KINGDOM OF CAMBODIA

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Ministry of Water Resources and Meteorology

Ministry of Agriculture, Forestry, and Fisheries

CAMBODIA WATER SECURITY IMPROVEMENT PROJECT (P176615)

ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK

DRAFT FOR CONSULTATION

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Prepared by the Ministry of Water Resource and Meteorology and Ministry of Agriculture, Forestry, and Fisheries

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ABBREVIATIONS & ACRONYMS

3S	Sesan-Srepok-Sekong basin
4P	Prek Te, Prek Kampi, Prek Preah, Prek Krieng
AH	Affected Household
AoA	Analysis of Alternatives
ARP	Abbreviated Resettlement Plan
AWD	Alternative Wet Dry
C-ESMP	Contractor–Environmental and Social Management Plan
CHMP	Cultural Heritage Management Plan
CHMF	Cultural Heritage Management Framework
COI	Corridor of Impact
COVID-19	Corona Virus Infection Disease 19
CSA	Climate Smart Agriculture
CSC	Construction Supervision Consultant
CWSIP	Cambodia Water Security Improvement Project
DSP	Dam Safety Panel
DED	Detailed Engineering Designs
DoAFF	Department of Agriculture, Forestry and Fisheries
DoWRAM	Department of Water Resources and Meteorology
EA	Executing Agency
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESA	Environmental and Social Assessment
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standard
FP	Process Framework
FPIC	Free, Prior, and Informed Consent
FWUC	Farmer Water Users Community
GAP	Good Agricultural Practices
GDA	General Directorate of Agriculture
GDR	General Department of Resettlement
GHG	Green House Gas
GRM	Grievance Redress Mechanism
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome
IA	Implementation Agency
IC	Indigenous Community
ICM	Integrated Crop Management
IEE	Initial Environmental Examination
IPDP	Indigenous Peoples Development Plan
IPPF	Indigenous Peoples Planning Framework
IPM	Integrated Pest Management
IRC	Inter-Ministry Resettlement Committee
IESA	Initial Environmental and Social Impact Assessment
IESMC	independent E&S monitoring consulting firm
IP	Indigenous Peoples

IPP	Indigenous Peoples Plan
IUCN	International Union for Conservation of Nature
LAR	Land Acquisition and Involuntary Resettlement
LMP	Labor Management Procedures
MCM	Million cubic meters
MEF	Ministry of Economy and Finance
MISTI	Ministry of Industry, Science, Technology and Innovation
MOE	Ministry of Environment
MOI	Ministry of Interior
MOWRAM	Ministry of Water Resources and Meteorology
MAFF	Ministry of Agriculture, Forestry and Fisheries
MRD	Ministry of Rural Development
NGO	Non-Governmental Organization
NTFP	Non-Timber Forest Products
OHS	Occupational Health and Safety
PA	Protected Area
PAP	Project Affected Person
PDO	Project Development Objective
PGL	Project Grievance Logbook
PDoWRAM	Provincial Department of Water Resources and Meteorology
PMP	Pesticide Management Plan
RESA	Regional Environmental and Social Assessment
RGC	Royal Government of Cambodia
ROW	Right of Way
RP	Resettlement Plan
RPF	Resettlement Policy Framework
SEA/SH	Sexual Exploitation and Abuse/Sexual Harassment
SEO	Social and Environmental Officer
SEP	Stakeholder Engagement Plan
SOP	Standard Operating Procedure
S-PMP	Simplified Pest Management Plan
STD	Sexually Transmitted Diseases
UXO	Unexploded Ordinance
VAC	Violence against Children
VEC	Valued Environmental and Social Component
VLD	Voluntary Land Donation
WB	The World Bank

GLOSSARY

Area of influence. The area likely to be affected by (i) project and borrower's activities and facilities that are directly owned, operated or managed (including by contractors) and that are a component of the project; (ii) impacts from unplanned but predictable developments caused by the project that may occur later or at a different location; or (iii) indirect project impacts on biodiversity or on ecosystem services upon which affected communities' livelihoods are dependent.

