	Subprojects/activities that require pesticides that falls in WHO classes IA, IB, or II.
3	The area located in territorial dispute between two or more countries in the subproject and its ancillary aspects and related activities

(b) Subproject Categorization

4. To guide the preparation of environmental safeguard documents, the criteria below will be used for the subproject categorization:

- Category A: If the subproject/activities is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works. If the answer is “YES” to any of the screening questions in *Form B1* above, the subproject is likely to be considered a Category A and an ESIA acceptable to World Bank including an ESMP (see *guideline in Annex 3*), will be prepared. The PPMU is advised to discuss the results of this screening with the WB before starting the preparation of the ESIA. Given the differences between the WB requirements for project category A and the GoV requirements per EIA regulation, two separate set of documents (one to satisfy the WB and one to satisfy GoV) will be needed.
- Category C: If the subproject/activity is likely to have minimal or no adverse environmental impacts and if all answers for the screening questions in *Form B1* are “NO”. Beyond screening (see Form B2), no further EA action is required. However, if the subproject and/or activities involve small works, the subproject/activity owner will apply the simplified ECOP (See *Annex 4 (b)*) to satisfy WB requirements and prepare EIA/EPP to satisfy the government requirements.
- Category B: If the subproject/activity is likely to create potential adverse environmental impacts on human populations or environmentally important areas - including wetlands, forests, grasslands, and other natural habitats – but less adverse than those of Category A subprojects. These impacts are site-specific; few if any of them are irreversible; and in most cases mitigation measures can be designed more readily than for Category A subprojects. After the screening for Category A and Category C is applied and if the conclusion is reached that the subproject is not A and is not C, then the subproject should be categorized as B. For Category B subproject, an ESMP can be prepared including ECOP (see Annex 4 (a)) to satisfy the WB requirements (see guidelines in Annex 3). The PPMU will also prepare an EIA or an EPP in accordance with the GoV regulations.

(b) Social impact screening and preparation of safeguard documents

5. To satisfy the WB safeguard policies (OP/BP 4.10 and OP/BP4.12), in addition to the environmental screening and preparation of ESIA or ESMP mentioned above, the subproject will be screened for the nature and extent of potential negative impacts on local people related to land acquisition, resettlement, land donation, relocation of graves, and/or involvement with ethnic minority, and other social impacts involved in the project. If the impacts exist, RAPs and/or EMDPs will be prepared in line with the RPF and/or the EMPF which have been developed for the project. During preparation of RAPs and EMDPs, consultation with affected population, local authorities, local communities, and interested community organizations and/or NGOs will be required. Due attention should also be given to address the issues related to gender, ethnic minorities, and other disadvantaged groups. Relocation of graves will be carried out based on the principle of replacement cost and in accordance with local cultural practices, taking into account cultural preferences, which are typical for each ethnic group as set out in the RAPs and EMDPs. WB approval of the RAPs and EMDPs will be mandatory.

Table A2.2. Requirements for safeguards documents for subprojects

Category for environmental assessment	Requirements for safeguard documents		
	<i>World Bank</i>		<i>Viet Nam</i>
	<i>Environmental assessment document</i>	<i>Other safeguard documents (see Forms below)</i>	
Category A	- Full ESIA - ESMP including ECOP	- RAP (if the answer to any of the questions 23-27 is “Yes”). - EMDP (if the answer to questions 28 or 29 is “Yes”). - Dam Safety Report (DSR) (if the answer to question 30 or 31 is “Yes”). - Pest Management Framework (PMF) (If the answer to question 33 is “Yes”).	EIA/EPP as required in Decree No.18/2015 /ND-CP
Category B	For first year subprojects: - ESIA - ESMP including ECOP For remaining subprojects: ESMP including ECOP		Circular 27/2015/TT -BTNMT
Category C	ECOP if involves small civil works	Not required	

A2.2 Safeguard Screening Checklist and Forms

This subproject screening checklist is intended for the use of PMUs and PPMUs so that they can determine the appropriate type of safeguards documentation that will be required by the World Bank for the subproject, in conformance with the ESMF for the Project.

The PMU or PPMU is encouraged to send this checklist to the Task Team Leader (TTL) to ensure that the World Bank agrees with the results of the screening prior to the hiring of consultants to prepare safeguard documents.

6. The following safeguard screening checklist and forms will be used for all the subprojects to be financed under Components 2, 3, and 4. The subproject owner will (a) apply Form A for presenting results of eligibility screening, (b) apply Forms B1 and B2 for categorization, (c) apply Form C for impact assessment, and (d) complete the signing in items (d) and (e). Technical guidelines for the preparation of ESIA and ESMP are provided in Annex 3 while those for RAP and EMDP are provided in the Resettlement Policy Framework (RPF) and the Ethnic Minority Policy Framework (EMPF) respectively.

4. For the activities to be carried out under Components 1 and 5, the activity owner will complete Form A and B2 and the signing in items (d) and (e).

**PROJECT: MEKONG DELTA INTEGRATED CLIMATE RESILIENCE AND
SUSTAINABLE LIVELIHOODS (MD-ICRSL)**

Subproject/Activity Name:

.....
.....

Subproject/Activity Location: (*e.g. region, district, etc.*)

.....
.....

Type of activity:

Subproject/Activity Owner and Address:

Environmental Category of the Main Project: A

(a) Eligibility screening

Form A: Eligibility Screening Criteria

Screening Questions	Yes/No	Remarks, (If yes?)
1. Will the subproject/activity likely to damage or otherwise adversely affect/impact on the national parks, natural reserves, and/or cultural property, including but not limited to, the sites listed in Table A2.1 item 1?		If yes, the sub-project is not eligible for funding.
2. Will the subprojects/activities require pesticides that falls in WHO classes IA, IB, or II.?		If yes, then the subproject is not eligible for funding.
3. Will there be any territorial dispute between two or more countries in the subproject and its ancillary aspects and related activities?		If yes, then the subproject is not eligible for funding.

Result of eligibility screening:

- The sub-project is not eligible for funding under MD-ICRSL project
- The sub-project is eligible for funding under MD-ICRSL project (i.e. all answers are “No”); technical screening will be continued using Forms B1 and/or B2 and Form C.
- The activity is eligible for funding under MD-ICRSL project (using Form B2)

(b) Technical Environmental Screening to identify which kind of EA will be applied for the subproject

Form B1: Category A Screening Criteria

Screening Questions	Yes (S, M, L)	No	Remarks (S=Significant, M=Moderate, L=Low, see definition in Box A2.1 below)
1. Does the subproject have the potential to cause significant adverse impacts to natural or critical natural habitats?			
Leads to loss or degradation of sensitive Natural Habitats defined as: land and water areas where (i) the ecosystems' bio-logical communities are formed largely by native plant and animal species, and (ii) human activity has not essentially modified the area's primary ecological functions. Important natural habitats may occur in tropical humid, forests; mangrove swamps, coastal marshes, and other wetlands; estuaries; sea grass beds; coral reefs; freshwater lakes and rivers; alpine and sub alpine environments, including herb fields, grasslands, and paramos; and tropical and temperate grasslands.			<p>Indicate location and type of natural habitat and the kind of impacts that could occur, e.g., loss of habitat and how much, loss of ecosystem services, effects on the quality of the habitat. State why these impacts are or are not significant.</p> <p>Note that the World Bank does not support projects involving the significant conversion of natural habitats unless there are no feasible alternatives for the project and its siting, and comprehensive analysis demonstrates that overall benefits from the project substantially outweigh the environmental costs.</p>
Leads to loss or degradation of Critical natural habitat, i.e., habitat that is legally protected, officially proposed for protection, or unprotected but of known high conservation value. Critical habitats include existing protected areas and areas officially proposed by governments as protected areas (e.g., reserves that meet the criteria of the World Conservation Union [IUCN] classifications, areas initially recognized as protected by traditional local communities (e.g., sacred groves), and sites that maintain conditions vital for the viability of these protected areas. Sites may include areas with known high suitability for bio-diversity conservation; and sites that are critical for rare, vulnerable, migratory, or endangered species.			<p>Note that the World Bank cannot fund any projects that result in significant conversion or degradation of critical natural habitats.</p> <p>Indicate location and type of critical natural habitat and state why they are or are not significant.</p>
2. Does the subproject have the potential to cause significant adverse impacts to physical cultural resources?			
Leads to loss or degradation of physical cultural resources, defined as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. They may be located in urban or rural settings, above or below ground, or under water.			Describe location and type of cultural resources and the kind of impacts that could occur. State the level of protection (local, provincial, national or international). Are any of these sites considered important to preserve in situ, meaning that the resources

Their cultural interest may be at the local, provincial or national level, or within the international community.		should not be removed from their current location? State why impacts are or are not significant.
Potentially results in a contravention of national legislation, or national obligations under relevant international environmental treaties and agreements, including the UNESCO World Heritage Convention or affect sites with known and important tourism or scientific interest.		Describe any impacts that might contravene national or international legislation concerning cultural resources. If considered not significant, explain why.
3. Does the subproject have the potential to cause significant adverse impacts on the lands and related natural resources used by ethnic minorities?		
Potentially result in impacts on lands or territories that are traditionally owned, or customarily used or occupied, and where access to natural resources is vital to the sustainability of cultures and livelihoods of minority peoples. Potentially impact the cultural and spiritual values attributed to such lands and resources or impact natural resources management and the long-term sustainability of the affected resources.		Describe the type and extent of impacts and the significance of alterations to the resources of the affected minorities. Note that an Ethnic Minority Development Plan will also be required in accordance with World Bank OP 4.10.
4. Does the subproject have the potential to cause significant adverse effects to populations subject to physical displacement?		
Leads to physical displacement of populations dependent upon lands or use of specific use of resources that would be difficult to replace or restore? Otherwise lead to difficult issues in the ability of the subproject to restore livelihoods?		Indicate the numbers of households affected and the resources that will be difficult to replace in order to achieve livelihood restoration. Note that a Resettlement Action Plan will need to be prepared in accordance with World Bank OP 4.12.
5. Does the subproject entail the construction of a large dam?		
Does the subproject require construction of a dam that is: <ul style="list-style-type: none">• 15 meters or more in height• between 10 and 15 meters in height with special design complexities--for example, an unusually large flood-handling requirement, location in a zone of high seismicity, foundations that are complex and difficult to prepare, or retention of toxic materials.• under 10 meters in height but expected to become large dams during the operation of the subproject?		Describe the issues and note the requirements of OP 4.37 concerning the appointment of an Independent Panel of Experts.
Does the operation of the subproject rely on the performance of: <ul style="list-style-type: none">• an existing dam or a dam under construction (DUC);		If yes, this may not always mean that a Category A EIA is required, but special care must be taken, because the World Bank has specific requirements to ensure the safety of

<ul style="list-style-type: none"> power stations or water supply systems that draw directly from a reservoir controlled by an existing dam or a DUC; diversion dams or hydraulic structures downstream from an existing dam or a DUC, where failure of the upstream dam could cause extensive damage to or failure of the new World Bank-financed structure and irrigation or water supply projects that will depend on the storage and operation of an existing dam or a DUC for their supply of water and could not function if the dam failed. 			the performance of the existing dam or dam under construction. World Bank requires inspection and evaluation of dam or DUC, its performance and operation and maintenance procedures, and recommendations for any remedial work or safety-related measures; previous assessments can also be evaluated.
6. Does the subproject entail the procurement or use of pesticides?			
Do the formulations of the products fall in World Health Organization classes IA and IB, or are there formulations of products in Class II? ,			If yes, this may not always mean that a Category A EIA is required, but special care must be taken. The World Bank will not finance such products, if (a) the country lacks restrictions on their distribution and use; or (b) they are likely to be used by, or be accessible to, lay personnel, farmers, or others without training, equipment, and facilities to handle, store, and apply these products properly.
7. Does the subproject have the potential to cause irreversible impacts or impacts that are not easily mitigated?			
Leads to loss of aquifer recharge areas, affects the quality of water storage and catchments responsible for potable water supply to major population centers.			Name the water bodies affected and describe magnitude of impacts.
Leads to any impacts such that the duration of the impacts is relatively permanent, affects an extensive geographic area or impacts have a high intensity.			Describe any impacts considered to be permanent, affecting a large geographic area (define) and high intensity impacts.
8. Does the subproject have the potential to result in a broad diversity of significant adverse impacts?			
Multiple sites in different locations affected each of which could cause significant losses of habitat, resources, land or deterioration of the quality of resources.			Identify and describe all affected locations.
Potential, significant adverse impacts likely to extend beyond the sites or facilities for the physical works.			Identify and describe the types of impacts extending beyond the sites or facilities of the physical works.
Transboundary impacts (other than minor alterations to an ongoing waterway activity).			Describe the magnitude of the transboundary impacts.
Need for new access roads, tunnels, canals, power transmission corridors, pipelines, or borrow and disposal areas in currently undeveloped areas.			Describe all activities that are new that are required for the main activity to function.

Interruption of migratory patterns of wildlife, animal herds or pastoralists, nomads or semi-nomads.			Describe how migrations of people and animals are affected.
9. Is the subproject unprecedented?			
Unprecedented at the national level?			Describe why and what aspects are unprecedented.
Unprecedented at the provincial level?			Describe why and what aspects are unprecedented.
10. Is the project highly contentious and likely to attract the attention of NGOs or civil society nationally or internationally?			
Considered risky or likely to have highly controversial aspects.			Describe perceived risks and controversial aspects
Likely to lead to protests or people wanting to demonstrate or prevent its construction.			Describe the reasons that subproject is highly unwelcome.
If all the answers from 1-10 is “No”; use the criteria in Form B2 Category C screening criteria			

Box A2.1 Definition for level of impacts
<u>Significant impact (S)</u>
<ul style="list-style-type: none"> - Significant changes, over a significant area, to key characteristics or features or to the landscape's character or distinctiveness for more than 2 years. - The impact goes beyond regulatory standards or long-lasting and widespread impacts - Altering the ecosystems or ecological functions on a large area causing losses at the moderate scale (lasting over 2 years) but having the ability to restore within 10 years; - Tentatively affect human health; - Causing financial damage to the users or communities.
<u>Moderate impact (M)</u>
<ul style="list-style-type: none"> - Noticeable but not significant changes for more than 2 years or significant changes for more than 6 months but less than 2 years, over a significant area, to key characteristics or features or to the landscape's character or distinctiveness. - Altering the ecosystems or ecological functions locally in a short time with potentially good recovering capacity. The impact level is similar to the changes at present but potentially causing accumulated impact. - Possibly (unlikely) affect human health; may causes difficulties to some users.
<u>Small Impact (L).</u>
<ul style="list-style-type: none"> - Noticeable changes for less than 2 years, significant changes for less than 6 months, or. - Changes occur only in the current variation range or barely discernible changes for any length of time, within acceptable standards and their impacts can be totally controlled. - The impacts may affect the operation but does not hinder the users or the public. - Mild impact on the human health or quality of life.
<u>No impact (Insignificant/Negligible) N</u>
<ul style="list-style-type: none"> - Any change would be negligible, unnoticeable or there are no predicted changes - - Changes that are not perceivable or can be measurable based on the basic operation; - No mutual influence and therefore no changes occurred

Form B2: Category C Screening Criteria

Screening Questions	Y	N	Remarks
1. Subproject activities are limited to training, technical assistance and capacity building.			Describe activities.
2. Training and capacity building do not require use of chemicals, biological agents, pesticides.			Support this statement.
3. There is no infrastructure to be demolished or built.			Support this statement.
4. There are no interventions that would affect land, water, air, flora, fauna or humans.			Support this statement.
5. If scientific research is being performed, the research is of such a nature that no hazardous or toxic wastes are created and the research does not involve recombinant DNA or other research that would create dangerous agents should they be released from contained, laboratory conditions			If yes, discuss with the World Bank environmental specialists.

Result of EA screening:

- Category A–full ESIA (If the answer is “YES (S)” to any of the screening questions in Form B1)
- Category C - no further EA action is required ESIA (If all answers are “NO” to the screening questions in Form B1)
- Category B - ESMP (After the screening for Category A and Category C is applied and if the conclusion is reached that the subproject is not A and is not C, then the subproject should be categorized as B)

(c) Identification of Issues and Preparation of Safeguard Documents

Form C: Potential Environmental and Social Impacts to be Addressed

No.	Does the subproject entail these environmental impacts?	N	L	M	H	Not known	Remarks
1.	Encroachment on historical/cultural areas						
2.	Encroachment on an ecosystem (e.g. natural habitat sensitive or protected area, national park, nature reserve etc....)						<i>Describe and briefly assess impact's level</i>
3.	Disfiguration of landscape and increased waste generation						
4.	Removal of vegetation cover or cutting down of trees during clearance for construction						
5.	Change of surface water quality or water flows (e.g. Increase water						<i>Indicate how and when this occurs.</i>

	turbidity due to run-off, waste water from camp sites and erosion, and construction waste) or long-term.					
6.	Increased dust level or add pollutants to the air during construction					<i>Indicate how and when this occurs</i>
7.	Increased noise and/or vibration					<i>Indicate how and when this occurs</i>
8.	Resettlement of households? If yes, how many households?					
9.	Use of resettlement site that is environmentally and/or culturally sensitive					<i>Briefly describe the potential impacts</i>
10.	Risk of disease dissemination from construction workers to the local peoples (and vice versa)?					<i>Note estimated number of workers to be hired for project construction in the commune/district and what kind of diseases they might introduce or acquire.</i>
11.	Potential for conflict between construction workers and local peoples (and vice versa)?					
12.	Use of explosive and hazardous chemicals					
13.	Use of sites where, in the past, there were accidents incurred due to landmines or explosive materials remaining from the war					
14.	Construction that could cause disturbance to the transportation, traffic routes, or waterway transport?					
15.	Construction that could cause any damage to the existing local roads, bridges or other rural infrastructures?					
16.	Soil excavation during subproject's construction so as to cause soil erosion					
17.	Need to open new, temporary or permanent, access roads?					<i>Estimate number of and length of temporary or permanent access roads and their locations</i>
18.	Separation or fragmentation of habitats of flora and fauna?					<i>Describe how.</i>
19.	Long-term impacts on air quality					

20.	Accident risks for workers and community during construction phase					
21.	Use of hazardous or toxic materials and generation of hazardous wastes					
22.	Risks to safety and human health					<i>Describe how.</i>

Does the subproject entail land acquisition or restriction of access to resources?

23.	Acquisition (temporarily or permanently) of land (public or private) for its development					<i>List land areas for permanent and temporary land acquisition, type of soils, duration and purpose of acquisition</i>
24.	Use land that is currently occupied or regularly used for productive purposes (e.g., gardening, farming, pasture, fishing locations, forests)					
25.	Displacement of individuals, families or businesses					
26.	Temporary or permanent loss of crops, fruit trees or household infrastructure					
27.	Involuntary restriction of access by people to legally designated parks and protected areas					

If the answer to any of the questions 23-27 is "Yes" for "L", "M", or "H", please consult the RPF; preparation of a Resettlement Action Plan (RAP) is likely required.

A. Are ethnic minority peoples present in the subproject area?

28.	Ethnic minority groups are living within the boundaries of, or nearby, the subproject.					
29.	Members of these ethnic minority groups in the area potentially could benefit or be harmed from the project.					

If the answer to questions 28 or 29 is "Yes" for "L", "M", or "H", please consult the EMPF; and preparation of an Ethnic Minority Development Plan (EMDP) is likely required.

Does the subproject entail construction of or depend upon a dam?

30.	Involve the construction of a large dam or embankment?					<i>See OP/BP 4.37 for the definition</i>
31.	Depend on water storage from an existing dam or weir or a dam under construction?					<i>Describe the functional relationship between the subproject and the existing dam or a dam under construction.</i>

If the answer to question 30 or 31 is "Yes" for "L", "M", or "H", please consult the ESMF Annex 3; a Dam Safety Report (DSR) will likely be required.

Does the subproject entail procurement or use of pesticides?

32	Subprojects/activities that require pesticides that falls in WHO classes IA, IB, or II.						<i>See list of ineligible items above</i>
33	Subprojects will involve the use of agrochemicals (pesticides, fertilizers, and toxic chemicals in aquaculture or shrimp farming)						<i>See Annex 5 for the application of Pest Management Framework (PMF)</i>
<i>If the answer to question 33 is “Yes”, the subproject is not eligible; If the answer to question 33 is “Yes” for “L”, “M”, and “H”, please consult ESMF Annex 5 (Pest Management Framework, PMF) will likely be required.</i>							
<i>Does the subproject involve dredging?</i>							
34	Subprojects will involve dredging.						<i>See ESMF Annex 3 (ESIA and ESMP) and ECOP</i>
<i>If the answer to question 34 is “Yes”, please consult ESMF Annex 3; the ESIA and ESMP of the subproject will address the potential impacts and mitigation measures and application of ECOP with dredging will be required.</i>							
Note: N =No impact; L =Low (very small- scale, localized and temporary impacts; M= Medium impacts (Medium-scale, reversible impacts can be solved by applying prevention and management measures; H = High Impact (large scale, reversible, compensated) and N/A= Not know							

(d) Social safeguard documents to be prepared:

- Resettlement Action Plan (*If the answer to any of the questions 23-27 is “Yes”*)
- Ethnic Minority Development Plan (*If the answer to questions 28 or 29 is “Yes”*)

(e) Result of subproject screening

1. Eligibility

- The sub-project is not eligible for funding under MD-ICRSL project
- The sub-project is eligible for funding under MD-ICRSL project

2. Safeguard documents

- full ESIA
- ESMP
- Resettlement Action Plan
- Ethnic Minority Development Plan
- Dam Safety Report
- Pest Management Plan

CONFIRMATION

PPMU

CPMU

WB

Annex 3 (a): Guideline for Subproject ESIA and ESPM Preparation

1. This annex presents technical guideline for preparation of ESIA and ESPM for subproject including scope of the ESIA report (Section A3.1), scope of ESMP report (Section A3.2), public consultation (Section A3.3), Guideline for preparation of Dredge Material Disposal Plan (DMDP) (Section A3.4), and preparation of EIA/EPP as required by the Government's EIA regulations (Section A3.5). Result from technical screening and issues identified in Annex 2 will be used as the basis of preparation of scope and extent of the mitigation measures.

A3.1 Preparation of ESIA Report

2. The subproject owner (CPO/PPMUs/ICMB10) is responsible for the preparation and submission of the ESIA/ESMP documents with assistance from a qualified consultant. After conducting the screening, the subproject owner's consultant will work with CPMU/CPO and WB to agree on the safeguard document to be prepared for the subproject.

(a) Guidance on Scope and Content of the ESIA Report

3. The general content below should be used:

- *Abbreviations and Acronyms*
- *Executive Summary*: Concisely discuss significant findings, recommended actions
- *Introduction*: Briefly explain the project and subproject and objective/scope of the ESIA report especially results of the safeguard screening.
- *Project description*. Concisely describes the proposed project and its geographic, ecological, social, and temporal context, including any offsite investments that may be required (e.g., dedicated access roads, water supply, housing, and raw material and product storage facilities). Indicates the need for any resettlement plan or indigenous people development plan. Normally includes a map showing the project site and the project's area of influence.
- *Policy, Legal and Administrative Framework*. Discusses the policy, legal, and administrative framework within which the ESIA is carried out, policies related to physical cultural resources and natural habitats; Identifies relevant international environmental agreements to which the country is a party; and list of the required clearance, permission and disclosure requirements.
- *Project Baseline data*. Assesses the dimensions of the study area and describes relevant physical environment; (b) biological Environment; (c) Socio-economic and socio-cultural Environment; (d) Cultural Resources sites (historical, religious, or architectural); and (e) Environmentally sensitive areas; including any changes anticipated before the project commences. Also takes into account current and proposed development activities within the project area but not directly connected to the project. Data should be relevant to decisions about project location, design, operation, or mitigatory measures. The section indicates the accuracy, reliability, and sources of the data.
- *Environmental and social impacts of the project*. Predicts and assesses the project's likely positive and negative impacts, in quantitative terms to the extent possible. Identifies mitigation measures and any residual negative impacts that cannot be mitigated. Explores opportunities for environmental enhancement. Identifies and estimates the extent and quality of available data, key data gaps, and uncertainties

associated with predictions, and specifies topics that do not require further attention. The assessment and identification of the mitigation measures will also include those for the ancillary and associated facilities of the subproject activities including, but not limited to disposal sites for dredged materials, quarries, access roads, etc. For the subproject related to sluice operations, due attention will be given to address the issues and mitigation measures related to potential impacts on land and water uses as well as to ensure that adequate consultation with water users and other key stakeholders will be conducted during the development and finalization of the sluice operational plan. For the subproject that involve livelihood development especially those related to aquaculture and/or shrimp farming in coastal area, potential risks and/or impacts on socioeconomic condition of poor farmers as well as possible degradation of mangrove and water quality due to expansion of the activities without proper controlled and/or management should be considered. Also see additional guidance in the *Guidance on specific issues as well as the guidelines on impact assessment of key investments under the project and social impacts as provided in Annex 3 (b) and (c)*.

- *Analysis of alternatives.* Systematically compares feasible alternatives to the proposed project site, technology, design, and operation--including the "without project" situation--in terms of their potential environmental impacts; the feasibility of mitigating these impacts; their capital and recurrent costs; their suitability under local conditions; and their institutional, training, and monitoring requirements. For each of the alternatives, quantifies the environmental impacts to the extent possible, and attaches economic values where feasible. States the basis for selecting the particular project design proposed and justifies recommended emission levels and approaches to pollution prevention and abatement.
- *Environmental management plan (EMP).* Covers mitigation measures, monitoring, and institutional strengthening; see outline in Annex C of the Bank's Operational Policy on Environmental Assessment (OP 4.01).
- *Public consultation of disclosure of information.* Stakeholder analysis, consultation and participation during environment and social impact assessment.
- *Appendices*
 - List of EA report preparers--individuals and organizations.
 - References--written materials both published and unpublished, used in study preparation.
 - Record of interagency and consultation meetings, including consultations for obtaining the informed views of the affected people and local nongovernmental organizations (NGOs). The record specifies any means other than consultations (e.g., surveys) that were used to obtain the views of affected groups and local NGOs.
 - Tables presenting the relevant data referred to or summarized in main text.
 - List of associated reports (e.g., resettlement plan or indigenous people development plan).

(b) Guidance on Specific Issues

4. Given the nature of the proposed subprojects, it is anticipated that during the preparation of ESIA report and its ESMP due attention will be given to the following aspects:

- ***Project area and area of influence***¹⁹. The ESMF outlines the project target area in general terms. The ESIA will provide clear and specific information on the subproject areas and the area of influence including a brief description of the main biophysical conditions, such as topography, hydrology, land use, forest cover, natural habitats, and important physical cultural resources. Population of ethnic minority and community livelihood should also be briefly highlighted. Where available, include maps to show the project target area.
- ***World Bank Group Environmental, Health, and Safety Guidelines***. There are also recent requirement for the Environmental, Health, and Safety Guidelines (known as the "EHS Guidelines"). The EHS Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice. It contains the performance levels and measures that are normally acceptable to the World Bank Group and are generally considered to be achievable in new facilities at reasonable costs by existing technology. The environmental assessment process may recommend alternative (higher or lower) levels or measures, which, if acceptable to the World Bank, become project- or site-specific requirements. The EHS Guidelines apply to the MD-ICRSLP and this has been incorporated into the ESMF (see ECOP in Annex 4).
- ***Subproject and/or activities involving civil works***: For the subproject and/or activities involving civil works, the generic Environmental Code of Practices (ECOP) (see Annex 4) will be applied to mitigate the impacts considered typical for works. However, for very small works, a simplified ECOP (Annex 4 (b)) could be applied. Site-specific requirements will also be prepared to address site specific-issues for the subproject. Both the mitigation measures described in the ECOP as well as the site-specific requirements will be included in the bidding and contract documents and the subproject owner will be required to assign the construction supervision consultants (CSC) to also supervise the contractor performance per these requirements on a day-to-day basis and include the results in the subproject progress report. CPMU and WB will conduct periodical monitoring and include the results in the Project progress report and/or safeguard monitoring reports.
- ***For the subproject related to sluice operations***: Sluice operations can create both positive and negative impacts on water transportation, flood regime/pattern, and/or water quality, therefore sluice operation may have significant impacts (positive and negative) on many water users upstream and downstream of the sluice location and may create potential conflicts among local population. Therefore sluice operations in the subproject area should be considered in connection with other existing and future sluice operation in nearby areas as well. To ensure that the final operation plan of the subproject sluice is acceptable to key water users and stakeholders, it is important adequate time (at least 1 year) should be allowed for facilitating technical discussion and its potential impacts. The plan should be considered as an adaptive plan that can be adjusted through consultation process therefore it is necessary to establish a network of water

¹⁹OP 4.01, Annex A – Definitions: *Project area of influence*: The area likely to be affected by the project, including all its ancillary aspects, such as power transmission corridors, pipelines, canals, tunnels, relocation and access roads, borrow and disposal areas, and construction camps, as well as unplanned developments induced by the project (e.g., spontaneous settlement, logging, or shifting agriculture along access roads). The area of influence may include, for example, (a) the watershed within which the project is located; (b) any affected estuary and coastal zone; (c) off-site areas required for resettlement or compensatory tracts; (d) the airshed (e.g., where airborne pollution such as smoke or dust may enter or leave the area of influence; (e) migratory routes of humans, wildlife, or fish, particularly where they relate to public health, economic activities, or environmental conservation; and (f) areas used for livelihood activities (hunting, fishing, grazing, gathering, agriculture, etc.) or religious or ceremonial purposes of a customary nature.

users/stakeholder so that normal consultation on sluice operation could be made and the plan can be adjusted as needed. In coastal area, due attention will be given to also address the issues and mitigation measures related to potential impacts on water uses along coastal area. Given complexity of water networks (rivers, canals, and water uses) and water regime (freshwater, brackish water, saline water, floods, and droughts) in the Mekong Delta (now and in the future), effective operations and management of existing and future sluice gates will be critical for providing water supply to support agriculture production (rice, fruit trees, and aquacultures) and development in the Delta area. .

- **For the subproject that involve livelihood development** especially those related to aquaculture and/or shrimp farming in coastal area, potential risks and/or impacts on socioeconomic condition of poor farmers as well as possible degradation of mangrove and water quality due to possible expansion of the activities without proper controlled and/or management should be considered. Experience in many developing countries has clearly shown that rapid expansion of shrimp farming in coastal area have cause rapid reduction of mangrove area, serious water pollution affecting poor farmers, and coastal erosion. Strengthening regulatory measures, providing technical assistance and/or capacity building for on-farm management and technical aspects could help reducing the risks. Moreover, there may also be economic and social risks for poor farmers who have limited technical knowledge and financial capacity to handle high investment cost for shrimp farming especially when there are uncertainty regarding water quality and other diseases that may occur in the area. Adopting a friendly and sustainable shrimp model will not be easy and it should be done step-by-step as suggested in the RSA. Therefore, in additional to a technical assistance program and financial incentives to be provided as part of the livelihood demonstration program proposed in the subproject, a technical assistance should also be provided as part of ESMP of the subproject to mitigate the potential negative impacts on socio-economic of poor farmers as well as possible induced impacts due to possible expansion of aquaculture and shrimp farming in the area without adequate control and/or management. A socio-economic survey for farmers especially for the poor should also be conducted during the implementation of the subproject.
- **Subproject related to use of toxic agro-chemicals:** For the subproject involving toxic agro-chemicals, it is important to ensure than proper actions are incorporated into the ESMP in line with PMF (see Annex 6).
- **Subproject related to dam safety:** For the subproject involving flood retention structure including embankment construction and safety of local community, it is important to ensure than the high of the embankment will not be higher than 10m and to mobilize a qualified engineer to determine that the design and/or current structure of the embankment would pose no risk or negligible risk that could create significant adverse impacts due to potential failure of the structure to local communities and assets, including assets to be financed as part of the proposed subproject. Preparation of a Dam Safety Report (DSR)²⁰ per OP/BP 4.37 may be required. Consultation with WB safeguard specialist is highly recommended.
- **Subproject related to dredging:** For the subproject involving dredging, it is important to ensure than the ESIA address the issues related to potential impacts of dredging

²⁰Main objective of a DSR is to review, analyse and make recommendations on: (a) All conditions that could have a bearing on the safety of the dam(s) and ancillary structures; (b) The risk and hazard of potential failure of the dam(s) or ancillary structure(s) due to extreme natural conditions, human error or structural damages; (c) The present and the future institutional framework that is necessary to avoid or mitigate adverse dam safety conditions; and (d) The proposed remedial works of the selected dams.

including preparation of Dredge Material Management Plan (DMDP) (see Section A3.3 below). The ESIA study should take sediment samples for analysis of possible contamination of heavy metals including mercury (Hg) and if exceed the national standards adequate measures will be required. Consultation with WB safeguard specialist is highly recommended.

- **Consultation and information disclosure:** It is important to ensure that during the preparation of ESIA and/or ESMP consultation will be required, results are recorded, and all safeguard documents are publically disclosed (see Section A3.5 below).

A3.2 Preparation of ESMP Report

5. This section provides technical guidelines for preparing an ESMP as part of the ESIA or a standalone document as part of Category B subproject to be submitted to World Bank through the outline and content of the ESMP report. The ESMP is the key documents to be used during the implementation of the subproject and monitoring of safeguard compliance covering both environment and social aspects during construction and operation of the subprojects (non-resettlement and ethnic peoples that are required to comply with OP/BP 4.10 and OP/BP 4.12). It is important to ensure the following:

- **Detailed design and preparation of bidding and contract documents:** To minimize the impact during land clearance, construction, and operation, it is important for the ESIA and its ESMP to clearly define the activities to be included in the detailed design as well as to finalize the ECOP to be included in the bidding and contract documents and ensuring that the activities are part of the subproject cost and the contractor is aware of this obligation (see ECOP in Annex 4).
- **Before starting construction,** the subproject owners and/or supervisor certify that (a) all compensation for land acquisition and affected facilities, the relocation of households and / or recovery of land / land donation has been completed, (b) subproject environmental impact assessment and / or the specific mitigation measures approved by the government, and (c) the ESMP above was approved by the Government.
- **During construction,** the subproject owners and/or supervisor closely monitor the implementation of the mitigation measures during construction and include the contractor performance especially on safety aspects in the subproject progress report.
- **After completing the construction,** the subproject owners and/or supervisor confirms compliance with the ESMP including ensuring that any damage incurred by the contractor has been properly addressed. If necessary, it should be ordered to pay compensation / rehabilitation of the construction sector as stipulated in the contract. The contractor will recruit a team of local experts (environmental contractors) to assist in the planning and implementation of environmental safeguards, including preparation of environmental management plan specifically Field and consultation with government and local communities.

(a) Scope and Content of ESMP report

6. The ESMP outline and content should be as follows:

- **Introduction:** This should provide brief but concise information on: (a) the ESMP context: describe how the EMP fits into the overall planning process of the project, listing project/subproject environmental studies such as EIA/EPP, approval documentation; (b) the ESMP's connection with the ESMF and the project; (c) the objectives of the ESMP: describe what the ESMP is trying to achieve. The objective

should be subproject specific, not broad policy statements. The project-specific ESMP shall form part of the subproject contract specifications.

- **Policy, legal and administrative framework:** GOV's regulations: provide brief description of GoV regulations related to EIA and technical regulations and standards applied to the subproject. *World Bank's safeguard policy*: list World Bank safeguard policies triggered.
- **Subproject description:** The subproject objective and description should be provided in sufficient detail to define the nature and scope of the subproject. These should include: (a) *Subproject location*: site location should be described with location of the activities provided including location maps showing location in the subproject area as well as details at the subproject level; (b) *Construction/operation activities*: the description may include a brief description of construction and operation processes; working or operating hours, including details of any activities required to be undertaken outside the hours; employment numbers and type; the plant and equipment to be used; the location and site facilities and worker camps; bill of quantities for civil works; and (c) *timing and scheduling*: anticipated commencement and completion dates should be indicated. If the subproject is to be completed in stages then separate dates for each stage should be provided.
- **Baseline data:** This should provide key information on the environmental background of the subproject as well as its connection with the subproject area, including maps. Focus should be given to provide clear data on topography, major land use and water uses, soil types, flow of water, and water quality/pollution. Brief description on socioeconomic condition and EM (if relevant) should also be provided. Photos showing existing conditions of subproject sites should be included.
- **Potential impacts and mitigation measures:** This section summarizes the predicted positive and negative impacts associated with the proposed subproject/subproject, particularly those presenting impacts of medium to high significance. A summary should be provided of the predicted positive and negative impacts associated with the proposed subproject that require management actions (i.e. mitigation of negative impacts or enhancement of positive impacts). The necessary information for this section should be obtained from the ESIA process, including the ESIA and EPP reports. The impacts should be described for pre-construction, construction, and operation phases. Using a matrix format could help understanding connection between the impacts and mitigation better (See Table 1 below for a sample mitigation measures matrix.). Cross-referencing to the ESIA/EPCs reports or other documentation is recommended, so that additional detail can readily be referenced. While commonly-known social and environmental impacts and risks of construction activities can be addressed through Environmental Codes of Practices (ECOP), specific mitigation measures should also be proposed to address sub-project specific impacts predicted based on site-specific conditions and typology of investments. Some measures can be proposed for incorporation into engineering design to address potential impacts/risks and/or bring about added values of the works provided (e.g. road/access path improvement combined with canal lining). Mitigation measures should include a communication program and grievance redress mechanism to address social impacts. It is necessary to ensure that this section responds to appropriate suggestions and adequately addresses the issues and concerns raised by communities as recorded in the consultation summary presented in Section A3.5. Depending on impacts of a subproject, Physical Cultural Resources (OP/BP 4.11) or Pest Management (OP/BP 4.09) may be triggered and

physical cultural resources and pest management plans may need to be developed and included in the ESMP. Key issues and needs for mitigation measures related to sluice operations on land and water uses (direct and indirect) and potential impacts due to implementation of aquaculture and shrimp farming in coastal area subprojects as discussed for the ESIA study (see above) should also be considered.

Table 1: Example of a Mitigation measure matrix

<i>Phase</i>	<i>Issue</i>	<i>Mitigation Measure</i>	<i>Locations for mitigation measures</i>	<i>Applicable Standard (e.g. country, WB, EU)</i>	<i>Cost of Mitigation</i>	<i>Responsible party</i>	<i>Verification Required to determine effectiveness of measures</i>
Design/Pre-Construction							
Construction							
Operation							
Decommissioning							

- **Monitoring:** Monitoring of ESMP implementation would encompass environmental compliance monitoring and environmental monitoring during subproject implementation as described in details below:
 - Environmental compliance monitoring includes a system for tracking environmental compliance of contractors such as checking the performance of contractors or government institutions against commitments expressed in formal documents, such as contract specifications or loan agreements.
 - The objectives of environmental monitoring is: a) to measure the effectiveness of mitigating actions (e.g. if there is a mitigating action to control noise during construction, the monitoring plan should include noise measurements during construction); b) To meet Borrower's environmental requirement; and c) to respond to concerns which may arise during public consultation (e.g. noise, heat, odor, etc.), even if the monitoring is not associated with a real environmental issue (it would show good faith by the Borrower). The monitoring program should clearly indicate the linkages between impacts identified in the EA report, indicators to be measured, methods to be used, sampling locations, frequency of measurements, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions, and so forth. The cost of environmental monitoring should be estimated and included in sub-project's total investment costs. It is crucial to monitor and collect data that is useful and will actually be used. There is no value in spending money to collect data that is not properly analyzed, that is not reported or even if reported, no actions can or will be taken. It is useful to know the kinds of analysis to which the data will be subjected before collecting the data to ensure that one can do the anticipated analyses.

Table 2 provides an example of how monitoring is structured.

Table 2: An example of monitoring plan

Phase	What parameter is to be monitored? (Note if it is against a set standard)	Where is the parameter to be monitored?	How is parameter to be monitored/ type of monitoring equipment?	When is parameter to be monitored/ frequency of measurement or continuous?	Responsible Party
Pre-construction					
Construction					
Operation					
Decommissioning					

- **ESMP Implementation arrangements:** The following subsections are recommended:

- *Responsibility for ESMP implementation:* This describes how the implementing agency plans to assign responsibilities to assure proper flow and use of environmental information for efficient and effective environmental management. For a World Bank-financed subproject, the stakeholders involved in EMP implementation and monitoring usually include the subproject implementing agency, the PMU, construction contractors, construction supervision consultant (CSC), independent environmental monitoring consultant (IEMC), local environmental management authorities, NGOs, and communities. Each player should be assigned with practical responsibilities. Good coordination among these actors ensures effective implementation of the EMP. Responsibilities of the CSC and IEMC for monitoring and supervision of EMP compliance during construction and supervision should be indicated in some detail. Generic Terms of Reference for CSC and IEMC should be included in the EMP as annexes.
- *Incorporation of ESMP into detailed technical design and bidding and contractual document:* The bidding and contractual documents should include ESMP requirements documents to ensure that obligations are clearly communicated to contractors. The bidding documents might also include environmental criteria as part of the basis for selecting contractors. Contractors should also be obliged to follow appropriate environmental, health, and safety standards to reduce associated risks during construction and operation. Therefore, this section should also elaborate on how PMU and its staff will incorporate ESMP into the subproject detailed design and tendering documents.
- *Environmental compliance framework:* During subproject implementation, the Borrower reports on compliance with environmental commitments, the status of mitigative measures, and the findings of monitoring programs as specified in the subproject documents. The World Bank bases supervision of the subproject's environmental aspects on the ESMP as set out in the legal agreements for the subproject. This subsection elaborates on the environmental duties of the contractor and its safety and environment officer, compliance with legal and contractual requirements, and environmental supervision during construction supervision, and a penalty framework.

- *Reporting procedures:* Procedures to provide information on the progress and results of mitigation and monitoring measures should be clearly specified. As a minimum, the recipients of such information should include those with responsibility for ensuring timely implementation of mitigation measures, and for undertaking remedial actions in response to breaches of monitoring thresholds. In addition, the structure, content and timing of reporting to the World Bank should be designed to facilitate supervision. Responsibility of different actors for reporting and the type of reports should also be clearly indicated.
- ***Institutional Strengthening Plan:*** This section describes institutional needs to assure successful implementation of the mitigation and monitoring plans. This may include equipment purchases, training, consultant services, and special studies. Most subprojects would mainly require capacity strengthening in ESMP implementation through training for different stakeholders. All relevant stakeholders should undergo general environmental awareness training and training about their responsibilities under the ESMP. The training should ensure that they understand their obligation to exercise proper environmental management during subproject implementation. Environmental training should include: a site induction, familiarization with the requirements of the ESMP; environmental emergency response training; familiarization with site environmental control; targeted environmental training for specific personnel such as environmental staff of PMU, safety and environment officer of the contractor, construction supervision engineer. The need for additional or revised training should be identified and implemented from the outputs of monitoring and reviewing the ESMP. Records of all training should be maintained and include: who was trained; when the person was trained; the name of the trainer; and a general description of the training content.
- ***Estimated Budget for ESMP Implementation:*** These should be specified for both the initial investment and recurring expenses for implementing all measures contained in the ESMP, integrated into the total project costs, and factored into loan negotiations. It is important to capture all costs, including administrative, training, environmental monitoring and supervision, costs for mitigation measures to be implemented by contractors, costs for additional environmental studies, and operational and maintenance costs. The aim is to satisfactorily mitigate adverse impacts at least cost. The costs of preparing an ESMP, which are borne by the Borrower, vary depending on factors such as the complexity of potential impacts, the extent to which international consultants are used, and the need to prepare separate ESMPs for subprojects.