Associated Facilities. facilities or activities that are not funded as part of the project and, in the judgment of the Bank, are: (a) directly and significantly related to the project; (b) carried out, or planned to be carried out, contemporaneously with the project; and (c) necessary for the project to be viable and would not have been constructed, expanded or conducted if the project did not exist. For facilities or activities to be Associated Facilities, they must meet all three criteria.

Biodiversity. The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species, and of ecosystems.

Chance Find Procedure. A chance find is archaeological material encountered unexpectedly during project construction or operation. A chance find procedure is a project-specific procedure which will be followed if previously unknown cultural heritage is encountered during project activities. The chance finds procedure will set out how chance finds associated with the project will be managed. The procedure will include a requirement to notify relevant authorities of found objects or sites by cultural heritage experts; to fence off the area of finds or sites to avoid further disturbance; to conduct an assessment of found objects or sites by cultural heritage experts; to identify and implement actions consistent with the requirements of ESS8 and national law; and to train project personnel and project workers on chance find procedures.

Cultural Heritage. defined as resources with which people identify as a reflection and expression of their constantly evolving values, beliefs, knowledge and traditions.

Cumulative Impact (of a project). The incremental impact of the project when added to impacts from other relevant past, present and reasonably foreseeable developments as well as unplanned but predictable activities enabled by the project that may occur later or at a different location. Cumulative impacts can result from individually minor but collectively significant activities taking place over a period of time. The environmental and social assessment will consider cumulative impacts that are recognized as important on the basis of scientific concerns and/or reflect the concerns of project-affected parties. The potential cumulative impacts will be determined as early as possible, ideally as part of project scoping.

Direct Impact. An impact which is caused by the project and occurs contemporaneously in the location of the project.

Disadvantaged or Vulnerable. Disadvantaged or vulnerable refers to those who may be more likely to be adversely affected by the project impacts and/or more limited than others in their ability to take advantage of a project's benefits. Such an individual/group is also more likely to be excluded from/unable to participate fully in the mainstream consultation process and as such may require specific measures and/or assistance to do so. This will take into account considerations relating to age, including the elderly and minors.

Indirect impact. An impact which is caused by the project and is later in time or farther removed in distance than a direct impact, but is still reasonably foreseeable, and will not include induced impacts.

Inherent Risk. Defined as the risk intrinsic to the activities of a project intervention. It refers to exposure to risk in the absence of controls or other mitigating factors.

Integrated Pest Management (IPM). A mix of farmer-driven, ecologically based pest control practices that seeks to reduce reliance on synthetic chemical pesticides. It involves (a) managing pests (keeping them below economically damaging levels) rather than seeking to eradicate them; (b) integrating multiple methods (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.

Habitats. Defined as a terrestrial, freshwater, or marine geographical unit or airway that supports assemblages of living organisms and their interactions with the non-living environment. Habitats vary in their sensitivity to impacts and in the various values society attributes to them.

Pollution Management includes measures designed to avoid or minimize emissions of pollutants, including short- and long-lived climate pollutants, given that measures which tend to encourage reduction in energy and raw material use, as well as emissions of local pollutants, also generally result in encouraging a reduction of emissions of short- and long-lived climate pollutants.

Labor Residual Risk. Refer to the risk that remains after taking into consideration the measures that have been established for its mitigation.

Restrictions on Land Use. Limitations or prohibitions on the use of agricultural, residential, commercial or other land that are directly introduced and put into effect as part of the project. These may include restrictions on access to legally designated parks and protected areas, restrictions on access to other common property resources, restrictions on land use within utility easements or safety zones.

Labor Risk. Defined as a possibility of loss. It refers to (a) the risk to achieving intended development outcomes, and (b) the risk of unintended impacts of project interventions. Risks are assessed on an inherent and a residual basis.

Risk Assessment (WB). Made based on inherent risks and residual risks, i.e., after taking into account the impact of mitigation measures that have already been implemented; but not presuming any future additional mitigation measures, beyond those already in place. It is a good practice to also consider the interaction among risks.

EXECUTIVE SUMMARY

1. Project introduction

The Cambodia Water Security Improvement Project (CWSIP, P176615) aims to improve water security and increase agricultural productivity in selected river basins of Cambodia, and to provide immediate and effective response in case of an eligible crisis of emergency.