(b) Consultation and Information Disclosure

7. ***Consultation:*** The ESMP should clearly describe and justify the proposed mitigation measures to facilitate public consultation. Consultation with affected people and NGOs should be integral to all Category A and B projects in order to understand the acceptability of proposed mitigation measures to affected groups. In some situations, the development of environmental awareness amongst stakeholders is important to ensure effective consultation on the ESMP. Where projects involve land acquisition or resettlement, these issues should be fully addressed in resettlement action plan (RAP), and where appropriate in ethnic minority development plan (EMDP).

- The consultation process can also be used help to design achievable mitigation measures. This process is particularly important when it depends on the buy-in of the affected people. Where appropriate, this may be supported by including formal requirements within the TOR for public participation in developing the ESMP.

- Public consultation of ESMP should be an integral part of EIA/EPP consultation. If consultation has not been conducted or not adequately carried out during EIA/EPP preparation process, it must be undertaken to capture the feedbacks of the affected people and communities. This section provides summary on consultation activities to stakeholders, particularly affected households, on the final draft ESMP at project/subproject level. This summary should indicate the date and location where consultation meeting took place, the number of participants from affected households, the numbers of female and ethnic minority participants, and suggestions, and concerns raised and responses. Locations and dates of ESMP to be disclosed should be provided.

8. ***Disclosure of the ESMP:*** Information disclosure: According to the World Bank's policy on access to information, all draft safeguard instruments, including the EMP, are disclosed locally in an accessible place and in a form and language understandable to key stakeholders and in English at the InfoShop before the appraisal mission. EMP is locally disclosed at the sites and in the Vietnam Development Information Center of the World Bank in Hanoi.

A3.3 Guidance on Public Consultation

9. The Bank's safeguard policies require the subproject's owner to facilitate public consultation and information disclosure. Accordingly, consultation with project affected people (PAPs) and local NGOs is required for this project and its subprojects. During the preparation of ESAs and ESMPs, public consultation must be carried out in line with the Bank's requirements in a form convenient to the local people (e.g. survey, meeting, leaflet, signboard etc.) and information on the main findings of environmental impacts and proposed mitigation measures must be provided in the local language understandable for the majority of the affected people. Records of feedback from public consultation should be attached to final draft ESMP while the main EMP should include a section summarizing public concerns and suggestions. The ESMP should clearly state that environmental concerns and suggestions for environmental improvement made by the public have been incorporated. It is required that ESMPs include a summary table (see Annex 4) to show the number of meetings, the place, the number of PAPs attended meetings.

10. The subproject's owner should confirm with the Bank that hard copies of draft ESMP (in Vietnamese) are displayed at the subproject area, at the PMB office and Commune People Committee's office, and accessible to the public and the time for such disclosure. The PCs should also confirm the release of ESMP for disclosure at the Vietnam Development Information Center (VDIC) in WB Hanoi office, and in the Info Shop.

A3.4 Guideline for Preparation of Dredge Material Disposal Plan

11. Some subprojects will involve maintenance dredging of existing canals. Details will be prepared during feasibility study and ESIA. However, the dredging would be carried out exclusively in the man-made existing canals, and therefore impacting natural habitats and physical cultural resources would be expected to be small. Nevertheless, clauses on (a) restriction on the dredging near natural habitats and (b) a "chance find" procedure would be introduced to ensure the full compliance with the Bank's safeguard policy. Main environmental and social issues to be addressed when the subproject involve dredging includes the following items:

- Pollution during the transport of the dredged soil from the dredging site to the disposal area;
- Potential increase in turbidity and pollution of the water in the canals due to the dredging;

- Contamination of soil and water source including groundwater nearby the disposal area;
- Potential misuse of the contaminated dredged materials for public infrastructure and households;

12. In preparing for the mitigation for above-mentioned potential impacts resulting from transport and disposal of the dredged materials, it should be noted that the estimate is preliminary, subject to the detailed analysis during the detailed design stage. Further, it should also be noted that the dredging would be carried out in an extensive subproject area through multiple contracts over 2-3 years of implementation period. Lastly, it should also be noted that preparation of the dredge disposal would be better prepared when the plan on the land appropriation is planned and implemented. In this context, the dredged material disposal plan (DMDP) would be prepared during the detailed design stage by the subproject owners with assistance of the detailed design engineers. The DMDP would be a part of contract specific environmental plan (CSEP) for contractors to follow.

13. The DMDP would cover the following aspects;

- Identifying water users that may be affected by the dredging and monitor water quality that could be used to monitor the potential impacts. Priority should be given to monitor the areas that are sensitive to change in water quality (high suspended solid (SS), low pH, high BOD or COD, high salinity, etc.) especially where the water is used as a source of water supply for domestic AND agricultural uses. In areas where dredging may cause negative impacts to these water users, respective subproject owner is required to inform/consult them and develop a series of actions to address their concerns, including conduct water quality monitoring in the DMDP.
- Identifying the nearby natural habitats which are important for fish and birds. If identified, a separate management plan should be prepared to minimizing the potential impacts. Such plan should include: (a) current status of the concerned natural habitats including water quality, and (b) periodical monitoring on water quality and turbidity.
- Assessing the quality of the sediments. The assessment would be carried out to confirm that the sediments would not include large amount of environmentally harmful materials such as heavy metals, sulfur soils, and residual pesticides. If these materials are found to be more than the thresholds stipulated by the national standards, a special disposal plan should be prepared with a monitoring plan. The special disposal plan should also set out a program to protect the nearby community residents from using the disposed dredged materials for house construction or gardening. The assessment would be carried out based on a sampling basis, and the following guidelines shall be used for the number of samples and items to be measured;

<i>Volume of Spoils in cubic m</i>	<i>No of Sediment Samples</i>
Up to 25,000	3
25,000 to 100,000	4-6
100,000 to 500,000	6-10
500,000 to 2,000,000	10-20
For each 1,000,000 above 2,000,000	Additional 10

<i>Parameters</i>	<i>Unit</i>						
Lead	mg/kg						
Cadmium	mg/kg						
Copper	mg/kg						
Zinc	mg/kg						
Nickel	mg/kg						
Chromium	mg/kg						
Mercury	mg/kg						
Arsenic	mg/kg						
<i>Organic Materials</i>							
Organic Materials	%						
Mineral Oils	mg/kg						

- Identifying the available land for disposing the dredged materials. The plan should also identify the possible lands to be appropriated for the disposal of dredged materials. Public land, land for construction of rural roads, public works, private land, etc. may be used, with an agreement with the project affected households. It should also meet local plans for land use. The identified land should be large enough to accommodate the detailed estimated amount of the dredged materials. The selected disposal land should be located at least 1 km from any Bird Sanctuary or protected sites, at least 200 m from public works (schools, administrative offices, and markets), temples and churches, and at least 200 m from aquaculture farms.
- Preparing for a transportation plan. In case, the dredge disposal area is far away from the dredged sites, the DMDA shall set out a transportation plan including: (a) methods of transportation (pipeline, barges, hopper barges) and uploading to the disposal area. If trucks are used, indicate proposed route of the transport from the dredged site to the disposal area, (b) time of operation, (c) type of vehicles/trucks and proposed measures to reduce the leakage of the dredged materials from the transport trucks, (d) contractors' responsibilities for cleaning the roads and carry out remedial works if necessary, and (e) a communication plan for the nearby communities including contact number for possible complaints.
- Plan for managing the disposal areas including: (a) plan for reducing the drainage (refer the next bullet), (b) construction of the perimeter dykes, (c) construction of sub-containment area, if applicable, (d) planned thickness of the dredged materials (typically less than 1.5 meters), (e) any measures to protect ground water and soils (e.g., installation of PVC membrane).
- Designing the Draining for Disposal lands. As the dredged materials are in the state of mud at first and soil particles are suspended for 24 to 48 hours. All drainage water from disposal land shall be driven to the drains and discharged back to the canal. In order to limit the negative impacts of mud (produced by dredging) on the environment as well as the water quality of the canals, the dredged sediment will be transported to a containing area which is appropriately located and properly design with an adequate size. The dredged spoil will be pumped to the disposal land and then overflow to a settlement pond, where turbidity and total suspended solids are settled. After some time, effluent is returned to the canals. A typical design of the dike around each disposal may be as follows: Height: 2m, Footing width: 5 m, and Surface width: 1m. The plan should set out a basic layout.

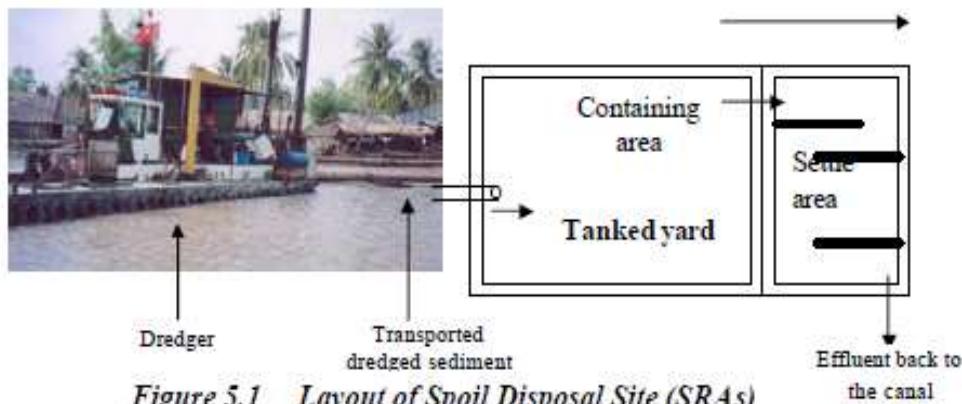


Figure 5.1 Layout of Spoil Disposal Site (SRAs)

A dike around each SRA is designed as follows:

- Height: 2m
- Footing width: 5 m
- Surface width: 1m

- Identification of the disturbance on local businesses and transportation. The DMDA shall carry out an inventory analysis on the possible affected local businesses, access to water, and transportation (mainly due to the dredging) and provide a plan to compensate the disturbances of the businesses (through the respective RAPs) and make a plan for constructing temporary bridges. If access to water is affected for some households by the disposal of the dredged materials, a plan to provide alternative access to water shall be included in the DMDA.
- Monitoring the Disposed Dredged Materials. A plan for monitoring the dredged materials as well as water quality of effluent would be required. As stated before, an intensive monitoring would be required if the dredged materials contains higher content of the heavy metals and other harmful materials than the national thresholds.
- In order to mitigate the issue of turbidity during dredging operation, the DMDA shall set out dredging equipment and/or techniques suitable to the particular site. On laying dredging machines on a barge, contractors can use a proper mud –stopping net for enclosing the dredging site and keeping back mud on land, not to let it goes back to the canal. If the disposal site for dredge materials is located far away from the dredger, a suction dredger should be used to transfer all the mud and soil in water to the disposal sites. The length of dredging sections should be limited less than 1 km and the dredging should be done one by one.
- As for the sections with acid sulphate soil or potential acid sulphate soil, the following measures should be considered: dredging should be carried out in the rainy season when more fresh water could be available for diluting acidic water; Treating acidic water in the disposal areas before returning effluent to the canals; and proper locate and design of the disposal area not to affect the nearby agricultural land.
- At the completion of the contract, carry out an assessment on dredged materials, and determine the use of the dredged materials for activities such as: (a) construction (roads and dykes), (b) basis for individual houses, and (c) gardening.

A3.5 Preparation of EIA/EPP Per GOV's EIA Regulations

14. In addition, the subproject is funded within the framework of the project will be

prepared MDICRSL documents the environmental assessment required by Vietnam. The details is as follows:

- Government's review and approval. If a subproject requires review and approval according to the government EA regulation, the subproject owner will prepare and submit the EA report as required for review and secure the approval by relevant government authorities before subproject appraisal. The guidelines for appraisal and approval of an EIA or EPP are included in the respective government regulation (namely, Decree 18/2015/NĐ-CP dated 14 February 2015 regarding regulations on strategic environmental assessment, environmental impacts assessment and environmental protection plan, and Circular 27/2015/TT-BTNMT dated 29 May 2015 detailing some articles of Decree 18/2015/NĐ-CP). Evidence of the approval will be provided to the World Bank for information.

Annex 3 (b) Guideline for Impact Assessment of Key Investment in the Project

This guideline presents the key findings from the Regional Environmental Assessment (REA) on the cumulative impact assessment of the Components 2, 3, and 4 of the Project. The findings should be considered during the preparation of the ESIA or ESMP for the subprojects.

(a) Impacts of upgrading and constructing new infrastructure

The civil works carried out in the process of implementing the subprojects under the project would generally increase the level of air, noise, vibration, and water pollution and traffic congestion they would also raise the potential for accidents and risks to public safety as well as disturbances to local residents. However, these impacts would be localized and temporary and could be mitigated by (a) ensuring that contractors apply good construction practices and initiate/maintain close consultation with local authorities and communities throughout the construction period and (b) close supervision of field engineers and/or environmental officer. An Environmental Code of Practices (ECOP) will be prepared with the following four sections: (a) general provisions; (b) managing construction; (c) dredging; and (d) construction of very small works. ECOP is part of the subproject ESMPs, and appropriate parts of the ECOP will be included in the bidding and contract documents and be closely monitored by supervision engineers.

Changes in the ecological flow of the Mekong River as a result of the installation of potential water/ flood/salinity control infrastructure and similar measures for the investments in the upper delta, estuary and peninsula will be assessed in the following sections.

(b) Impacts of dredging

The main possible impacts on the local environment during maintenance dredging and/or construction of secondary and/or tertiary sluices would be: (a) contamination of the lands and water resulting from the disposal of dredged materials; (b) contamination of the roads and lands resulting from the transportation of the dredged materials; and (c) an increase in suspended solids in water due to disturbances of bottom sediment. A sampling survey suggested that dredged materials are mainly silt and clay with high organic content with the content of the heavy metals and residual pesticides being below the national thresholds. Therefore, the risk of contamination to the disposal land and ground water is small.

In the Mekong Delta, it is customary that dredged materials be stored on the land next to the canal for drying for one or two years and then used as a basis for roads or dykes. However, it should be noted that the dredging would take place over extensive areas and over the whole project implementation period. Important information such as estimated quantity and likely quality of the sediments, availability of lands for disposal is at the detailed design stage. In this context, it is appropriate to develop a detailed plan for the disposal of the dredged materials at the detailed design stage.

(c) Impacts of installing water/flood control structures in the upper delta

Flooding in the delta is a natural process that maintains productivity and drives the dynamic evolution of the Mekong Delta. The annual flood event is responsible for replenishing the fertile sediments that is vital to agricultural productivity. Climate change is expected to bring higher and more pronounced season flood regimes, the key challenges are to retain the natural flood based agriculture and protect downstream provinces from flooding.

The subprojects in the upper delta involve the upgrading of existing low embankments/dykes and the construction of culverts and sluices to expand flood retention capacity in the wet season. The culverts and sluices will allow annual floodwaters to pass through embankments and

dykes, expanding the floodplain agriculture of the POR and LXQ in Dong Thap, An Giang and Kien Giang provinces. This infrastructure will support the conversion of triple rice to double cropping plus floating vegetables or aquaculture (i.e. freshwater fish or shrimp farming). The new embankments will reduce impacts to cropping associated with failure of existing embankments during the flood season. Upgrading low embankments (August dikes) from earthen to concrete material will also reduce yearly maintenance costs and facilitate waterway transportation. The project will protect high value agriculture (i.e. fruit trees) and downstream provinces from flood damage.

The construction of the sluices under the subproject would provide water for farming during the wet season. Currently, the high dikes constructed for flood control and rice intensification prevent water from entering the floodplains to allow for planting of the third crop. The operation of the sluice gates will control the water levels in the project areas and promote floating vegetables, aquaculture and freshwater shrimp farming. Conflicts over water use could occur between farmers of different crops, and areas where increased flood retention does not provide benefits. Some of the positive impacts will be that the increased flood retention will replenish the floodplains with sediments and nutrients from the Mekong River and may reduce the amount of fertilizers and pesticides used in agricultural activities. Climate smart farming and sustainable agricultural practices should be included to support the transition to new agriculture and aquaculture.

The subprojects may change the hydrological flow from the upper delta affecting natural resources and habitats of aquatic species (OP 4.04). However, the August dikes fragmented the floodplains and reduced ecosystem connectivity leading to a decline in capture fisheries. Improving flood retention may increase biodiversity in the floodplain ecosystems.

(d) Impacts of new livelihood models in the upper delta

The development of livelihood models in the upper delta will support farmers to transition from triple rice cropping. Providing support measures to farmers so they have alternatives to the wet season rice crop is an important measure to transition from triple rice cropping to double rice plus floating vegetables, flowers, aquaculture and freshwater shrimp farming. Triple cropping in the upper delta has lower total yield and higher rice production costs. Rice intensification has also driven farmers to apply more pesticides and fertilisers, reducing the cost benefits of the winter-autumn crop and increasing surface water pollution. Farmers have also reported that their rice fields are less fertile from reduced alluvial deposition from the high dykes and flood control structures.

Appropriate livelihood support during flooding season in retention areas including diversifying agriculture and aquaculture models with strengthening of the value chains and linking farmers to business and markets. The transition to high value agriculture will provide many positive social benefits to local communities and households involved in the livelihood models. To ensure sustainability the project must also consult with communities in the surrounding areas to enable all farmers to transition to alternative farming mechanisms.

Restoring flood retention will provide more nutrients and sediments during the flood season, however the impacts of the possible increase in the use of pesticides and fertilisers from more diversified cropping needs to be considered. The livelihood models for high-value agriculture (i.e. fruit trees, flowers, vegetables, mushrooms, watermelons) may require higher inputs of fertilisers and pesticides. The potential environmental impacts of aquaculture (i.e. catfish) and freshwater shrimp farming including the release of organic wastes, agro-chemicals, antibiotics, the transmission of diseases and the ecological impact on endemic fish species in the Mekong Delta and floodplains will also need to be considered. In order to mitigate these environmental

impacts, an integrated pest management plan (IPM) program will be implemented for each applicable subproject as a part of the ESMP. Surface water quality monitoring will also need to be established in the project areas.

(e) Impacts of installing water/salinity control structures in the estuary and peninsula

The subprojects in Component 3 and 4 involve the construction/ rehabilitation of coastal dikes in erosion areas and the modification of water control infrastructure along the coastal zone to adapt to changing salinity levels. Ca Mau, Bac Lieu and Soc Trang high historic rates of coastal erosion which are projected to continue increasing indicate that the business-as-usual approach to coastal protection is not working and a new approach is needed to protect coastlines, ecosystems and valuable agriculture and aquaculture areas.

The traditional approach to protecting the coastline in Vietnam consists of constructing sea dikes, many of them armed with rocks and/or concrete. Previously, water control infrastructure was constructed in coastal provinces to control salinity intrusion into the estuaries. Saline water is prevented to enter the canals by the construction of sluices that can be closed when the seawater rises with the tide above river water levels. Where sluices exist, this creates conflicts between the freshwater needs of agriculture and the brackish water needs for aquaculture. To manage conflicting water uses zones will need to be established for saline, brackish and freshwater farming areas. The operation of sluices and farming zones would need to be flexible to consider salinity intrusion in wet, average, dry years and future sea level rise.

Recently, the function of salinity-control structures has been modified from a control oriented to adaption-oriented approach. For instance, shrimp culture relying on saline water in the dry season is followed by rice culture depending on rainwater in the wet season through proper adjustments in the design and operation of existing water structures and additional investments in small-scale infrastructure. The MD-ICRSL project builds on this approach and the infrastructure will support the transition to more sustainable brackish water activities such as mangrove-shrimp, rice shrimp and other aquaculture activities, adapting to further challenges of salinity intrusion.

Changes in the ecological flow of the Mekong River may result due to the installation of flood/salinity control measures; leading to a reduction in the diversity and quantity of fish populations (OP 4.04). Overfishing and loss of habitat and spawning sites due to changes in the river threaten fish species in the Mekong Delta. Efforts will be taken to limit impacts on aquatic fauna.

The issue of surface water quality and operation of sluices needs to be managed. Surface water pollution comes from the residues of agro-chemicals (i.e. pesticides and fertilisers) and organic matter from agriculture and aquaculture when flushing water from canals and embankments. However, the proposed project would only include construction of secondary and tertiary sluices, and the environmental impacts would be mainly local, and mitigation measures can be implemented at the subproject level. The operation of sluices also needs to consider the impacts to local waterway transportation for fishers and farmers. The operating rules of sluice gates should be developed in consultation with all stakeholders, including local waterway users.

(f) Impacts of new livelihood models in the estuary and peninsula

The livelihood models in the delta estuary and peninsula will support to farmers to transition (where suitable) to more sustainable brackish water activities such as mangrove-shrimp, rice-shrimp, and other aquaculture activities and to implement climate smart agriculture by facilitating water use efficiency in the dry season. Livelihood programs are very important in the delta estuary and coastal provinces as households in the transition between fresh and brackish water had lower income than those in other zones. Livelihoods of people in this zone

are more vulnerable to freshwater availability from the upstream, to salinity intrusion from estuaries and/or adjacent shrimp farming areas and to extreme dry season freshwater shortages.

Providing livelihoods support measures to farmers to adapt to salinity intrusion and transition to brackish aquaculture is an important initiative. Salinity issues in the estuary areas have caused production losses to rice and high value agriculture. The transition to high value agriculture will provide many social benefits to local communities and households involved in the livelihood models. Construction of salinity control infrastructure in the past has been inflexible and locked farmers into development pathways. A high number of Khmer people are living in Soc Trang and Tra Vinh, the Khmer are some of the poorest households in the Mekong Delta. It is important that support and livelihood programs are provided to Khmer and other ethnic groups. The transition to aquaculture in the estuary areas will be complex as currently high value crops provide more farm-based income than aquaculture and supports employment opportunities for local people.

The mangrove-shrimp and rice-shrimp are more sustainable options for aquaculture. The development of livelihood models will need to consider the potential environmental impacts of aquaculture and shrimp farming including the release of organic wastes, agro-chemicals, antibiotics, the transmission of diseases and the ecological impact on freshwater and coastal fisheries in the Mekong Delta. In order to mitigate these environmental impacts, an integrated pest management plan (IPM) program will be implemented for each applicable subproject as a part of the ESMP. In order to mitigate these environmental impacts, an integrated pest management plan (IPM) program will be implemented for each applicable subproject as a part of the ESMP. The PMF stipulates: prohibition of the use of very toxic chemicals, and provides directions and approach for Integrated Pest Management (IPM).

(g) Expanding aquaculture and shrimp farming

The large areas of land required for intensive and semi-intensive shrimp farming have led to significant natural habitat loss through conversion of mangroves and wetlands into shrimp ponds. The investment in large water control infrastructure has lead to conflicting interests and inflexible water management when local rice farmers sought to benefit their income through the conversion of their farms from rice to shrimp.

The project will promote integrated rice-shrimp and mangrove-shrimp farming that are considered to be more environmentally sustainable aquaculture because it is extensive and uses less agro-chemicals (i.e. fertilisers, antibiotics) and can lead to restoration of mangrove areas. Environmental concerns such as effluents from the shrimp farms, disposal of the sediments in the shrimp ponds into canals and rivers need to be managed. Applying sustainable rice-shrimp model using VietGap standard to develop operational guidelines for water management systems in the project area will lead to more sustainable shrimp farming in the estuary and peninsula.

Nevertheless, there are some environmental concerns relating to the current rice-shrimp farming systems. First, the current shrimp farming method is based on high water exchange, which would result in high accumulation of sediment in the rice farms in the long-term. Many farmers reportedly dispose of accumulated sediment back into the canals or nearby river, which would induce negative environmental impacts. Furthermore, recent introduction of exotic species and introduction of more intensive shrimp aquaculture may also lead to more pollution in the effluent of the wastewater from the shrimp farming.

The Project would support a study contributing to the improvement of current water management practices for shrimp aquaculture. In particular, the study would cover the following aspects: (a) developing a categorized inventory of the current farms; (b) analyzing

the current use of fertilizers and antibiotics; (c) identifying areas with acute environmental issues; and (d) establishing and disseminating best practices. Wastewater treatment systems are required for aquaculture and shrimp farming to reduce surface water pollution. Increasingly, groundwater is being used an additional source of fresh water to control salinity levels in shrimp farming and enable the diversification of production into vegetables (both in rice and shrimp areas). The transition to sustainable shrimp farming will reduce groundwater abstraction.

(h) Impacts of protecting mangrove forests in coastal areas

To adapt to saline intrusion and prevent coastal erosion in Ca Mau and Bac Lieu, measures will include ecosystem-based aquaculture, resilient infrastructure for aquaculture and mangrove reforestation. Mangroves play a critical role in biodiversity and ecosystem productivity in the coastal areas of the Mekong Delta. In some areas of the delta, dikes are already being strengthened or heightened and mangroves are being planted to improve protection from storm surges and coastal erosion. The GIZ Integrated Coastal and Mangrove Protection (ICMP) programme is supporting Vietnam to manage its coastal ecosystems in order to strengthen resilience to climate change. To manage environmental impacts, a forest Management Plans (OP 4.36) will be prepared for all mangrove reforestation work undertaken as part of the project.

Integrated coastal management requires a combination of sea dykes, mangrove restoration and sustainable shrimp farming to protect the peninsula from coastal erosion and sea level rise. Increasing the mangrove area will protect against coastal erosion, storm surges and may increase biodiversity. This activity should be supported by biodiversity conservation and monitoring to protect saline and estuarine species in the mangrove areas. The sustainable management of coastal (near-shore) fisheries and other aquatic animals is important to support livelihoods of landless and protect biodiversity.

(i) Impacts of reservoir and water and sanitation facilities

Surface water serves as one of the main water sources in the freshwater zone while groundwater is still the main supply source in the coastal zone, especially during the dry season. Coastal provinces suffer from several negative trends, like increased salinity intrusion, decreasing availability of fresh water of sufficient quality, depletion of aquifers. Coping with dry season fresh water shortages and droughts and securing fresh water supply is a critical challenge for the Peninsula. Water supply in many areas, such as Ca Mau, Bac Lieu and Soc Trang water is used without treatment, so water quality is below the required standards. This activity will have positive impacts for 11,000 households in the Ca Mau peninsula.

The investments in Cau Mau will also support the construction of a reservoir to store freshwater from the wet season and release during the dry reason for domestic and agricultural uses. The reservoir responds to the challenges of dry season freshwater shortages in the dry season and if implemented in combination with climate smart agriculture will reduce groundwater dependence. Reviewing the operational rules, multipurpose uses (i.e. irrigation, flood control) and dam safety aspects will be important to consider in the subproject safeguard instruments. A combination of hydrological and hydraulic modeling should be used to predict the irrigation area (ha), total storage (ML) and operating rules for the reservoir.

Dam safety issues based on flood retention structures (OP 4.37). Given that no flood retention structure will be higher than 10 meters, the team will take appropriate safety measures in line with OP4.37 and to ensure the involvement of qualified engineers, and will confirm that the environmental assessment (EAs) for each subproject have determined that there would be no risk or negligible risk of significant adverse impacts due to potential failure of the structure to local communities and assets, including assets to be financed as part of the proposed project.

The development of freshwater supplies for domestic use will have important positive impacts in preventing further groundwater depletion and land subsidence. These investments should be supported by climate smart agriculture and groundwater studies to determine the existing agricultural, industrial and domestic use and to identify hotspot areas for groundwater extraction. There are links between groundwater abstraction, land subsidence and coastal/riverbank erosion so this will be an important activity.

Potential increase in wastewater resulting from increased services of rural water supply has been identified, but the impacts would not be significant. The water is available through canals and rivers in the Mekong Delta, and incremental use of the domestic water consumption would not be significant. The project would also supply the household sanitation to address this environmental impact risk.

(l) Induced Impacts

In addition to identifying direct and indirect impacts under each investment type and each livelihood model under a subproject, their induce impacts, if any, need also to be considered and analyzed. Induced impacts may occur as a result of actions of the subproject activities such as operation of the sluice gates, expanding or scaling up of the livelihood models. These may include growth inducing impacts and other effects related to induced changes to the pattern of future land use which may have positive impacts or adverse consequences on the environment and local people livelihood.

Annex 3 (c) Guideline for Social Assessment (in addition to RAP and EMDP)

This guideline presents the key findings from the Regional Social Assessment (RSA) for addressing climate and environmental vulnerability and for social vulnerability of the Components 2, 3, and 4 of the Project. The findings should be considered during the preparation of the ESIA or EMP for the subproject.

A. Addressing Climate and Environmental Vulnerability

(a) Structural works to support livelihoods

- Utilize the expertise of agricultural and aquaculture specialists to optimize the structural designs supporting livelihood models. Ensuring that structural component design can better control the water availability and quality needs of the respective livelihood models will be critical to reducing farmers' climate/environmental risks.

(b) Water quality and zoning/land use planning

- Water quality issues need to be addressed particularly in models that involve aquaculture (both fresh and brackish water) if the livelihoods are to be sustainable. Many of the sub-project areas are in sub-optimal areas in terms of water quality and water control infrastructure.
- The land use plans in Ba Tri, Ben Tre, should be revised with the multi-disciplinary assistance of agricultural, aquaculture and forestry (mangrove-shrimp) specialists. The conflicting coastal land use and canals between the sea dyke and District Road 16 makes water quality management extremely difficult.
- Assess and monitor the possible impacts of persistent organic pollutant discharges from behind the salinity control sluice gates (KG) on coastal aquaculture.

(c) Groundwater extraction and land subsidence

- Conduct studies on groundwater extraction and land subsidence in Cuu Lao Dung in order to better inform the livelihood investments. Combined groundwater pumping for dry season sugar cane irrigation and household water supply will lead to continued subsidence which compounds sea level rise.

B Addressing Social Vulnerability

(a) Farmer willingness to adopt livelihood adaptation models

- Locate pilot livelihood demonstrations near successful models in order to change farmer's risk perceptions. Triple rice crop and double-rice crop farmers, as well as floating rice farmers perceive the failure risks of flood-based livelihoods as relatively high. Similarly, coastal intensive rice growing farmers (eg. Ba Tri) and sugar cane farmers also perceive the risks of intensive shrimp as relatively high in comparison to intensive rice and sugar cane growing.

(b) Addressing market risks

- Reduce the risk of over-supply by working with agribusinesses from the start on a staged incremental approach. A staged approach to up-scaling is essential so that markets can be tested and agribusinesses have time to expand their markets or find new markets incrementally.

(c) Diversity of and within adaptation models

- In some sub-projects the proposed livelihood options are relatively narrow and there is some scope, with expert advice, to increase the number of models over time.
- Sharing lessons and experience between sub-projects could also help increase diversification. For example, the Ben Tre rice-shrimp models add giant freshwater shrimp to the wet season rice crop, and this model could be adopted in the Kien Giang rice-shrimp systems.

- Organic certification, clean production standards (eg. VietGAP), and product branding should be supported to help open up and diversify markets.

(d) Farmer Support

- The use of farmer cooperatives or collective groups to implement the livelihood adaptations should form the basis of the livelihood implementation strategy for the sub-projects. Forming new cooperatives, or implementing through existing cooperatives, will help to instill farmer confidence through collective risk sharing, particularly with risk-averse farmers that may be unwilling to adopt the new adaptation models.
- Start-up capital needs to be provided to fund the livelihood investments. Farmers will not be able to fund the livelihood investments by themselves because most farmers have some level of debt. Capital for investment was the highest priority support requested by farmers.
- Hire aquaculture and agriculture specialists to support cooperatives/collective groups, extension agencies, and farmers with technical training and development support.
- Mass organisations, in particular the Farmers Union and Women's Union, should play a central role in supporting farmers and cooperatives to mobilize, organize extension training, facilitating farmer to farmer exchanges, monitor model performance, etc.
- Encourage agribusinesses to establish hatcheries capable of producing high quality aquaculture seed as close as possible to the sub-project sites.
- Develop predictive decision support tools that can provide early warning of droughts and floods to farmers. The intense El Nino this year has highlighted the need to develop predictive tools that could help inform farmers on what crops they should be investing in.

(e) Poverty and landlessness

- Livelihood support for the landless in the sub-project areas should be established or extended from existing micro-credit sources and development programs in order to avoid increasing inequality between better-off farmers and the poor.
- Encourage agribusiness, particularly vertically integrated companies, to extend their value chains to create employment opportunities for the poor. The Provinces could offer land and tax concessions in order to attract the agribusiness investment.

(f) Public consultation and participation

- The following consultations are required in addition to those already mandated to be conducted for safeguards (i.e. resettlement & environment).
- Livelihood model acceptance
- Micro-credit livelihood options and design
- Waterway transportation - sluice gate design and operational schedules
- More specifically, the public consultations and community participation initiatives should take into account the following recommendations related to literacy levels and women's needs.
- Project communications must be supplemented by verbal communications. Project implementation at a community level should not rely solely on written documents/communications (eg. for compensation, technical training, etc.). In most of the sub-project areas, the level of education is low and there are relatively high levels of illiteracy, particularly amongst women and ethnic minorities.

- Extension training programs should ensure that they are done in a manner and time that allows women to adequately tend to their domestic duties, ie. childcare, meal preparations, etc.

(g) Sluice gates and waterway transportation

- Sluice gate designs need to ensure that boats can move in and out optimally. In areas with heavy traffic, for example fishing communities (Kien Giang, Soc Trang, Ba Tri-Ben Tre), the gates should be designed to enable fishing boats to be moved in or out within the period of time that the gates can stay open in that location.
- The management agency responsible for the sluice gate operations needs to design an operational schedule with the community that details the exact opening and closing schedules for the gates so that the community is able to plan its use of the waterway and minimize the impact of lost time and fuel while waiting for the gates to open.

Annex 4 (a) Environmental Code of Practice (ECOP)

[Bid Specification for Construction Management and Responsibilities of Contractors]

The World Bank Operational Policy (OP) on Environmental Assessment (OP 4.01) requires environmental assessment (EA) of Bank-financed projects to ensure they are environmentally sound and sustainable. EA is a process of analyzing potential environmental risks and of the identification and adoption of measures to avoid or mitigate such impacts.

As a part of EA, the Environmental Management Plan (EMP) is a safeguards instrument that is typically used in many projects and which of the process of mitigating and managing environmental impacts throughout project implementation.

Environmental codes of practice (ECOPs) are mitigation measures for generic impacts from project activities during the construction phase and are intended to be included in the bidding documents as requirements to the construction contractor.

If impacts require site-specific mitigation measures that are not adequately covered in these generic ECOPs, they must be addressed separately in the EMP. These ECOPs also do not cover impacts from worker camps (assuming they would not generally be needed for small urban works projects), impacts from large works (bridges, tunnels, big roads). Social impacts caused by involuntary resettlement or involving ethnic minorities are addressed in other safeguard instruments. The ECOPs cover dredging operations producing relatively small amounts of sludge, whilst larger amounts or contaminated sludge would need to be handled through a separate set of procedures outside of the scope of these ECOPs.

MAIN ENVIRONMENTAL AND SOCIAL ISSUES DURING CIVIL WORKS CONSTRUCTION

Construction activities for small works governed by these ECOPs are those whose impacts are of limited extent, temporary and reversible, and readily managed with good construction practices. The environmental and social issues covered in this document are:

- Dust generation
- Air pollution
- Impacts from noise and vibration
- Water pollution
- Drainage and sedimentation control
- Management of stockpiles, quarries, and borrow pits
- Solid waste
- Chemical and hazardous wastes
- Disruption of vegetative covers and ecological resources
- Traffic management
- Interruption of utility services
- Restoration of affected areas
- Worker and public safety
- Communication with local communities
- Chance findings

Vietnamese Legal and Regulatory Framework

There are a number of Government of Vietnam (GoV) regulations, standards, code of practices, etc. related to environmental and safety aspects that are relevant to construction activities and

environmental quality. The principal ones related to issues covered by these ECOPs are listed below (not an exhaustive list):

- *Vietnamese Environment Standards:* including standards on sampling and sample preservation; analysis methods; standards on quality of air, surface water, groundwater, soils, standards on emission, waste water, standards on dumps, and standards on incinerators. These include:
 - (i) QCVN 01:2009/BYT: National technical regulation on drinking water quality.
 - (ii) QCVN 02:2009/BYT: National technical regulation on domestic water quality.
 - (iii) QCVN 08:2008/BTNMT: National technical regulation on water surface quality.
 - (iv) QCVN 09:2008/BTNMT: National technical regulation on underground water quality.
 - (v) QCVN 10:2008/BTNMT: National technical regulation on water quality in coastal areas.
 - (vi) QCVN 14:2008/BTNMT: National technical regulation on domestic wastewater.
 - (vii) QCVN 40:2011/BTNMT: National technical regulation on industrial wastewater.
 - (viii) QCVN 39:2011/BTNMT: National technical regulation on Water Quality for irrigated agriculture.
 - (ix) QCVN 38:2011/BTNMT: National technical regulation on Surface Water Quality for protection of aquatic lifes
 - (x)
 - (xi) QCVN 03:2008/BTNMT: National technical regulation on permitted limit of heavy metal in land.
 - (xii) QCVN 15:2008/BTNMT: National technical regulation on the pesticide residues in the soils.
 - (xiii) QCVN 43:2012/BTNMT - National technical regulation on sediment quality in fresh water areas.
 - (xiv) QCVN 05:2013: National technical regulation on ambient air quality.
 - (xv) QCVN 06:2008: National technical regulation on hazardous substances in ambient air.
 - (xvi) QCVN 26:2010/BTNMT: National technical regulation on noise.
 - (xvii) QCVN 27:2010/BTNMT: National technical regulation on vibration.
 - (xviii) QCVN 07:2009/BNM: National Technical Regulation on Hazardous Waste Thresholds
 - (xix) QCVN 17:2011/BGTVT: National technical regulation on Rules for Pollution Prevention of inland waterway ships.
 - (xx) Decision 3733/2002-BYT October 10, 2002: Promulgating 21 labor hygiene standards, 05 principles and 07 labor hygiene measurements
- *Basics for Safety/Construction:* Location of the disposal sites and other use purposes shall be agreed with the local authorities and all earth works shall comply with:
 - (i) Law on traffic and transportation No. 23/2008/QH12
 - (ii) Law on construction No. 16/2003/QH11
 - (iii) Decree No. 73/2010/NĐ-CP on administrative penalization security and society issues
 - (iv) Decree No. 12/2009/NĐ-CP on management of project
 - (v) Decree No. 59/NĐ-CP on management of solid waste
 - (vi) Decree No. 1338/NĐ-CP on technical guidelines for construction within weak foundation area
 - (vii) Decree No. 22/2010/TT-BXD on regulation of construction safety;
 - (viii) Circular No. 12/2011/TT-BTNMT on management of hazardous substance
 - (ix) Decision No. 35/2005/QĐ-BGTVT on inspection of quality, technical safety and environmental protection;
 - (x) Instruction No. 02 /2008/CT-BXD on safety and sanitation issues in construction agencies
 - (xi) TCVN 5308-91: Technical regulation on safety in construction
 - (xii) TCVN 4447:1987: Earth works-Codes for construction

- (xiii) Air, noise, and vibration control requirements stipulated in the TCVN4087: 1985-(Use of building plants-General requirements);
- *Chance find procedure*
 - (i) Law on Cultural Heritage (2002)
 - (ii) Law on Cultural Heritage (2009) for supplementary and reformation
 - (iii) Decree No. 98/2010/NĐ-CP for supplementary and reformation

MONITORING AND REPORTING REQUIREMENTS

Non-compliance by the contractor could result in suspension of works, financial penalties, or other penalties, as must be clearly spelled out in the EMP and in the contract.

Contractors are responsible for implementation of ECOPs. The responsibilities for monitoring ECOPs implementation are shared between the contractor, the PMB, and the Construction Supervision Consultant (CSC) as indicated in Annex 5. The Contractor's Work Plan should incorporate Site Environmental Management Plan, the guidelines provided in these ECOPs as well as the Environmental Management Plan (EMP) created for the sub-project. The designated Technical Officer(s) and Environmental Officer(s) of the PMBs are responsible for supervising the adherence to the agreed EMP by the selected contractor(s). The World Bank will periodically supervise implementation activities of Bank-financed projects at least on a biannual basis.

At a minimum, the contractor should prepare a monthly report on adherence to ECOPs which should be submitted to the CSC and to the PMB. Project-specific or contract-specific reporting requirements are described in the EMP. CSC is responsible for monitoring overall environmental performance of the project and submit to PMBs quarterly monitoring reports.

The World Bank Operational Policy (OP) on Environmental Assessment (OP 4.01) requires environmental assessment (EA) of Bank-financed projects to ensure they are environmentally sound and sustainable. EA is a process of analyzing potential environmental risks and of the identification and adoption of measures to avoid or mitigate such impacts.

As a part of EA, the Environmental Management Plan (EMP) is a safeguards instrument that is typically used in many projects and which of the process of mitigating and managing environmental impacts throughout project implementation.

Environmental codes of practice (ECOPs) are mitigation measures for generic impacts from project activities during the construction phase and are intended to be included in the bidding documents as requirements to the construction contractor.

If impacts require site-specific mitigation measures that are not adequately covered in these generic ECOPs, they must be addressed separately in the EMP. These ECOPs also do not cover impacts from worker camps (assuming they would not generally be needed for small urban works projects), impacts from large works (bridges, tunnels, big roads). Social impacts caused by involuntary resettlement or involving ethnic minorities are addressed in other safeguard instruments. The ECOPs cover dredging operations producing relatively small amounts of sludge, whilst larger amounts or contaminated sludge would need to be handled through a separate set of procedures outside of the scope of these ECOPs.