The Project Development Objective (PDO) will be measured through the following indicators:

- Increased water availability for agriculture and domestic water supply in water scarce areas (MCM)
- Area provided with improved irrigation or drainage services (ha)
- Increased agricultural productivity (percentage)

The project will be implemented from 2024 to 2030 – through various investment activities organized in five project components:

- Component 1. Building foundations for improved water resource services (US$ 10m)
- Component 2. Sustainable Water Service Delivery (US$ 110m)
- Component 3. Increased Agricultural Productivity at Farm Level (US$ 20m)
- Component 4. Project Management, Coordination, and Monitoring and Evaluation (US$ 5m)
- Component 5: Contingency Emergency Response Component (CERC) (US$0m).

Project's infrastructure typology will include:

- Embankment improvement, installation of steel gate outlets and the improvement and lining of the main canal
- Dam repair, building of new gate structures and spillways, extension of main canal and distribution systems
- Rehabilitation of off-stream reservoirs to augment water availability for expansion of existing command area and increased cropping intensity
- Establish O&M processes for weirs, barrages, and off-stream reservoirs to manage water releases in the dry season and minimize flooding impacts in the wet season
- Support PDWRAM to regularly monitor water flow and water levels and to effectively operate the regulators and off-stream reservoirs throughout the year
- Support the farmers transition of less water-intensive crops and higher value crops
- Strengthening of FWUC and RBC sustainable operational mechanisms and functionality
- Enhancing of new/existing regulatory framework through promotion of integrated sector policy improvement at national, sub-national, and river basin committee

2. Purpose and Scope of the ESMF

The Environmental and Social Management Framework (ESMF), prepared in accordance with the laws and regulations of the Royal Government of Cambodia and the Environmental and Social Framework (ESF) of the World Bank, aims to ensure identified E&S risks and impacts that arise during project implementation are managed timely and effectively. To this end, the ESMF sets out principles, methods, and procedures that guide the preparation of site-specific Environmental and Social Management Plans (ESMP) for all subprojects which will be identified for implemented.

The ESMF identifies potential environmental and social risks and impacts that are likely associated with planned project investments, and propose key measures that should be taken – as a minium, to

address identified E&S risks and impacts. The ESMF also suggests measures that could be taken to reduce the likelihood of environmental and social risks and to minimize anticipated project impacts, including actions that should be taken to build and ensure sufficient capacity are in place to assure effective E&S risks and impact management, particularly the capacity of the contractors who are accountable to managing E&S risks and impacts that would arise while their workforce are present in the subproject area to carry out planned construction activities.

The ESMF also sets forth institutional arrangements which will be led by MOWRAM for the whole project, and by MAFF for Component 3. These implementation arragements aim to ensure environmental and social risks and potential impacts are identified and managed timely and effectively during project implementation, and during operation phase when the project's water infrastruture is put into use. The ESMF provides also attempts to an estimated a tentative total cost for overall ESMF implementation. At this stage, the cost estimate serves the purpose of budget planning and allocation~~purpose~~. This cost estimate will be updated once the Feasibility Study (which is almost final) is approved and the list of all subprojects for entire project life is confirmed and approved to inform more accurate cost calibration and estimation based more specific scope of impacts in each subprojects. Timely and sufficient allocation and availabity of financial resources is critiral to faciliating~~e~~ the process of effective environmental and social risk and impact mangement for all subprojects during project implementation.

In line with the above, the ESMF covers key identified environmental and social (E&S) risks and impacts anticipated as a result of rehabiliation/upgrading of existing reservoirs and irrigation canals, including auxiliaries (e.g. construction of small diversion canal, riverbank levvy, maintenance and operation of the upgraded reservoir and command areas, and policy actions that aim to improve for sustainable water resource management at sub-basin level. The E&S risks and potential impacts anticipated in this ESMF are based on:

Scope, nature, and scale of potentially selectted subprojects

Negative List (that is adopted under the Project to eliminate (from E&S screening stage) subprojects that are likely high-risk

Current E&S capacity of MOWRAM, MAFF and their respective Departments at project provinces

Commitment of MOWRAM and MAFF as to effective management of identified E&S risks, including additional risks and impacts that may arise during project implementation.