ENVIRONMENTAL – SOCIAL ISSUES	MITIGATION MEASURE	VIETNAM CODE/REGULATION
1. Dust generation	<ul style="list-style-type: none"> • The Contractor is responsible for compliance with relevant Vietnamese legislation with respect to ambient air quality. • The Contractor shall implement dust suppression measures (e.g. water spray vehicles, covering of material stockpiles, etc.) as required; • Construction vehicles shall comply with speed limits and haul distances shall be minimized. • Material loads shall be suitably covered and secured during transportation to prevent the scattering of soil, sand, materials or dust. • The Contractor shall be responsible for any clean-up resulting from the failure by his employees or suppliers to properly secure transported materials. • Exposed soil and material stockpiles shall be protected against wind erosion and the location of stockpiles shall take into consideration the prevailing wind directions and locations of sensitive receptors. • Dust masks should be used where dust levels are excessive. 	<ul style="list-style-type: none"> • QCVN 05: 2009/BTNMT: <i>National technical regulation on ambient air quality</i> • QCVN 06:2008: National technical regulation on hazardous substances in ambient air.
2. Air pollution	<ul style="list-style-type: none"> • All vehicles must comply with Vietnamese regulations controlling allowable emission limits of exhaust gases. • Vehicles in Vietnam must undergo a regular emissions check and get certified named: “Certificate of conformity from inspection of quality, technical safety and environmental protection” following Decision No. 35/2005/QD-BGTVT. • There should be no burning of waste or construction materials or cleared vegetation on site. • Cement processing plants should be far from residential areas. 	<ul style="list-style-type: none"> • TCVN 6438-2005: <i>Road vehicles Maximum permitted emission limits of exhaust gas.</i> • No. 35/2005/QD-BGTVT • QCVN 05:2009/ BTNMT; QCVN 06:2009
3. Impacts from noise and vibration	<ul style="list-style-type: none"> • The contractor is responsible for compliance with the relevant Vietnamese legislation with respect to noise and vibration. 	<ul style="list-style-type: none"> • QCVN 26:2010/ BTNMT: <i>National technical regulation on noise</i>

ENVIRONMENTAL – SOCIAL ISSUES	MITIGATION MEASURE	VIETNAM CODE/REGULATION
	<ul style="list-style-type: none"> • All vehicles must have appropriate “Certificate of conformity from inspection of quality, technical safety and environmental protection” following Decision No. 35/2005/QD-BGTVT; to avoid exceeding noise emission from poorly maintained machines. • When needed, measures to reduce noise to acceptable levels must be implemented and could include silencers, mufflers, acoustically damped panels or placement of noisy machines in acoustically protected areas. • Avoiding or minimizing transportation through or material processing near community areas. 	<ul style="list-style-type: none"> • QCVN 27:2010/ BTNMT: <i>National technical regulation on vibration</i>
4. Water pollution	<ul style="list-style-type: none"> • The Contractor must be responsible for compliance with the relevant Vietnamese legislation relevant to wastewater discharges into watercourses. • Portable or constructed hygienic toilets must be provided on site for construction workers. Wastewater from toilets as well as kitchens, showers, sinks, etc. shall be discharged into a conservancy tank for removal from the site or discharged into municipal sewerage systems; there should be no direct discharges to any water body. • Wastewater over standards set by relevant Vietnam technical standards/regulations must be collected in a conservancy tank and removed from site by licensed waste collectors. • Using techniques as berthing or diversion during construction to limit the exposure of disturbed sediments to moving water. • Before construction, all necessary wastewater disposal permits/licenses and/or wastewater disposal contract have been obtained. • At completion of construction works, wastewater collection tanks and septic tanks shall be safely disposed or effectively sealed off. 	<ul style="list-style-type: none"> • QCVN 09:2008/ BTNMT: National Technical Standard on underground water Quality • QCVN 14:2008/ BTNMT: National technical regulation on domestic wastewater; • QCVN 24: 2009/ BTNMT: National technical regulation on industrial wastewater; • TCVN 7222: 2002
5. Drainage and sedimentation control	<ul style="list-style-type: none"> • The Contractor shall follow the detailed drainage design included in the construction plans, intended to prevent storm water from causing local flooding or scouring slopes and areas of unprotected soil resulting in heavy sediment loads affecting local watercourses. • Ensure drainage system is always maintained cleared of mud and other obstructions. • Areas of the site not disturbed by construction activities shall be maintained in their existing conditions. 	<ul style="list-style-type: none"> • TCVN 4447:1987: Earth works-Codes for construction • Decree No. 22/2010/TT-BXD on regulation of construction safety;

ENVIRONMENTAL – SOCIAL ISSUES	MITIGATION MEASURE	VIETNAM CODE/REGULATION
	<ul style="list-style-type: none"> • Earthworks, cuts, and fill slopes shall be properly maintained, in accordance with the construction specifications, including measures such as installation of drains, use of plant cover. • To avoid sediment-laden runoff that could adversely impact watercourses, install sediment control structures where needed to slow or redirect runoff and trap sediment until vegetation is established. Sediment control structures could include windrows of logging slash, rock berms, sediment catchment basins, straw bales, storm drain inlet protection systems, or brush fences. • Site de-watering and water diversions: In the case that construction activities require that work be carried out within the watercourse (e.g. culvert or bridge crossing construction, retaining wall construction, erosion protection works), the work area must be dewatered to provide for construction in dry conditions. The sediment laden water pumped from the work area must be discharged to an appropriate sediment control measure for treatment before re-release to the stream. 	<p>QCVN 08:2008/ BTNMT – National technical regulation on quality of surface water</p> <ul style="list-style-type: none"> • QCVN 07:2009/BTNMQCVN 43:2012/_BTNMT
6. Management of stockpiles, quarries, and borrow pits	<ul style="list-style-type: none"> • Large scale borrow pits or stockpiles of more than 50,000 m³ will need site-specific measures that go beyond those in these ECOPs. • All locations to be used must be previously identified in the approved construction specifications. Sensitive sites such as scenic spots, areas of natural habitat, areas near sensitive receptors, or areas near water should be avoided. • An open ditch shall be built around the stockpile site to intercept wastewater. • Stockpile topsoil when first opening a borrow pit and use it later to restore the area to near natural conditions. • In cases of high risk of slope failure, disposal sites shall include a retaining wall. • If the need for new sites arises during construction, they must be pre-approved by the Construction Engineer. • If landowners are affected by use of their areas for stockpiles or borrow pits, they must be included in the project resettlement plan. • If access roads are needed, they must have been included in the environmental assessment and EMP. 	

ENVIRONMENTAL – SOCIAL ISSUES	MITIGATION MEASURE	VIETNAM CODE/REGULATION
7. Solid waste	<ul style="list-style-type: none"> • Before construction, a solid waste control procedure (storage, provision of bins, site clean-up schedule, bin clean-out schedule, etc.) must be prepared by Contractors and it must be carefully followed during construction activities. • Before construction, all necessary waste disposal permits or licenses must be obtained. • Measures shall be taken to reduce the potential for litter and negligent behavior with regard to the disposal of all refuse. At all places of work, the Contractor shall provide litter bins, containers and refuse collection facilities. • Solid waste may be temporarily stored on site in a designated area approved by the Construction Supervision Consultant and relevant local authorities prior to collection and disposal through a licensed waste collector, for example, URENCO in urban areas or local environment and sanitation companies. • Waste storage containers shall be covered, tip-proof, weatherproof and scavenger proof. • No burning, on-site burying or dumping of solid waste shall occur. • Recyclable materials such as wooden plates for trench works, steel, scaffolding material, site holding, packaging material, etc shall be collected and separated on-site from other waste sources for reuse, for use as fill, or for sale. • If not removed off site, solid waste or construction debris shall be disposed of only at sites identified and approved by the Construction Supervision Consultant and included in the site specific measures. Under no circumstances shall the contractor dispose of any material in environmentally sensitive areas, such as in areas of natural habitat or in or close to watercourses. 	<ul style="list-style-type: none"> • Decree No. 59/2007/NĐ-CP on solid waste management. • QCVN 07:2009/BNM: National Technical Regulation on Hazardous Waste Thresholds •
8. Chemical or hazardous wastes	<ul style="list-style-type: none"> • Chemical waste of any kind shall be disposed of at an approved appropriate landfill site and in accordance with local legislative requirements. The Contractor shall obtain needed disposal certificates. • The removal of asbestos-containing materials or other toxic substances shall be performed and disposed of by specially trained and certified workers. • Used oil and grease shall be removed from site and sold to an approved used oil recycling company. • Used oil, lubricants, cleaning materials, etc. from the maintenance of vehicles and machinery shall be collected in holding tanks and removed from site by a specialized oil recycling company for disposal at an approved hazardous waste site. 	<ul style="list-style-type: none"> • Decision No. 23/2006/QĐ-BTNMT with list of hazardous substance • Circular No. 12/2011/TT-BTNMT on management of hazardous substance

ENVIRONMENTAL – SOCIAL ISSUES	MITIGATION MEASURE	VIETNAM CODE/REGULATION
	<ul style="list-style-type: none"> • Used oil or oil-contaminated materials that could potentially contain PCBs shall follow procedures provided in the EMF to avoid any leakage or affecting workers. The local DONRE must be contacted for further guidance. • Unused or rejected tar or bituminous products shall be returned to the supplier's production plant. • Relevant agencies shall be promptly informed of any accidental spill or incident. • Store chemicals appropriately and with appropriate labeling. • Appropriate communication and training programs should be put in place to prepare workers to recognize and respond to workplace chemical hazards. • Prepare and initiate a remedial action following any spill or incident. In this case, the contractor shall provide a report explaining the reasons for the spill or incident, remedial action taken, consequences/damage from the spill, and proposed corrective actions. 	
9. Workforce, Camps and Site Management	<ul style="list-style-type: none"> • Workers' camps will be located at least 200 m away from schools and health care centres and not be located on steep slopes. The workforce shall be provided with safe, suitable and comfortable accommodations and safe portable water. They have to be maintained in clean and sanitary conditions. • Site offices, worker camps, mixing stations, and workshops shall be located NOT within 100m from any water courses, 500 meters of existing residential area. • Engineers and workers shall register their temporary residence with the local authority. • Allocate officer to be the Contractor's Workplace Safety and Environment Officer responsible for environmental and safety issues including training for workers. • Septic tank toilets must be provided at all construction camp areas where there will be concentration of labor. <p style="text-align: center;">First aid boxes shall be provided in each construction camp site.</p>	
10. Disruption of vegetative cover and ecological resources	<ul style="list-style-type: none"> • The Contractor shall prepare a Clearance, Revegetation and Restoration Management Plan for prior approval by the Construction Engineer, following relevant regulations. The Clearance Plan shall be approved by Construction Supervision Consultant and followed strictly by contractor. Areas to be cleared should be minimized as much as possible. 	<ul style="list-style-type: none"> • Law on Environment protection No. 52/2005/QH11

ENVIRONMENTAL – SOCIAL ISSUES	MITIGATION MEASURE	VIETNAM CODE/REGULATION
	<ul style="list-style-type: none"> • Site clearance in a forested area is subject to permission from Department of Agriculture and Rural Development. • The Contractor shall remove topsoil from all areas where topsoil will be impacted on by rehabilitation activities, including temporary activities such as storage and stockpiling, etc; the stripped topsoil shall be stockpiled in areas agreed with the Construction Supervision Consultant for later use in re-vegetation and shall be adequately protected. • The application of chemicals for vegetation clearing is not permitted. • Prohibit cutting of any tree unless explicitly authorized in the vegetation clearing plan. • When needed, erect temporary protective fencing to efficiently protect the preserved trees before commencement of any works within the site. • No area of potential importance as an ecological resource should be disturbed unless there is prior authorization from CSC, who should consult with PMBs, and the relevant local authorities. This could include areas of breeding or feeding of birds or animals, fish spawning areas, or any area that is protected as a green space. • The Contractor shall ensure that no hunting, trapping shooting, poisoning of fauna takes place. 	
11. Traffic management	<ul style="list-style-type: none"> • Before construction, carry out consultations with local government and community and with traffic police. • Significant increases in number of vehicle trips must be covered in a construction plan previously approved. Routing, especially of heavy vehicles, needs to take into account sensitive sites such as schools, hospitals, and markets. • Installation of lighting at night must be done if this is necessary to ensure safe traffic circulation. • Place signs around the construction areas to facilitate traffic movement, provide directions to various components of the works, and provide safety advice and warning. • Employing safe traffic control measures, including road/rivers/canal signs and flag persons to warn of dangerous conditions. • Avoid material transportation for construction during rush hour. 	<ul style="list-style-type: none"> • Law on traffic and transportation No. 23/2008/QH12 • Law on construction No. 16/2003/QH11 • Decree No. 22/2010/TT-BXD on regulation of construction safety

ENVIRONMENTAL – SOCIAL ISSUES	MITIGATION MEASURE	VIETNAM CODE/REGULATION
	<ul style="list-style-type: none"> Passageways for pedestrians and vehicles within and outside construction areas should be segregated and provide for easy, safe, and appropriate access. Signpost shall be installed appropriately in both waterways and roads where necessary. 	
12. Interruption of utility services	<ul style="list-style-type: none"> Planned and unplanned interruptions to water, gas, power, internet services: the Contractor must undertake prior consultation and contingency planning with local authorities about the consequences of a particular service failure or disconnection. Coordinate with relevant utility providers to establish appropriate construction schedules. Provide information to affected households on working schedules as well as planned disruptions (at least 5 days in advance). Interruptions of water supply to agricultural areas must also be avoided. The contractor should ensure alternative water supply to affected residents in the event of disruptions lasting more than one day. Any damages to existing utility systems of cable shall be reported to authorities and repaired. 	Decree No. 73/2010/NĐ-CP on administrative penalization security and society issues
13. Restoration of affected areas	<ul style="list-style-type: none"> Cleared areas such as borrow pits which are no longer in use, disposal areas, site facilities, workers' camps, stockpiles areas, working platforms and any areas temporarily occupied during construction of the project works shall be restored using landscaping, adequate drainage and revegetation. Start revegetation at the earliest opportunity. Appropriate local native species of vegetation shall be selected for the planting and restoration of the natural landforms. Spoil heaps and excavated slopes shall be re-profiled to stable batters, and grassed to prevent erosion. All affected areas shall be landscaped and any necessary remedial works shall be undertaken without delay, including green-spacing, roads, bridges and other existing works. Trees shall be planted at exposed land and on slopes to prevent or reduce land collapse and keep stability of slopes. Soil contaminated with chemicals or hazardous substances shall be removed and transported and buried in waste disposal areas. Restore all damaged road and bridges caused by project activities. 	<ul style="list-style-type: none"> Law on Environment protection No. 52/2005/QH11

ENVIRONMENTAL – SOCIAL ISSUES	MITIGATION MEASURE	VIETNAM CODE/REGULATION
14. Worker and public Safety	<ul style="list-style-type: none"> • Contractor shall comply with all Vietnamese regulations regarding worker safety. • Prepare and implement action plan to cope with risk and emergency. • Preparation of emergency aid service at construction site. • Training workers on occupational safety regulations. • If blasting is to be used, additional mitigation measures and safety precautions must be outlined in the EMP. • Ensure that ear pieces are provided to and used by workers who must use noisy machines such as piling, explosion, mixing, etc., for noise control and workers protection. • During demolition of existing infrastructure, workers and the general public must be protected from falling debris by measures such as chutes, traffic control, and use of restricted access zones. • Install fences, barriers, dangerous warning/prohibition site around the construction area which showing potential danger to public people (such as unfinished power pole foundation, high risk electrical shock areas, etc.). • The contractor shall provide safety measures as installation of fences, barriers warning signs, lighting system against traffic accidents as well as other risk to people and sensitive areas. • If previous assessments indicate there could be unexploded ordnance (UXO), clearance must be done by a relevant army unit. 	<ul style="list-style-type: none"> • Decree No. 22/2010/TT-BXD on regulation of construction safety • Instruction No. 02 /2008/CT-BXD on safety and sanitation issues in construction agencies • TCVN 5308-91: Technical regulation on safety in construction • Decision No. 96/2008/QD-TTg on clearance of UXO.
15. Communication with local communities	<ul style="list-style-type: none"> • Maintain open communications with the local government and concerned communities; the contractor shall coordinate with local authorities (leaders of local wards or communes, leader of villages) for agreed schedules of construction activities at areas nearby sensitive places or at sensitive times (e.g., religious festival days). • Copies in Vietnamese of relevant parts of these ECOPS should contained in contractor documents and of other relevant environmental safeguard documents shall be made available to local communities and to workers at the site. • Reduced playground space, loss of playing fields and car parking: The loss of amenities during the construction process is often an unavoidable source of inconvenience to users in sensitive areas. 	<ul style="list-style-type: none"> • Decree No. 73/2010/NĐ-CP on administrative penalization security and society issues

ENVIRONMENTAL – SOCIAL ISSUES	MITIGATION MEASURE	VIETNAM CODE/REGULATION
	<p>However, early consultation with those affected, provides the opportunity to investigate and implement alternatives. In all cases damages shall be compensated.</p> <ul style="list-style-type: none"> • Disseminate project information to affected parties (for example local authority, enterprises and affected households, etc) through community meetings before construction commencement. • Provide a community relations contact from whom interested parties can receive information on site activities, project status and project implementation results. • Provide all information, especially technical findings, in a language that is understandable to the general public and in a form of useful to interested citizens and elected officials through the preparation of fact sheets and news release, when major findings become available during project phase. • Monitor community concerns and information requirements as the project progresses; • Respond to telephone inquiries and written correspondence in a timely and accurate manner. • Inform local residents about construction and work schedules, interruption of services, traffic detour routes and provisional bus routes, blasting and demolition, as appropriate. • Provide technical documents and drawings to PC's community, especially a sketch of the construction area and the EMP of the construction site. • Notification boards shall be erected at all construction sites providing information about the project, as well as contact information about the site managers, environmental staff, health and safety staff, telephone numbers and other contact information so that any affected people can have the channel to voice their concerns and suggestions. 	
16. Chance find procedures	<p>If the Contractor discovers archeological sites, historical sites, remains and objects, including graveyards and/or individual graves during excavation or construction, the Contractor shall:</p> <ul style="list-style-type: none"> • Stop the construction activities in the area of the chance find. • Delineate the discovered site or area. • Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities or the Department of Culture and Information takes over. 	<ul style="list-style-type: none"> • Law on Cultural Heritage (2002) • Law on Cultural Heritage (2009) for supplementary and reformation • Decree No. 98/2010/NĐ-CP for

ENVIRONMENTAL – SOCIAL ISSUES	MITIGATION MEASURE	VIETNAM CODE/REGULATION
	<ul style="list-style-type: none"> • Notify the Construction Supervision Consultant who in turn will notify responsible local or national authorities in charge of the Cultural Property of Viet Nam (within 24 hours or less). • Relevant local or national authorities would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures. This would require a preliminary evaluation of the findings to be performed. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage; those include the aesthetic, historic, scientific or research, social and economic values. • Decisions on how to handle the finding shall be taken by the responsible authorities. This could include changes in the layout (such as when finding an irremovable remain of cultural or archeological importance) conservation, preservation, restoration and salvage. • If the cultural sites and/or relics are of high value and site preservation is recommended by the professionals and required by the cultural relics authority, the Project's Owner will need to make necessary design changes to accommodate the request and preserve the site. • Decisions concerning the management of the finding shall be communicated in writing by relevant authorities. • Construction works could resume only after permission is granted from the responsible local authorities concerning safeguard of the heritage. 	supplementary and reformation

Annex 4(b): Simplified Environmental Code of Practice (ECOP) for Small Works

1. This annex presents the Environmental Codes of Practice (ECOP) to be applied in the subprojects when small works are involved. The content and requirements following the WB guideline described in (the ESMF tool kit -annex 5).

A4.1 Objectives

2. The Environmental Codes of Practice (ECOP) is prepared to manage small environmental impacts during construction. The ECOPs will apply to manage small scale infrastructure investments subproject. ECOP will be a mandatory part of construction contract or bidding documents so that contractor complies with environmental covenants. The subproject owner (PPMU) and construction supervisors will be responsible for monitoring of compliance with ECOP and preparing the required reports.

3. There are a number of national technical regulations related to environmental, health and safety that apply to construction activities. Some of them are listed below:

- *Water Quality*: (QCVN 01:2009/BYT, QCVN 02:2009/BYT, QCVN 08:2008/BTNMT, QCVN 09:2008/BTNMT, QCVN 10:2008/BTNMT, QCVN 14:2008/BTNMT, TCVN 5502:2003; TCVN 6773:2000, TCVN 6774:2000, TCVN 7222:2002)
- *Air and Soil Quality* (QCVN 05:2008/BTNMT, QCVN 06:2008/BTNMT, QCVN 07:2008/BTNMT)
- *Solid Waste Management* (QCVN 03:2008/BTNMT, TCVN 6438:2001, TCVN 6696:2009, QCVN 07:2009)
- *Vibration and Noise* (QCVN 27:2010/BTNMT, QCVN 26:2010/BTNMT, TCVN 5949: 1998)
- *Labor Health and Safety*: Decision No.3733/2002/QĐ-BYT issued by Ministry of Healthcare dated on 10/10/2002 about the application of 21 Labor health and safety standards that concerned about microclimate, noise, vibration, Chemicals – Permitted level in the working environment
- The World Bank Group Environmental Health and Safety Guidelines which available at: http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/our+approach/risk+management/ehsguidelines

A4.2 Responsibilities

4. The subproject owner (PPMU/ICBM10) and Contractors are the key entities responsible for implementation of this ECOP. Key responsibilities of PPMU/ICBM10 and the contractors are as follows:

(a) PPMU/ICBM10

- PPMU/ICBM10 is responsible for ensuring that the ECOP is effectively implemented. The PPMU/ICBM10 will assign a qualified staff to be responsible for checking implementation compliance of Contractors, include the following: (a) monitoring the contractors' compliance with the environmental plan, (b) taking remedial actions in the event of non-compliance and/or adverse impacts, (c) investigating complaints, evaluating and identifying corrective measures; (d) advising the Contractor on environment improvement, awareness, proactive pollution prevention measures; (e) monitoring the activities of Contractors on replying to complaints; (f) providing guidance and on-the-job training to field engineers on various aspects to avoid/mitigate potential negative impacts to local environment and communities during construction.

(b) Contractor

- Contractor is responsible for carrying out civil works and informs PPMU/ICBM10, local authority and community about construction plan and risks associated with civil works. As such, contractor is responsible for implementing agreed measures to mitigate environmental risks associated with its civil works.
- Contractor is required to obey other national relevant legal regulations and laws.

Part 1 – Contractor's Responsibilities

7. This is an example and is not necessarily a full treatment of all requirements for a specific project. For example, there might be reason to have contractor deal with sexually transmitted diseases, medical and hazardous wastes (e.g., oil from vehicle or furnace repair and similar, oily rags).

Issues/Risks	Mitigation Measure
1) Dust generation/ Air pollution	<ul style="list-style-type: none"> • The Contractor implement dust control measures to ensure that the generation of dust is minimized and is not perceived as a nuisance by local residents, maintain a safe working environment, such as: <ul style="list-style-type: none"> . water dusty roads and construction sites; a. covering of material stockpiles; b. Material loads covered and secured during transportation to prevent the scattering of soil, sand, materials, or dust; c. Exposed soil and material stockpiles shall be protected against wind erosion.
2) Noise and vibration	<ul style="list-style-type: none"> • All vehicles must have appropriate "<i>Certificate of conformity from inspection of quality, technical safety and environmental protection</i>" following Decision No. 35/2005/QD-BGTVT; to avoid exceeding noise emission from poorly maintained machines.
3) Water pollution	<ul style="list-style-type: none"> • Portable or constructed toilets must be provided on site for construction workers. Wastewater from toilets as well as kitchens, showers, sinks, etc. shall be discharged into a conservancy tank for removal from the site or discharged into municipal sewerage systems; there should be no direct discharges to any water body. • Wastewater over permissible values set by relevant Vietnam technical standards/regulations must be collected in a conservancy tank and removed from site by licensed waste collectors. • At completion of construction works, water collection tanks and septic tanks shall be covered and effectively sealed off.
4) Drainage and sedimentation	<ul style="list-style-type: none"> • The Contractor shall follow the detailed drainage design included in the construction plans, to ensure drainage system is always maintained cleared of mud and other obstructions. • Areas of the site not disturbed by construction activities shall be maintained in their existing conditions.
5) Solid waste	<ul style="list-style-type: none"> • At all places of work, the Contractor shall provide litter bins, containers and refuse collection facilities. • Solid waste may be temporarily stored on site in a designated area approved by the Construction Supervision Consultant and relevant local authorities prior to collection and disposal. • Waste storage containers shall be covered, tip-proof, weatherproof and scavenger proof. • No burning, on-site burying or dumping of solid waste shall occur.

Issues/Risks	Mitigation Measure
	<ul style="list-style-type: none"> Recyclable materials such as wooden plates for trench works, steel, scaffolding material, site holding, packaging material, etc. shall be collected and separated on-site from other waste sources for reuse, for use as fill, or for sale. If not removed off site, solid waste or construction debris shall be disposed of only at sites identified and approved by the Construction Supervision Consultant and included in the solid waste plan. Under no circumstances shall the contractor dispose of any material in environmentally sensitive areas, such as in areas of natural habitat or in watercourses.
6) Chemical or hazardous wastes	<ul style="list-style-type: none"> Used oil and grease shall be removed from site and sold to an approved used oil recycling company. Used oil, lubricants, cleaning materials, etc. from the maintenance of vehicles and machinery shall be collected in holding tanks and removed from site by a specialized oil recycling company for disposal at an approved hazardous waste site. Unused or rejected tar or bituminous products shall be returned to the supplier's production plant. Store chemicals in safe manner, such as roofing, fenced and appropriate labeling.
7) Disruption of vegetative cover and ecological resources	<ul style="list-style-type: none"> Areas to be cleared should be minimized as much as possible. The Contractor shall remove topsoil from all areas where topsoil will be impacted on by rehabilitation activities, including temporary activities such as storage and stockpiling, etc; the stripped topsoil shall be stockpiled in areas agreed with the Construction Supervision Consultant for later use in re-vegetation and shall be adequately protected. The application of chemicals for vegetation clearing is not permitted. Prohibit cutting of any tree unless explicitly authorized in the vegetation clearing plan. When needed, erect temporary protective fencing to efficiently protect the preserved trees before commencement of any works within the site. The Contractor shall ensure that no hunting, trapping shooting, poisoning of fauna takes place.
8) Traffic management	<ul style="list-style-type: none"> Before construction, carry out consultations with local government and community and with traffic police. Significant increases in number of vehicle trips must be covered in a construction plan previously approved. Routing, especially of heavy vehicles, needs to take into account sensitive sites such as schools, hospitals, and markets. Installation of lighting at night must be done if this is necessary to ensure safe traffic circulation. Place signs around the construction areas to facilitate traffic movement, provide directions to various components of the works, and provide safety advice and warning. Employing safe traffic control measures, including road/rivers/canal signs and flag persons to warn of dangerous conditions. Avoid material transportation for construction during rush hour. Signpost shall be installed appropriately in both water-ways and roads where necessary.

Issues/Risks	Mitigation Measure
9) Interruption of utility services	<ul style="list-style-type: none"> Provide information to affected households on working schedules as well as planned disruptions of water/power at least 2 days in advance. Any damages to existing utility systems or cable shall be reported to authorities and repaired as soon as possible.
10) Restoration of affected areas	<ul style="list-style-type: none"> Cleared areas such as disposal areas, site facilities, workers' camps, stockpiles areas, working platforms and any areas temporarily occupied during construction of the project works shall be restored using landscaping, adequate drainage and revegetation. Trees shall be planted at exposed land and on slopes to prevent or reduce land collapse and keep stability of slopes. Soil contaminated with chemicals or hazardous substances shall be removed and transported and buried in waste disposal areas.
11) Worker and public Safety	<ul style="list-style-type: none"> Training workers on occupational safety regulations and provide sufficient protective clothing for workers in accordance with applicable Vietnamese laws. Install fences, barriers, dangerous warning/prohibition site around the construction area which showing potential danger to public people. The contractor shall provide safety measures as installation of fences, barriers warning signs, lighting system against traffic accidents as well as other risk to people and sensitive areas. If previous assessments indicate there could be unexploded ordnance (UXO), clearance must be done by qualified personnel and as per detailed plans approved by the Construction Engineer.
12) Communication with local communities	<ul style="list-style-type: none"> The contractor shall coordinate with local authorities (leaders of local communes, leader of villages) for agreed schedules of construction activities at areas nearby sensitive places or at sensitive times (e.g., religious festival days). Copies in Vietnamese of these ECOPs and of other relevant environmental safeguard documents shall be made available to local communities and to workers at the site. Disseminate project information to affected parties (for example local authority, enterprises and affected households, etc) through community meetings before construction commencement. Provide a community relations contact from whom interested parties can receive information on site activities, project status and project implementation results. Inform local residents about construction and work schedules, interruption of services, traffic detour routes and provisional bus routes, blasting and demolition, as appropriate. Notification boards shall be erected at all construction sites providing information about the project, as well as contact information about the site managers, environmental staff, health and safety staff, telephone numbers and other contact information so that any affected people can have the channel to voice their concerns and suggestions.
13) Chance find procedures	<ul style="list-style-type: none"> If the Contractor discovers archeological sites, historical sites, remains and objects, including graveyards and/or individual graves during excavation or construction, the Contractor shall: Stop the construction activities in the area of the chance find; Delineate the discovered site or area;

Issues/Risks	Mitigation Measure
	<ul style="list-style-type: none"> • Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities or the Department of Culture and Information takes over; • Notify the Construction Supervision Consultant who in turn will notify responsible local or national authorities in charge of the Cultural Property of Viet Nam (within 24 hours or less); • Relevant local or national authorities would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures. This would require a preliminary evaluation of the findings to be performed. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage; those include the aesthetic, historic, scientific or research, social and economic values; • Decisions on how to handle the finding shall be taken by the responsible authorities. This could include changes in the layout (such as when finding an irremovable remain of cultural or archeological importance) conservation, preservation, restoration and salvage; • If the cultural sites and/or relics are of high value and site preservation is recommended by the professionals and required by the cultural relics authority, the Project's Owner will need to make necessary design changes to accommodate the request and preserve the site; • Decisions concerning the management of the finding shall be communicated in writing by relevant authorities; • Construction works could resume only after permission is granted from the responsible local authorities concerning safeguard of the heritage.

Part 2 – Contractor’s Workers Environmental Code of Conducts

8. This is an example for typical project, but for a specific project, some other requirements might be relevant. For example, washing hands protocol, or agreeing to attend STD workshops.

Do:	Do not
<ul style="list-style-type: none"> ♦ Use the toilet facilities provided – report dirty or full facilities ♦ Clear your work areas of litter and building rubbish at the end of each day – use the waste bins provided and ensure that litter will not blow away. ♦ Report all fuel or oil spills immediately & stop the spill from continuing. ♦ Smoke in designated areas only and dispose of cigarettes and matches carefully. (littering is an offence.) 	<ul style="list-style-type: none"> ♦ Remove or damage vegetation without direct instruction. ♦ Make any fires. ♦ Poach, injure, trap, feed or harm any animals – this includes birds, frogs, snakes, etc. ♦ Enter any fenced off or marked area. ♦ Drive recklessly or above speed limit ♦ Allow waste, litter, oils or foreign materials into the stream ♦ Litter or leave food lying around. ♦ Cut trees for any reason outside the approved construction area ♦ Buy any wild animals for food;

<ul style="list-style-type: none"> ◆ Confine work and storage of equipment to within the immediate work area. ◆ Use all safety equipment and comply with all safety procedures. ◆ Prevent contamination or pollution of streams and water channels. ◆ Ensure a working fire extinguisher is immediately at hand if any “hot work” is undertaken e.g. Welding, grinding, gas cutting etc. ◆ Report any injury of workers or animals. ◆ Drive on designated routes only. ◆ Prevent excessive dust and noise 	<ul style="list-style-type: none"> ◆ Use unapproved toxic materials, including lead-based paints, asbestos, etc.; ◆ Disturb anything with architectural or historical value ◆ Use of firearms (except authorized security guards) ◆ Use of alcohol by workers during work hours ◆ Wash cars or machinery in streams or creek ◆ Do any maintenance (change of oils and filters) of cars and equipment outside authorized areas ◆ Dispose trash in unauthorized places ◆ Have caged wild animals (especially birds) in camps ◆ Work without safety equipment (including boots and helmets) ◆ Create nuisances and disturbances in or near communities ◆ Use rivers and streams for washing clothes ◆ Dispose indiscriminately rubbish or construction wastes or rubble ◆ Spill potential pollutants, such as petroleum products ◆ Collect firewood ◆ Do explosive and chemical fishing ◆ Use latrines outside the designated facilities; and ◆ Burn wastes and/or cleared vegetation.
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Annex 5: Pest Management Framework (PMF)

1. This annex provides technical guidelines for actions to be carried out by the subproject owner and its consultant when the subproject involves development/rehabilitation of irrigation and/or aquaculture/shrimp farming activities that may increase the use of pesticides and/or other toxic agrochemicals, OP/BP 4.09 (Pest Management) is triggered, and preparation of a Pest Management Plan (PMP) is required. The annex provides information on the objectives and basic principles of the PMP (Section A5.1), key policy and regulations related to management of pesticides and toxic agrochemicals (Section A5.2), and technical considerations (Section A5.3). The PMF will be applied and/or considered during the safeguard screening and assessment of potential impacts (see Annex 2) and preparation of an Environmental and Social Impact Assessment and/or Environmental and Social Management Plan (ESIA/ESMP) of the subproject (see Annex 3).

A5.1 Objectives and Basic Principles of PMP

2. The Project (MD-ICRSLP) is not intended to purchase or promote the use of fertilizers, pesticides, and/or other toxic agrochemicals during Project implementation. However, construction/upgrading of water infrastructure and livelihood development to be financed under the Project are expected to increase the agricultural command areas (including aquaculture and shrimp farming activities) that may indirectly increase the use of fertilizers, pesticides, and/or other toxic agrochemicals in the subproject areas. To mitigate this potential impacts as a ‘good practice’, the subproject owner will prepare and implement a PMP aiming to increase famers knowledge on Government regulations, policies, and/or technical guidelines related to safe use (application, storage, and disposal) of pesticides and toxic agrochemicals likely to be used by farmers as well as promote the application of an Integrated Pest Management (IPM) practice²¹ that are appropriate for the agriculture productions (rice, shrimp, aquaculture, etc.) in the subproject area through training and other capacity building activities.

3. It is noted that many of the Project provinces (i.e. An Giang, KienGiang, CaMau, Bac Lieu, and Soc Trang) have been implementing an IPM program and a number of on-farm pilot program aiming to reduce the use of pesticides and fertilizers with another WB support project²². Therefore the PMP activities will be designed by the provinces during the preparation of the ESMP of the subproject based on these knowledge and implementation experience. Efforts are being made to develop a communication and technology transfer strategy to promote the application of IPM practices in the Mekong Delta including production of training manuals, development of local radio/TV program, and production of public materials and local newspapers. The IPM technology being considered in the Mekong Delta includes application of the System Rice Intensification (SRI) technology and the “3Reductions, 3Gains” or “3R3G” and “1Must, 5Reductions” or “1M5R” campaigns while there are some pilot activities related to the application of “VietGap” during production of shrimp, aquaculture, and other agriculture products (see Section A5.2 and A5.3).

4. **Objectives:** Main objective of the PMP is to support Government policy to reduce the use of pesticides and toxic agro-chemicals in agriculture production in the Project area by continued enhancing farmer knowledge and understanding on ways to reduce the use of pesticides and toxic agrochemicals in the production process as well as reduce the risks to human health and/or possible contamination of local environment (soil, water) in the Project provinces. *Specifically, the PMP aims to:*

- Support the local agencies to implement Government regulations, strategy, and plans related to effective use of pesticides and toxic agrochemicals in the subproject areas including the application of IPM practices in the context of food hygiene and safety, food

²¹IPM refers to a mix of farmer-driven, ecologically based pest control practices that seeks to reduce reliance on synthetic chemical pesticides. It involves (a) management (keeping them below economically damaging levels) rather than seeking to eradicate them; (b) relying, to the extent possible, on nonchemical measures to keep pest populations low; and (c) selecting and applying pesticides, when they have to be used, in a way that minimizes adverse effects on beneficial organisms, humans, and the environment.

²² The Mekong Delta Water Resources Management for Rural Development Project (MD-WMRDP or WB6) is being implemented until March 2017.

security, adaptation to climate change, and the concerned international conventions that Vietnam is a member.

- Improve farmer's knowledge and capacity to safely use pesticides and other toxic agrochemicals in rice farming, shrimp farming, aquaculture, and other agricultural products including promotion of IPM practices and other capacity building activities that are being applied in the subproject areas.

5. ***Basic principles and approach:*** To achieve the objectives, the following principles will be applied during the preparation of ESMP/PMP of the subprojects:

- The subproject will not finance the purchase of fertilizers, pesticides, or other toxic agrochemicals. In normal conditions, if pesticide use is considered to be the necessary option, only pesticides registered with the government and the international recognition will be used and the Project will also provide technical and economic information for the type and amount of the chemicals. The subproject will also consider other options (including the management of non-harmful chemicals) that can also reduce reliance on the use of pesticides. The measures will be incorporated into the subproject design to reduce risks related to the handling and use of pesticides by farmers.
- During the preparation of the ESMP/PMP for the subproject, the subproject owner and consultant will identify the need for training and capacity building in close consultation with the local authorities and other key stakeholders including chemical suppliers to enhance close cooperation and understanding among them. The subproject will apply IPM practices in line with the national IPM program and aquaculture/shrimp farming management programs being implemented by MARD as a means to minimize the potential negative impact of the increased use of fertilizers, pesticides, and toxic chemicals. Main activities may include training, sharing of knowledge and experience in the use of fertilizers and chemicals through research surveys, study visits, and/or selecting safe use of non-chemicals, other techniques. Key policies, regulations, and technical guidelines described in Sections A5.2 and A5.3 will be considered.
- The PMP will identify the agency responsible for implementation including fund flow and reporting arrangements. DARD will be responsible for planning and implementation of PMP activities while farmers will be responsible for actively participation during the planning and implementation. CPMU will be responsible for supervision and monitoring of the ESMP including PMP activities after it has been approved by WB. The activities will be planned and implemented in close consultation with farmers, local authority, and local community organization especially women. The implementation budget will be included as part of the ESMP cost and the activities, outputs, and impacts will be monitored as part of the ESMP implementation.

A5.2 Key Policies, Regulations, and Agencies Related to Pesticides and IPM

6. ***National policies and plans:*** Application of the IPM concept in Vietnam has been introduced in early 1990's. A national IPM program was prepared and implemented and a Steering Committee on IPM, chaired by a vice-Minister of MARD, was established and responsible for supervision of the program. During the period, a number of policy and regulations supporting the IMP was developed including bans and restrictions of toxic pesticides and operations of an inspection system. Since then additional measures to reduce the use of pesticides in rice production have been carried out throughout the country including the Mekong Delta. MARD policy to promote the application of the "Three

Reductions, Three Gains” or “3R3G”²³ and the “One Must, Five Reductions” or “IM5R”²⁴ for rice production as well as the “VietGAP”²⁵ approaches for agriculture products have been implementing in AnGiang and the western provinces of the Mekong Delta.

7. **Pesticides control:** In 1990, Vietnam officially approved and adopted the *International Code of Conduct on the Distribution and Use of Pesticides* of the Food and Agriculture Organization of the UN (FAO) and the a regulatory system was developed in line with FAO guidelines in mid 1990’s. The Ordinance on Plant Protection and Quarantine was enacted in February 1993, followed in November by Decree 92/CP with regulations on pesticides management. These regulations are updated periodically and are being applied by the agencies. During 1995-97, a total of 45 pesticides were banned for use in Vietnam (see Box A5.1) and 30 have been restricted (amount cannot exceed 10% of total pesticides sold in Vietnam). These include the highly toxic pesticides such as carbofuran, endosulfan, methamidophos, monocrotophos, methyl parathion, and phosphamidon. In 1998, Vietnam stopped the registration of new insecticides for leaf-folders into the country since IPM activities had shown that insecticides use against leaf-folders is unnecessary.

8. Below lists key regulations related to pesticides and toxic chemicals used in agriculture productions control in Vietnam:

- Decision 193/1998/QD BNN-BVT dated December 2nd, 1999 by MARD promulgating the regulations on quality control, pesticide surplus and new pesticide testing in order to registration in Vietnam.
- Decision 145/2002/QD/BNN-BVT dated December 18th, 2002 by MARD promulgating the regulations on procedures for screening production, processing, registration, export and import, trading, storage and disposal, label, packaging, seminars, advertising and use of plant protection pesticides; This is the basis for GoV monitoring the use and storage of pesticides. Box A5.2 highlights key procedures for transportation, storage, and uses of pesticides.

²³This program is locally known as *Ba Giảm, Ba Tăng* which was developed based on the concept of a crop management technology designed by the International Rice Research Institute (IRRI) to *reduce production costs, improve farmers' health, and protect the environment in irrigated rice production in Mekong Delta through the reduction on use of seeds, nitrogen fertilizer, and pesticides*. This concept was based on the research findings showing that early spraying was unnecessary as any damage from leaf-feeding insects (the prime cause of early spraying) did not affect yield. A campaign called “*No Early Spraying*” (NES) through various media was conducted with an aim to reach about 92% of the 2.3 million farmer households in the Mekong Delta and the result suggested that the number of insecticide sprays per season dropped by 70% (from 3.4 to 1.0 time/crop). The research also suggested that in Mekong Delta farmers tended to apply high seeding rates -about 200–300 kilogram per hectare (kg per ha) and nitrogen applications of around 150–300 kg per ha. PPD with assistance from Danida conducted a study, involving 951 farmers, showed that seeds, fertilizers, and insecticides can be reduced by 40 percent, 13 percent, and 50 percent, respectively. The NES practice was then packaged with lower seed rates and lower nitrogen use.

²⁴This program built on the success on “3R3G” campaign, additional researches were carried out to demonstrate that appropriate reduction of production inputs (water, energy, seed, fertilizer, and pesticides) and post harvest-loss without reducing yield could be made and the 3 reductions should be extended to cover five reductions. This approach promotes the use of certified seed (this is considered as “*one must do*”) and the application of modern technology to promote efficiency in water and energy uses and reduction of post-harvest loss. The five reductions therefore cover *water, energy, post-harvest loss, fertilizers, and pesticides*. Implementation of this campaign however will be more complex and require additional investment and technical assistance as well as effective cooperation among MARD agencies involving in irrigation and production managements. Following a successful demonstration in An Giang province, MARD is moving towards modernization and development of best practices for scaling up this approach in the Mekong Delta.

²⁵VietGap (Vietnamese Good Agricultural Practices) is a food safety inspection program covering production activities starting from breeding to final products including storage and other related factors such as the environment, chemicals, plant protection drugs, packaging and even the working conditions and welfare of workers in the farm. The program focusing on setting (a) Standard for production technology; (b) Food safety, including measures to ensure no chemical contamination or physical contamination when harvesting; (c) The work environment aims to prevent the abuse of poor labor; and (d) Product traceability. The Vietnam Certification Centre (QUACERT) is responsible for undertaking VietGAP certification for fruit & vegetables, tea, rice and coffee.

- MARD Decision No. 1503/QD-BNN-TCTS on Good Practices for Aquaculture in Vietnam (referred to as VietGAP), May 07, 2011; Decision No. 1617/QD-BNN-TCTS giving guidelines for implementation of VietGAP for growing P. hypophthalmus), P.monodon) and P. vannamei); Government Decision 72/QĐ-TT-QLCL (March 04, 2013) assigns Vietnam Certification Centre (QUACERT) as the organization responsible for certification including for VietGAP for fruit & vegetables, tea, rice and coffee. Box A5.3 highlights key requirements for VietGap for aquaculture.