The ESMF also provides (in its appendices) key important documents, including Indigenous Peoples Planning Framework, Labor Management Procedures, etc. which are, in aggregate, fundamental to effective management of E&S risks and potential impacts identified for each subproject – based on the nature and scope of potential subprojects to be selected from seven provinces, including Mondulkiri, Kratie, Kampong Thom, Preah Vihear, Tboung Khmum, Stueng Treng, and Ratanakiri.

The Appendices of this ESMF also have, among others, a suggestive outline for a site-specific ESMP, Chance-Find Procedures, Screening & Scoping Form, Environmental and Social Codes of Conduct, Monitoring Checklists, and so forth.

This ESMF will be applied to all project components, and activities. However, it will focus more on Project Component 2 (Sustainable Water Service Delivery), Component 3 (Increased Agricultural Productivity at Farm Level), Component 1 (Building foundations for improved water resource services), and Component 5 (Contingency Emergency Response Component) with which most identified E&S risks and impacts are associated. The ESMF will be applied during project implementation stage, and subsequently during the operation and maintenance of the subprojects during project implementation

and following project closure. Budget for MOWRAM's implementation of this ESMF following completion of civil works subprojects and handover to MoWRAMh during project implementation and after project completion, are estimated in Chapter 11 (Costs and Budget).

Project's Environmental and Social Risks and Impacts

The E&S risks and impacts presented in this document are identified as those potentially associated with key investment activities that will be implemented under project components 1, 2, and 3. These impacts, and risks, are *direct*, *indirect*, and *cumulative in nature* – as defined in the WB's ESF, and are anticipated based on the following key factors: a) **project's potential investment activities**, b) **scope, scale**, and **nature** of such activities, c) **area of influence** (based on the first three identified subprojects), d) **capacity of key project stakeholders** (e.g. MOWRAM, MAFF, GDR, and their implementation agencies at provincial, district, and subproject levels), e) **E&S management practices** in the same type of project (e.g. legal framework and current practices), and f) **expected capacity of contractors.** The assessment of E&S risk and impact is made assuming that financial and human resources, including risks management capacity, are sufficiently and timely available to bring all inherent risks – wherever they are (e.g., *substantial*, *moderate*), down to *low* level.

The section below describes key E&S risks and impacts that are associated with key activities under project component 2 (rehabilitation of reservoirs and irrigation canals), component 3 (agricultural extension and crop production), component 1 (water resources institution). The approach to identification and evaluation of E&S risks involves: (i) identifying and assessing inherent risks associated with proposed project activities; and (ii) evaluating potential residual risks (that remain after adoption of proposed mitigation measures). It is noted that evaluation of residual risks is based on the capacity of project stakeholders to be involved in risk and impact management, resource availability.

During project implementation, additional risks and impacts may be identified, evaluated at subproject level. Additional risks and impacts will be added to subproject's ESMP and mitigation measures proposed to effective risk and impact management.

It is planned that Rapid Cumulative Impact Assessment (RCIA) will be conducted in the first year of project implementation for at least one subproject (e.g. Svay Chrum-Kantout). Others may be done in second year. The scope of the RCIA exercise for the first subproject will be confirmed based on the final and approved engineering design of respective subprojects. The RCIA will cover a) the direct area of influence of the select subproject and b) the downstream of the subproject - to the extent based on the VEGs that will be identified as part of RSIA exercise. A sample ToR for CIA has been provided in Annex 5.2. CIA may cover the subproject's area of influence (as defined in each ESMP) and/or beyond the subproject's area of influence which is sub-basin. A list of potential valued environmental and social components (VEC) is proposed for consideration when CIA exercise is carried out Year 1.

Where possible, depending on the nature, scale and scope of subproject activities, and stakeholder capacity and resources, risk exposures at subprojects will be overseen at river basin level – as part of cumulative impact assessment, through considering/examining a plausible range of risks assocaited with identified valued environmental and social components (VEC), and potential interactions among these risks. It is also important to note the overall risk assessment under this project would be based on current residual risk taking into account the expected effect of proposed mitigation measures but not presuming any future additional mitigation measures, beyond mitigation measures that are already in place.