Box A5.2: List of Plant Protection drugs Banned in Vietnam

COMMON NAMES - TRADE NAMES	
Pesticides, preservatives forest	
1	Aldrin (Aldrex, Aldrite)
2	BHC, Lindane (Gamma - BHC, Gamma - HCH, Gamatox 15 EC, 20 EC, Lindafor, Carbadan 4/4G Sevidol 4/4G)
3	Cadmium compound (Cd)
4	Chlordance (Chlorotox, Octachlor, Pentichlor)
5	DDT (Neocid, Pentachlorin, Chlorophenothane)
6	Dieldrin (Dieldrex, Dieldrite, Octalox ...)
7	Eldrin (Hexadrin)
8	Heptachlor (Drimex, Heptamul, Heptox)
9	Isobenzen
10	Isodrin
11	Lead compound (Pb)
12	Methamidophos: (Dynamite 50 SC, Filitox 70 SC, Master 50 EC, 70 SC, Monitor 50 EC, 60 SC, Isometha 50 DD, 60 DD, Isosuper 70 DD, Tamaron 50 EC)
13	Methyl Parathion (Danacap M25, M40; Folidol - M50 EC; Isomethyl 50 ND; Metaphos 40 EC, 50 EC; (Methyl Parathion) 20 EC, 40 EC, 50 EC; Milion 50 EC; Proteon 50 EC; Romethyl 50 ND; Wofator 50 EC)
14	Monocrotophos: (Apadrin 50SL, Magic 50 SL, Nuvacron 40 SCW/DD, 50 SCW/DD, Thunder 515 DD)
15	Parathion Ethyl (Alkexon, Orthophos, Thiophpos)
16	Sodium Pentachlorophenate monohydrate (Copas NAP 90 G, PDM 4 90 powder, P-NaF 90, PBB 100 powder)
17	Pentachlorophenol (CMM 7 liquid oil, Oil eradicate termites M-4 1.2 liquid)
18	Phosphamidon (Dimeccron 50 SWC/DD)
19	Polychlorocamphe (Toxaphene, Camphechlor)
20	Stroban (Polychlorinate of camphe)
Crops Fungicides	
1	Arsenic compound (As) except Dinasin
2	Captan (Captane 75 WP, Merpan 75 WP)
3	Captafol (Difolatal 80 WP, Folcid 80 WP)
4	Hexachlorobenzene (Anticaric, HCB)
5	Mercury compound (Hg)
6	Selenium compound (Se)
Rodenticides	
1	Talium compound (TI);
2	2.4.5 T (Brochtox, Decamine, Veon)

Box A5.2 Procedures for Transportation, Storage, and Uses of Pesticides

- *Procedures for Safety transporting pesticides:* The following procedures will be followed while transporting pesticides for application under this PMP: pesticide concentrate will only be carried in a secure lockable and compartment with proper signage; pesticide concentrate will only be transported in original labeled containers; pesticide concentrate will always be carried separately from food and drinking water, safety gear and people; spill-containment and clean up equipment will be carried separately from pesticides but in close proximity to the pesticide on each vehicle during pesticide transport and use; appropriate documents such as operations records and material safety data sheets (MSDS) will be carried in each vehicle during pesticide transport and use.
- *Procedures for Safety storing pesticides:* In summary, the storage area must: be ventilated to the outside atmosphere; be locked when left unattended; be entered only by persons who are authorized to do so; have a placard affixed and maintained on the outside of each door leading into the facility in which the pesticides are stored bearing, in block letters that are clearly visible, the words “WARNING – CHEMICAL STORAGE – AUTHORIZED PERSONS ONLY”. In addition, the person responsible for the storage area shall notify the closest fire department of the presence of pesticides on the premises, if stored in one place for a period longer than 60 days. Persons responsible for the pesticide storage shall ensure that all pesticides are stored in a locked canopy, or similar arrangement, separate from the driver and personal protective equipment.
- *Procedures for Safety Mixing, Loading and applying pesticides:* All mixing, loading and applicators of pesticides shall be carried out by certified pesticide applicators, or someone under the direct supervision a certified pesticide applicator in the appropriate category of certification; Mixing of pesticides must always be conducted in a safe manner; Safety spill kits, spill response plans and first aid supplies shall be present on or near the treatment and mixing sites; Eye wash station(s) and protective clothing as recommended on the respective product labels shall be available on or near the treatment and mixing sites; Product labels and Material Safety Data Sheets will be available on or near the treatment and mixing sites to ensure that quantities of pesticides being mixed and used are consistent with label rates; There shall be no mixing or loading of pesticides within 15 metres of sensitive environmental features.
- *Procedures for the Safe Disposal of Empty Pesticide Containers and Unused pesticides:* Empty containers shall be disposed of in accordance with the manufacturer's instructions as noted on the product label or provincial instructions and recommendations. As a minimum, empty pesticide containers shall be: returned to the pesticide distributor as part of their recycling program; or triple rinsed or pressure rinsed, then altered so they cannot be reused; and disposed of in a permitted sanitary landfill or other approval disposal site.
- *Procedures for Responding to Pesticide spills:* Spill treatment equipment shall be at or near storage (including mobile storage), mixing and loading sites, and it shall include at least the following: personal protective equipment; absorbent material such as sawdust, sand, activated charcoal, vermiculite, dry coarse clay, kitty litter or commercial absorbent; neutralizing material such as lime, chlorine bleach or washing soda; and long handled broom, shovel, and waste-receiving container with lid. The following procedures must be followed if a spill occurs: all personnel shall be protected from pesticide contamination by wearing appropriate protective clothing and safety gear; any person exposed to a pesticide shall be moved away from the place of the spill; first aid should be administered, if required; the source of the spill should be stopped; the spilled material should be stopped from spreading by creating a dam or ridge; the owner shall ensure operations cease until the spill is contained and the source is repaired; absorbent material shall be spread over the spill, if applicable, to absorb any liquid; the absorbent material shall be collected in garbage bags or containers with the contents clearly marked; contaminated soil or other material will be removed from the spill site and placed in garbage bags or containers; the owner shall contact an approved representative of the province for shipping instructions and disposal requirements; when more than one kilogram of product of pesticide is spilled, or any amount into a water body, the owner will immediately report it to the Provincial Emergency Program by telephoning 115 or, where that is impractical, to the local police; and an approved representative of PPD will be notified of the details related to the spill as soon as is practical by the owner.

Box A5.3 Basic principles of VietGAP for Aquaculture

- Aquaculture must ensure quality and food safety by complying with current standards and regulations of the State and provisions of the Food and Agriculture Organization (FAO) of the United Nations and the World Health Organization (WHO).
- Aquaculture must ensure health and living conditions for aquatic animals by creating optimal conditions for health, reducing stress, limiting the risk of disease and maintain good farming environment in all stages of the production cycle, etc.
- Aquaculture activities should be done with detail plans and not affects environment, according to the regulations of the state and international commitments. There must be evaluation of the impact on the environment of the planning, development and implementation of aquaculture.
- Aquaculture should be done in a responsible way to society, respect the local community culture, strictly abide by provisions of the State and the relevant agreement of the International Labor Organisation (ILO) on labor rights, not affect the livelihood of farmers and surrounding community. Aquaculture must actively contribute to rural development, brings benefits, equality and contribute to reducing poverty and enhancing food security in the locality. Therefore socio-economic issues must be considered in all phases of growing process from development and deployment of aquaculture plan.

9. ***Institutions and capacity:*** MARD, through the Plant Protection Department (PPD), the Fisheries and Aquaculture Department (FAD), and other research centers/institutes, is the lead ministry responsible for ensure effective management of pesticides and toxic agrochemical used in agriculture productions in Vietnam. PPD functions are operated through the central office in Hanoi as well as PPD regional offices and provincial PPDs (PPDs). For the Mekong Delta, the PPD office in Ho Chi Minh City (HCMC) has a small laboratory that could be used to analyze pesticides in agriculture products while the PPD office in Tien Giang has played an active role in providing policy and technical guidance on research activities and work closely with the PPPDs in the Project area. Fisheries and aquaculture development has more or less similar institutional structure. The FAD functions are operated through the FAD Hanoi office as well as the Research Institute for Aquaculture No. 2 (based in the Ho Chi Minh City), and the provincial office (namely the aquaculture center) of DARD. There are universities and other specialized research center/institutes as well as mass organization and local unions/associations involved in promotion of IPM practices and management of agrochemicals use in rice farming, shrimp farming, and aquaculture.

10. The PPPDs, university, and research centers in the Project provinces are quite familiar with the IPM and participated in the previous research and training. *However, their coordination and cooperation as well as technical and management capacity regarding regulatory monitoring and laboratory analysis appears inadequate. Moreover, limited Government budget has limited the Government and the provinces to play an active role in ensuring effective management of pesticides and toxic agro-chemicals in the Mekong Delta.*

A5.3 Technical Considerations

11. ***IPM principles and demonstration of IPM models:*** To be in line with OP/BP 4.09 the subproject will apply the IPM practices and if appropriate and effective, the PMP activities may include an IPM demonstration measures in pilot areas and the following considerations should be considered:

- The IPM models should follow the general IPM principles (see Box A5.4) and the planning and designed should be conducted in close consultation with central and local technical agencies as well as farmers and the model should also build institutional capacity including group leaders and farmers network. Given different in local environment and types of crops, size the model should range between 5-10 ha/model.
- In addition to technical assistance and training the subproject support should also include materials and other incentives to encourage effective household participation in the demonstration models.
- Development of IPM guiding documentation for major crops (rice, vegetables, shrimp, aquaculture, etc.) and promotion of scaling up efforts.

12. ***TOT (Training of Trainers) and Farmer Field School (FFS):*** The subproject may support:

- ***Workshops and training of IPM staff:*** Scope of the training may include: Distinguish the major and secondary pests; Identify the natural enemies of pests and diseases in the field; Investigate methods to detect worms and diseases; Understand the impact of two pesticides, using appropriate pesticides; The techniques pest control under IPM principles; and Advanced farming techniques.
- ***FFS activities:*** To strengthen understanding both in theory and practical application in the field. The training can be made through thematic groups: farming techniques, identification and detection methods of pests and their natural enemies, and the IPM techniques in production for both crops and fisheries products.

13. ***Information exchange and stud visits:*** The activities may be considered when found to be relevant and effective. Building connection and networking of farmers and their associations as well as cooperation among local authorities could contribute significantly to improve adaptive capacity to address climate changes issues.

Box A5.4 IPM principles

- “*Grow a healthy crop*”. The focus is on cultural practices aimed at keeping the crop healthy. Selection of varieties that are resistant or tolerant to pests is an important aspect. Attention to soil, nutrient and water management is part of growing a healthy crop. Many IPM programs therefore adopt a holistic approach and consider a wider range of agro-ecological parameters related to crop production.
- “*Manage the agro-ecosystem*” in such a way that pests remain below economic damaging levels, rather than attempt to eradicate the pest. Prevention of pest build up and encouragement of natural mortality of the pest is the first line of defense to protect the crop. Non-chemical practices are used to make the field and the crop inhospitable to the insect pest species and hospitable to their natural enemies, and to prevent conditions favorable to the build up of weeds and diseases. Decisions to apply external inputs as supplementary controls are made locally, are based on monitoring of pest incidence and are site-specific. External inputs may include predators or parasites (bio-control), labor to remove the pest manually, pest attracting lures, pest traps, or pesticides. The choice of external input varies for each situation. Pesticides are generally used if economically viable non-chemical pest control inputs are not available or failed to control the pest. They are applied only when field monitoring shows that a pest population has reached a level that is likely to cause significant economic damage and the use of pesticides is cost-effective in terms of having a positive effect on net farm profits. Selection of products and application techniques should aim to minimize adverse effects on non-target species, people and the environment.
- *IPM is not an input or a technology but an approach that should be applied according to the local conditions.* IPM encourages farmers to find specific solutions to the pest problems they encounter in their fields based on understanding of agro-ecological principles, monitoring interactions among crops, pests and natural enemies of pests, and selecting and implementation of adequate control measures. In addition to crop production, IPM also calls for *non-chemical alternatives* to post harvest loss prevention. This is particularly important as losses due to post harvest damage can be significant and use of chemicals on stored produce is a common cause of poisoning people.
- *Support for IPM extension and farmer training* should be the core element of an IPM program, however it should be designed to connect with existing capacity and organization structure and cropping systems. Increasing knowledge and skills of farmers may be conducted through a variety of measures, including but not limited to: (a) demonstration plots and trials as traditionally known in agricultural extension, (b) distribution of information via television and radio broadcast, newsletter, and internet services; and training of individual farmers or in groups. Application of the Farmer Field School²⁶ (FFS) approach and/or the Farmer Participatory Training and Research (FPTTR) approach (as promoted by CABI and others) may be applied as appropriate.

²⁶ The concept of FFS comprises usually a season-long group training exercise for a group of farmers in an on-site location. Emphasis is put on agro-ecosystem analysis as a way to acquire environmental management knowledge in learning by doing approach. FFS have been used in many Asian countries to address pest problems caused by injudicious and over use of insecticides, especially in irrigated rice. The approach has been promoted by the Systemwide Programme on IPM (SP-IPM) which is based at FAO and supported by the Bank. In Vietnam, it is not clear about the economic impact and the financial sustainability of the FFS concept as costs per trained farmer can be substantial.

International and national agricultural research centers are using FPTR to bridge the gap between research and implementation by farmers.

- *Outreach and sharing of experience* is also a critical element of the IPM approach. The program should be designed to increase knowledge on good practices that are likely to be practical in the projects/subprojects areas taken into account the socioeconomic conditions of farmers. IPM does not necessarily involve sophisticated information gathering and decision making. The IPM approach can be introduced at any level of agricultural development. For example, improvement of basic crop management practices, such as planting time and crop spacing, can often be effective in reducing pest attack. IPM is a dynamic process. A useful beginning can be made with relatively limited specialized information or management input. Later, additional information, technologies, and mechanisms can be developed to enhance the effectiveness of the system.
- *Research and development and technical assistance:* There is no "blueprint" for planning interventions in support of IPM in a particular setting. The on-going research, extension activities, and training to staff and farmers related to IPM in the fields should be reviewed and if found appropriate the IPM program for the subproject should be built on the strength and address the weaknesses. When possible, providing support to research is an important element of an IPM intervention strategy because there is still a lack of locally adapted solutions to pest problems. Additionally, new pests constantly emerge with the change of farming systems. Close relationship between the research and extension services must be ensured. Involvement with the private sector to promote non-chemical and/or "green and safe" IPM options should also be considered.
- There is a wide variety of techniques that can be applied under IPM approach. Applicability of individual techniques depends on various factors, including: the crop, the cropping system, the pest problems, the climate, the agro-ecological conditions, etc. Generally, IPM involves a combination of techniques. Some examples of such techniques include:
 - *Cultural practices that can help prevent build up of pests such as* Crop rotation, Inter-cropping, Field sanitation and seed bed sanitation, Use of pest-resistant crop varieties, Managing sowing, planting or harvesting dates, Water/irrigation management, Soil and nutrient management (including mulching, zero/low tillage, fertilizer management), Practices to enhance the buildup of naturally existing predator populations, Hand-picking of pests or hand-weeding, Use of traps or trap crops, and Post harvest loss prevention;
 - *Biological inputs* -include Biological control through release of predators, parasites or pathogens; Biological control through fish, ducks, geese, goats, etc.; Release of sterile male insects; Bio-pesticides; and Biological preparations (e.g. nematic extract).
 - *Chemical inputs* such as chemicals that disrupt insect behavior (e.g.: pheromones) and Growth-regulators.
 - *Conventional pesticides:* The use should be technically and economically justified.
- *Careful selection of pesticides and application techniques is important* to minimize impact on beneficial organisms, humans and the environment. There is a broad range of pesticides with varying degree of impact on beneficial organisms, humans and the environment. When selecting pesticides one would search for a product that: (a) is effective in controlling the pest; (b) is highly specific to the pest and does not significantly affect beneficial organisms; (c) has a low human toxicity. In addition it is important to look at applications methods, as the amount of pesticides used may vary significantly. Use of insect traps (attractant combined with a pesticide) for instance requires far less pesticides than foliar application of pesticides onto crops.

A5.3 Technical Guidelines on IPM for Rice and Maize

14. Rice and maize are major crops in the Mekong Delta. Below provides guidelines for application of IPM practices for rice and maize that should be considered:

(a) Application of IPM practices:

- *Five basic principles of IPM practices for rice farming are:*
 - Planting and health care of crops: Choose good seed, suitable for local conditions; Choose healthy and qualified crops; and Planting, cared for properly techniques to grow good crops which are resistant and high yielding;
 - Check fields regularly, understand the progress of the growth and development of plants, pests, weather, land, water to take timely remedial measures;
 - Farmers become experts in the field: Farmers' technical knowledge, management skills need to advocacy field for many other farmers;

- Pest prevention includes Using appropriate preventive measures, depending on the severity of disease, parasitic natural enemies in each stage; Using of chemical drugs has reasonable and proper technique; and
 - Protect natural enemies: Protecting the beneficial organisms to help farmers kill pests.
- **For rice farming**, depending on specific crops and localities of the subproject, the following IPM measures should be considered:
 - *Cultivation methods*: Soil, field sanitation, crop rotation, intercropping, crop seasons, reasonable sowing and planting density, rational use of fertilizers; appropriate caring measures;
 - *Using seed*: the tradition seed and the proposed seed in use;
 - *The biological measures*: taking advantage of available natural enemies in the field, using probiotics;
 - Determination of the level of harm and prevention threshold; and
 - *Chemical measures*: safe using with natural enemies, the economic threshold; correct use of medicines.
- **Farming methods**
 - *Early land preparation and field sanitation*: Land preparation and field sanitation soon after planting to kill many caterpillars and pupae live in the rice stem borer and rice stubble, loss of shelter and food source of the brown plant hopper, green hoppers... Brokers are the transmission of viral diseases for rice as dangerous illness blighted gold, rice ragged stunt disease; Principles of impact of field sanitation measures and handling crop residues after harvest is cut off the ring cycle of pests from the crop to other crops and pests limited source accumulation, transmission spread at beginning of the crop.
 - *Crop rotation*: Rice rotation with other crops to avoid pathogen accumulation in rice from the crop to other crop.
 - *Appropriate Planting*: Planting rice to ensure appropriate growth and good development, achieve high productivity, avoids the risk of the weather. The determination of appropriate the crop having to rely on the characteristics of the damage incurred pests important to ensure that rice avoiding peak of the epidemic.
 - *Use healthy seeds, pest resistant and short seeds*: Healthy seeds, free disease helps to rice facilitate development; Using resistant rice seeds reduce drug use chemical pest control, reduce pollution, protect natural enemies; keep balance agricultural ecosystems; Rice seed with short growth period of about 100-110 days, plant earlier in the season could have been avoided borer, deep bite panicle. Rice seed with extremely short growing period is 80-90 days brown planthopper prevention measures effective for brown plant hopper could not accumulate in sufficient quantities to cause severe damage in extremely short day breeds.
 - *Cultivation density is reasonable*: The density and sowing techniques, depending on the rice seeds transplanting, crop, soil and nutrition, aged rice, rice quality, process agricultural intensification; The density is too thick or too little will affect productivity, while also affecting the generation and development of pests, weeds; The rice fields are often sown too thick closed up early, causing high humidity, creating conditions for sheath blight and brown plant hopper damage incurred at the end of the crop.
 - *Using reasonable fertilizers*: Fertilization excessive or unreasonable fertilizer will make plants grow normally and not prone to pest infestation. Rice fields fertilization are more susceptible to infectious diseases rice blast, sheath blight, leaf blight.
- **Manual methods:**

- Light traps catch butterflies, break eggs, rub stripping foil fencing using leaf spray, dig down to catch mice.
- ***Biological methods:***
 - Creating a favorable environment for beneficial organisms are natural enemies of pest development to contribute to kill pests;
 - Protection of natural enemies to avoid toxic chemicals by using selective medication drugs, narrow-spectrum drugs, drugs used when absolutely necessary and should be based on economic thresholds;
 - Create habitat for natural enemies after planting by intercropping, planting legumes on bunds, disintegrator for lurking natural enemies; and
 - Application of cultivation techniques to facilitate reasonable development natural enemies.
- **Priority use drugs Biological Plant Protection**
 - The medicines is effective only biological pest control, non-toxic to beneficial organisms, safe to human health and the environment.

(b) Norms of fertilizer use: The following norms of fertilizer use should be as follows:

- ***For direct sowing rice:*** *The following will be considered:*
 - The amount of fertilizer is 1ha (8-10 tons) of manure, 250 kg Urea, 500 kg superphosphate, K chloride 150kg.
 - Whole basal fertilizing of manure, phosphate + 20% urea + 30% K.
 - Additional fertilizing tillering 60-70% urea + 20% K.
 - Note: The spring crop only put down fertilizer when the weather is not too cold and nitrogen fertilizer limited when rice is in ear to avoid fall in the end of the crop pests.
- ***For transplanted rice:*** Amount of the fertilizer for 1 acres: 4-5 kg decomposed manure, urea nitrogen 8-12 kg 6-12 kg K chloride, Lam Thao superphosphate 15-25 kg. Specific fertilizer depending on the frame with rice, soil properties:
 - High-yielding hybrid rice varieties grown on sandy soils, silver colored, fertilize with manure maximum.
 - Domesticated rice varieties, nutrient-rich soil fertilizer with a minimum quantity.
 - Sandy soil, silver colored, with mineral fertilizer ratio 1 N: 1 K₂O: 1 P₂O₅ (1 protein: 1 K: 1 time per pure fertilizer concentration).
 - Boggy land, wetlands regularly, typically acidic, rich in protein, lack of time, lack of potassium fertilizer lime powder before transplanting 7-10 days and reduced nitrogen fertilizers, increasing phosphorus, K, etc.
 - Recommendation on manufacturing: For initiative water soil, the total amount of fertilizer deeply lined manure, 30-40% protein + phosphate, K before transplanting harrow. None initiative water land is not nitrogen fertilizer liner to prevent cold rice death.
 - The 1st additional fertilizing when rice plants have taken root in green (15-20 days after transplanting). Apply 50-80% protein 20-40% + K, water levels flooded 5cm.
 - Additional fertilizing Series 2: When the rice stand, about 1-4 to 10-4 every year, 10% nitrogen fertilizer notes and other potassium. Nitrogen pay attention to the color of the

leaf, if the leaf is dark green, do not apply nitrogen fertilizer to increase the amount of K, so until flowering rice, the leaves are green ginger is good, keep humidity saturated soil (soft land, subsidence feet).

- In addition to ensuring high yield and stability need to better control some pests and diseases of rice such as BPH, stem borer, sheath blight, blast, etc.
 - Note: only rice cultivation and nitrogen fertilizer when the outdoor temperature is greater than 15°C.
 - ***Hybrid maize crops:***
 - The amount of seed for 1 ha: 15 kg
 - Organic manure: lowland areas reach at least 4-5 tons.
 - Urea 300 kg
 - Phosphate 400 - 500 kg
 - Potassium fertilizer 150 kg
 - ***Domesticated maize crop:***
 - The amount of seed for 1 ha: 25 kg
 - Organic manure: lowland areas reach at least 4-5 tons.
 - Urea 200 - 250 kg
 - Phosphate 350 - 400 kg
 - Potassium fertilizer 100 - 120 kg
 - (If using other kind fertilizer to apply, must be taken to ensure the regularization the amount of according to 3 kinds of NPK fertilizer)

(c) Intensive technical guidance for rice plants

- About seed, cultivated by the new hybrid rice varieties, limit the use of the old hybrids, Steering simultaneously sowing of seasonality, monoculture on the same field, due to time of growth, leading to different characteristics difficult disease management, water control and take care.
 - Regarding technical aspects
 - For rice sowing: Continue to apply the sowing areas with convenient conditions to ensure irrigation water, flat land (with accompanying technical process).
 - For rice plants: a new technique is applicable implanted moderately high density 55-60 clusters / m², less transplant dedicated to saves Seed and time shorten the tillering, apply enough fertilizer under the guidance of technical staff.
 - Apply day intensive from Seed stage, saving seeds, apply integrated pest management (IPM), reduced plant pesticide to reduce input costs.

(d) Intensive technical guidance for maize crop

- *About seeds*: lowland areas and upland in the uplands and upland villages of communal planting some of the maize hybrids. The area is not cultivated maize, maize buy pure, pure, high yield potential. Maize must originate clear, good quality seeds, the specialized agencies testing before supply for sowing.
 - *Technique*: Planting density from 5.5 to 6 thousand plants / ha, only 1 tree / hole, the upland districts in density from 5 to 5.5 thousand plants / ha (1-2 plants / hole), enough organic fertilizers and inorganic fertilizers are balance, earlier additional fertilizing as instructed.

Annex 6. Sample Grievance Registration Form

This annex applies to all subprojects to be financed by MD-ICRSLP. The subproject owner (PPMU/ICMB10) will be responsible for implementation of the GRM process (see ESMF main text Section IX) and complete the GRM registration form and report the results as part of the safeguard monitoring report to be submitted to CPMU and WB. It is expected that a Community Development Committee (CDC) is established to take the lead in responding to the GRM process. Training will be provided to responsible staff.

Grievance Number:	
LOCATION : District:	Village:
CDC Name:	
NAME OF COMPLAINANT:	
ADDRESS:	Telephone #:
DATE RECEIVED:	
Classification of the grievance (Check boxes)	
<input type="checkbox"/> Water Use	<input type="checkbox"/> Dispute with contractors
<input type="checkbox"/> CDC formation	<input type="checkbox"/> Inter-community dispute
<input type="checkbox"/> Land acquisition and Compensation	<input type="checkbox"/> Technical/operational coordination
<input type="checkbox"/> Financial	<input type="checkbox"/> Process delays
<input type="checkbox"/> Water Quality	<input type="checkbox"/> Noise
<input type="checkbox"/> Sanitation	<input type="checkbox"/> Water Use
<input type="checkbox"/> Other (specify) _____	
Brief description of the grievance:	
What is the perceived cause?	
Suggested action (by complainant) to address grievance:	

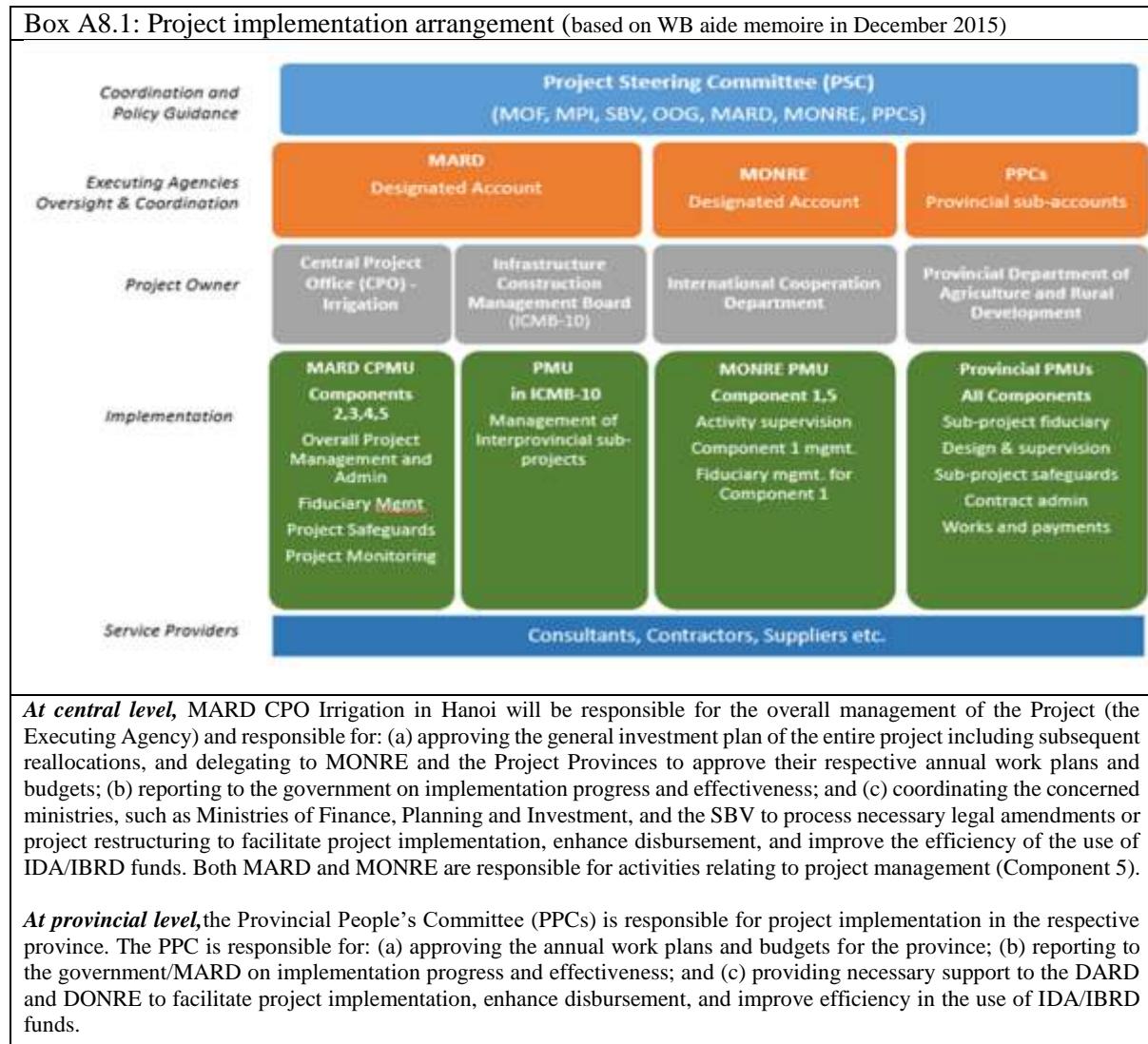
Annex 7: Organization and Reporting

1. This annex presents organization and responsibility of key entity related to safeguards monitoring performance (Section A8.1) as well as the reporting forms at subproject level (Section A8.2) and project level (Section A8.3). At subproject/activity level, the subproject/activity safeguard staff of the subproject/activity owner (PPMU, ICMB10, or PMU of MONRE) will be responsible for monitoring and monthly reporting. At Project level, the Project safeguard staff of CPMU/CPO and PMU of MONRE will review the ESMF/safeguard implementation progress, take actions as necessary, and report the results as part of the Project safeguard monitoring report to be submitted to WB on a 6 months and yearly basis. The Project Steering Committee (PSC) and/or the Provincial People Committee (PPC) will be responsible respectively for taking policy actions related to safeguard issues at Project level and subproject levels. Close consultation with WB on specific issues are recommended.

(A8.1) Organization Structure for Safeguard Monitoring (see explanation in table below)

2. The Project will be implemented in 9 provinces: Dong Thap and An Giang (Upper Delta), Ben Tre, Tra Vinh, Vinh Long and Soc Trang (Delta Estuary), and Bac Lieu, Kien Giang and Ca Mau (Delta Peninsula). The implementing agencies will be MARD, MONRE, and the provincial People's Committees (PPCs) of the nine project provinces. In line with the Project implementation arrangement (see ESMF main text and Box A8.1 below), the organization structure for safeguard monitoring is presented in *Figure A8.1 and Table A8.1* below.

Box A8.1: Project implementation arrangement (based on WB aide memoire in December 2015)



Project oversight: To provide policy guidance to the implementing agencies, a Project Steering Committee (PSC) will be established, consisting of representatives from Ministry of Finance (MOF), Ministry of Planning and Investment (MPI), Office of the Government (OOG), State Bank of Vietnam (SBV), MARD, MONRE, and the Provincial People's Committees (PPCs). The PSC will be chaired by a leader of MARD and co-chaired by MONRE. The PSC will organize meetings to review the project implementation, provide policy guidance and assist in coordination on a needed basis. The PSC will report to the MARD/MONRE Ministers.

For Component 1, MONRE will be the Project Owner (Implementing Agency), and has assigned the International Cooperation Department (ICD-MONRE) to be responsible for management of contracts, through a dedicated PMU responsible for implementation. A designated account for MONRE PMU will be opened and maintained throughout the project and to be managed by MONRE on a daily basis. Coordination with MARD will be in the form of information sharing, activity alignment and report consolidation.

For Components 2, 3, and 4, MARD CPO Irrigation in Hanoi will be the Project Owner. CPO will (a) assign the existing Central Project Management Unit (CPMU) located in Can Tho to be responsible for project management and supervision including fiduciary, procurement, financial accounting and payments and disbursement; (b) delegate the planning and implementation responsibility of non-complex (and single-province) subprojects to the provincial subproject owners (DARDs); (c) assign the Infrastructure Construction Management Board No. 10 (ICMB 10) to be responsible (as the subproject owner) for a complex subprojects (involve more than 1 province); and (d) create a Technical Working Group (TWG) made up of irrigation, agriculture, forestry, aquaculture specialists from technical departments, and related research institutes to provide technical guidance to subprojects. Specific responsibility of CPO, CPMU, and PPMUs, and ICMB10 are highlighted but not limited to the followings:

- *Specific responsibilities of the CPO* include, but are not limited to, the following: (a) providing technical support to the DARDs in project implementation and management, including preparing and implementing annual work plans, procurement plans, disbursement plans, M&E, EMP, EMDPs, RAPs, etc.; (b) developing and maintaining a sound project accounting system in accordance with the procedures required by government and IDA; (c) handling all ICB packages and the selection of international consultants, as well as all other procurement matters for which central management is more efficient compared to provincial level management; (d) monitoring the progress and quality of implementation, safeguards compliance, and project impact to report to MARD and IDA; and (e) preparing proposals for project restructuring and legal amendments, when necessary, for submission to government and IDA.
- *CPMU (located in Can Tho)* in coordination with CPO Irrigation, will (a) Provide technical inputs for preparing/reviewing complex or interprovincial projects which will be managed by CPO Irrigation and (b) Extend technical assistance to DARDs, when required, to support implementation of non-complex sub-projects which are decentralized to the project provinces. The CPMU will also help manage the subprojects at the provincial level, and will include technical specialists from various technical departments including agriculture, forestry, aquaculture, climate change, water, and environment, as needed. Each province involved in the project will set up its own PMU (called "PPMUs") under the DARD (sub-project owner) which will be responsible for the non-complex sub-projects within their jurisdictions. The CPMU, assisted by the TWG, is responsible for implementing the components in accordance with the framework documents for determining the eligibility, prioritization and readiness of the subproject investments, as well as in compliance with the safeguards framework, and the sub-project assessments. In addition, the CPMU will be responsible for the overall project level administration, including oversight procurement, financial management, monitoring and evaluation, and communications.
- The subprojects under Components 2, 3 and 4 would be implemented by provincial project management units (PPMUs) in the respective provinces. The Provincial People's Committee (PPC) will appoint existing Provincial Project Management Units (PPMU) under the Department of Agriculture and Rural Development (DARD) to be the implementing agency. Subprojects involving more than one province would be implemented by Infrastructure Construction Management Board No. 10 (ICMB 10) under the direct management of MARD. The main tasks of the PPMU and ICMB10 will be in charge of day-to-day implementation activities including: (i) preparation and processing of sub-project investments; (ii) preparation of detailed technical engineering design, safeguards mitigation documents, implementation and procurement plans; (iii) carrying out fiduciary (procurement and financial management) and safeguards activities at the sub-project level; (iv) operating and maintaining the project account; and, (v) monitoring and evaluating of implementation of the sub-projects. Each of the PPMUs and ICMB10 will be fully staffed with qualified and experienced staff in all areas particularly on fiduciary and safeguards aspects.

Figure A8.1 Organization structure for safeguard monitoring

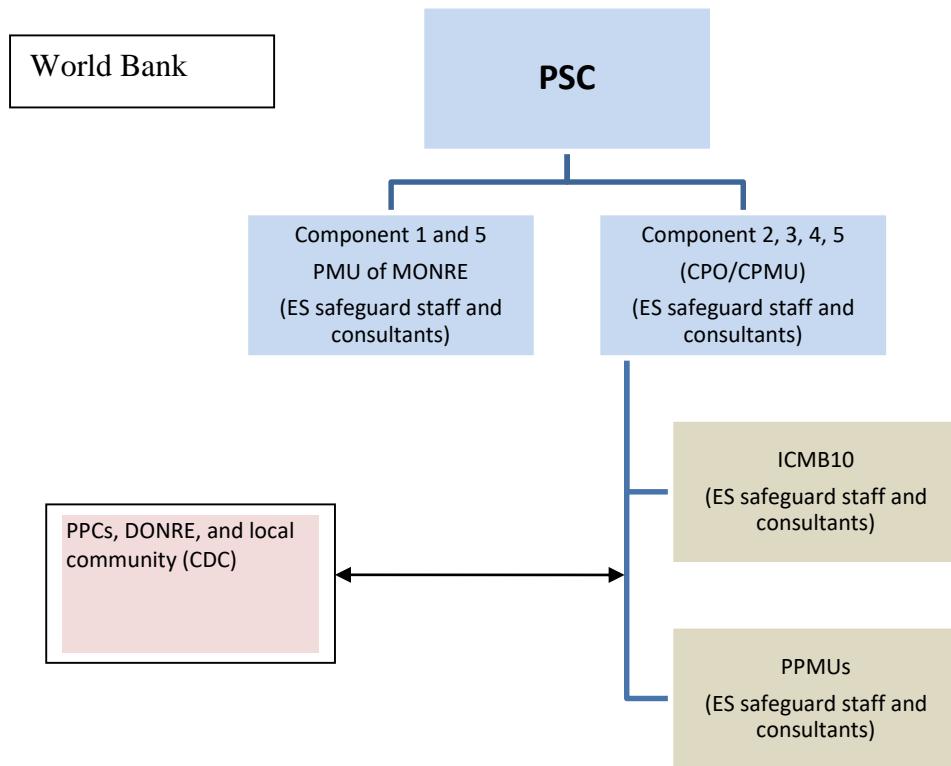


Table A8.1: Institutional Responsibilities for the Project and Subproject Safeguard Implementation

Community/ Agencies	Responsibilities
Project Implementing Agency (IA) and PMU (The IA means MARD and MONRE while PMU here means the PMU of MONRE and CPMU and ICMB10 of MARD and PPMUs of the provinces)	<ul style="list-style-type: none"> - The IA will be responsible for overseeing the Project implementation including ESMF implementation and environmental performance of contractors. - PMU, representative of the IA, will be responsible for monitoring the overall Project implementation, including environmental compliance of the Project. PMU will have the final responsibility for ESMF implementation and environmental performance of the Project during the construction and operational phases. - Specifically the PMU will: (i) closely coordinate with local authorities in the participation of the community during project preparation and implementation; (ii) monitor and supervise ESMP implementation including incorporation of ESMP into the detailed technical designs and bidding and contractual documents; (iii) ensure that an environmental management system is set up and functions properly; (iv) be in charge of reporting on ESMP implementation to the IA and the World Bank. - In order to be effective in the implementation process, PMU will establish an Environmental and Social Unit (ESU) with at least two safeguard staff to help with the environmental aspects of the Project.

Environmental and Social Unit(ESU) under PMU	<ul style="list-style-type: none"> - The ESU is responsible for monitoring the implementation of the World Bank's environmental safeguard policies in all stages and process of the Project. Specifically, this unit will be responsible for: (i) screening subprojects against eligibility criteria, for environment and social impacts, policies triggered and instrument/s to be prepared;(ii) reviewing the subproject EIAs/EPPs and ESIAs/ESMPs prepared by consultants to ensure quality of the documents; (iii) helping PMU incorporate ESMPs into the detailed technical designs and civil works bidding and contractual documents; (iv) helping PMU incorporate responsibilities for ESMP monitoring and supervision into the TORs, bidding and contractual documents for the Construction Supervision Consultant (CSC) and other safeguard consultants (SSC, ESC, IMA, and EMC) as needed; v) providing relevant inputs to the consultant selection process; (v) reviewing reports submitted by the CSC and safeguard consultants; (vi) conducting periodic site checks; (vii) advising the PMU on solutions to environmental issues of the project; and viii) preparing environmental performance section on the progress and review reports to be submitted to the Implementing Agency and the World Bank.
PPMUs, ICMB10, PMU of MONRE	<ul style="list-style-type: none"> - As the subproject/activity owner, PPMU/ICMB10/PMU of MONRE is responsible for implementation of all the ESMP activities to be carried out under the Project, including fostering effective coordination and cooperation between contractor, local authorities, and local communities during construction phase. PPMU/ICMB10/PMU of MONRE will be assisted by the environmental staff, safeguard consultants, and CSC/or field engineer.
Construction Supervision Consultant (CSC) and/or Field Engineer	<ul style="list-style-type: none"> - The CSC will be responsible for routine supervising and monitoring all construction activities and for ensuring that Contractors comply with the requirements of the contracts and the ECOP. The CSC will engage sufficient number of qualified staff (e.g. Environmental Engineers) with adequate knowledge on environmental protection and construction project management to perform the required duties and to supervise the Contractor's performance. - The CSC will also assist the PMU/PPMU/ICMB10/PMU of MONRE in reporting and maintaining close coordination with the local community.
Contractor	<ul style="list-style-type: none"> - Based on the approved environmental specifications (ECOP) in the bidding and contractual documents, the Contractor is responsible for establishing a Contractor ESMP (CESMP) for each construction site area, submit the plan to PPMU/ICMB10/PMU of MONRE and CSC for review and approval before commencement of construction. In addition, it is required that the Contractor get all permissions for construction (traffic control and diversion, excavation, labor safety, etc. before civil works) following current regulations. - The Contractor is required to appoint a competent individual as the contractor's on-site <i>Safety and Environment Officer (SEO)</i> who will be responsible for monitoring the contractor's compliance with health and safety requirements, the CESMP requirements, and the environmental specifications (ECOP). - Take actions to mitigate all potential negative impacts in line with the objective described in the CESMP. - Actively communicate with local residents and take actions to prevent disturbance during construction. - Ensure that all staff and workers understand the procedure and their tasks in the environmental management program. - Report to the PPMU/ICMB10/PMU of MONRE on any difficulties and their solutions. - Report to local authority and PPMU/ICMB10/PMU of MONRE if environmental accidents occur and coordinate with agencies and keys stakeholders to resolve these issues.
Independent Environmental Monitoring Consultants (IEMC)	<ul style="list-style-type: none"> - IEMC will, under the contract scope, provide support to PPMU/ICMB10/PMU of MONRE to establish and operate an environmental management system, offers suggestions for adjusting and building capacity for relevant agencies during project implementation and monitor the CESMP implementation in both construction and operation stages. IEMC will also be responsible to support PPMU/ICMB10/PMU of MONRE to prepare monitoring reports on ESMP implementation.

	<ul style="list-style-type: none"> - The IEMC will have extensive knowledge and experience in environmental monitoring and auditing to provide independent, objective and professional advice on the environmental performance of the Project.
Local community	<ul style="list-style-type: none"> - Community: According to Vietnamese practice, the community has the right and responsibility to routinely monitor environmental performance during construction to ensure that their rights and safety are adequately protected and that the mitigation measures are effectively implemented by contractors and the CPMU/PPMU/ICMB10/PMU of MONRE. If unexpected problems occur, they will report to the CSC and/or CPMU/PPMU/ICMB10/PMU of MONRE.
Social organizations, NGOs and civil society groups	<ul style="list-style-type: none"> - These organizations could be a bridge between the PPC/DPC, communities, Contractors, and the CPMU/PPMU/ICMB10/PMU of MONRE by assisting in community monitoring. - Mobilizing communities' participation in the subproject, providing training to communities and Participating in solving environmental problems, if any.
Province and District People's Committees (PPCs/DPCs), Provincial DONRE	<ul style="list-style-type: none"> - Oversee implementation of subprojects under recommendations of DONRE and PPMU/ICMB10/PMU of MONRE to ensure compliance of Government policy and regulations. DONRE is responsible for monitoring the compliance with the Government environmental requirements.

A8.2 Monthly Progress Report of Subprojects/Activities

3. **Instructions:** This form will be completed and sent to the Project Director every month without fail. Attach additional information as needed should the form below not provide enough space.

Progress report for the month of: _____

Subproject Name: _____

Subproject Number: _____

Village/area: _____

District: _____

Progress: (List all the subproject components and the progress to date)

Component/subproject	Description of subproject implementation to date	Remarks
1.		
2.		
3.		

Comments on Subproject Safeguard Issues:

(Report if there have been any ES problems that require the attention and assistance of the Project Director or safeguard specialist/consultants).

Problem/Issue	Comments

A8.3 Project Safeguard Reporting

4. Form below should be used for 6 month and/or annual reporting for the Project. Attach additional information as needed should the form below not provide enough space.

Progress report for the period of: _____

Subproject/Activity Owner: _____

Environmental and Social Progress Report Format

No	Project investment (subproject or activity)	Key environmental and social issues	Mitigation measures taken	Implementation and monitoring of ESMP	Training & capacity-building programs implemented	Lessons learnt	Remarks