ENVIRONMENTAL RISKS AND IMPACTS

- Generation of noise and vibration due to construction operation (temporary during construction stage)
- Pollution of air, water, soil (temporary during construction stage)
- Generation of solid, hazardous, domestic waste (temporary during construction stage)
- Potential impact on biodiversity (at reservoir area due to inundation and farming ecosystem due to increased crop intensification)
- Occupational health and safety (for project workers, particularly contractors' workforce)
- Disease transmission (for project workers, particularly contractors' workforce) Road and Traffic safety (for project workers, particularly contractors' workforce)
- Unexploded ordinance (associated with physical construction activities that involve ground-breaking, excavation)

SOCIAL RISKS AND IMPACTS

- Potential land acquisition (mostly linear impact for rehabilitating/construction of irrigation canals)
- Potential impact on cultural heritage of IPs (e.g., inundation in reservoir causing seasonal inundation to tombs of IPs)
- Temporary restricted water access for farmers in target command area during construction phase
- Reduced Downstream Water Access
- Gender inequality (e.g., during the process of crop intensification)
- Sexual Exploitation and Abuse, Sexual Harassment, and Violence against Children due to labor influx,
- Child Labor, Forced labor
- Exclusion of Vulnerable/ Disadvantaged Groups (e.g., because of their restricted access to project information, language)
- Disease transmission (due to labor influx and locations that is specific for certain diseases)
- Road and traffic safety (during to increased transportation activities during construction)
- Hunting, trading, and consumption of animals from the wild (due to labor influx).

Mitigation Measures

To mitigate environmental and social risks and impacts, the following mitigation hierarchy is adopted:

- Environmental and social risks and potential impacts will be anticipated and avoided;
- Where avoidance is not possible, risks and potential impacts are minimized or reduced to acceptable levels;
- Once risks and potential impacts have been minimized or reduced, further mitigate; and
- Where significant residual impacts remain, compensate for or offset these impacts, where technically and financially feasible.

Based on the risks and potential impacts discussed in Chapter 4, this chapter outlines the overall approach to Environmental and Social Risk and Impact Management. A summary of the mitigation measures that will be taken by the MOWRAM and MAFF to mitigate environmental risks and impacts during project implementation, including construction and operation phases. These proposed measures will be adopted to guide the preparation of site-specific ESMP at subprojects level.

Consultation and Information Disclosure

Under WB financed project, it is important that open and transparent engagement process be established and maintained between the Borrower and project stakeholders. When effective

stakeholder engagement can be ensured, this process helps improve the environmental and social sustainability of project, enhance public support for project implementation and contribute to successful project design and implementation.

Information disclosure refers to making information accessible, and in a manner that is appropriate and understandable to interested and affected parties. Information Disclosure will be an ongoing process under CWSIP. During all stages, project information will be disclosed in a way that is accesible to a wide range of stakeholders (in both English and Khmer). For EM groups and communities, information disclosure will also be in a language and manner accessible to them, as necessary.

The following guiding principles will be used:

- Project information, including project/subproject purpose, activities, environmental and social risks and potential impacts, proposed mitigation measures, complaint handling procedures, etc, will be disclosed at the earlier stage of project/ subproject preparation;
- Information will be disclosed to the target group well ahead of consultations to promote understanding about the project and allow meaningful feedback of stakeholders;
- Project information will be disclosed in local languages of the target audience;
- In case the target IPs do not have written language, national language (Khmer) will be used in Project Information Booklet to be distributed to them. However, consultation will be conducted in their native language using verbal translation to promote communication and feedback of the EM during consultation;
- Project information will be disclosed in the written form, and in various formats for convenient use of various project stakeholders, including Project Information Booklet, Executive Summary, and full documents;
- Project information will be disclosed through different channels for convenient access of various project stakeholders. Project's dedicated channels for information disclosure include webpage of MOWRAM and MAFF.

Information Disclosure during Project Preparation

To prepare for consultation, the draft ESMF (including ESMF, RPF, LMP, SEP, and ESCP will be disclosed on the website of MOWRAM and MAFF (https://www.) on DD-MM-2023, including full English version and Executive Summary in Khmer language. The final draft of ESF package will be disclosed on MOWRAM's and MAFF's websites on DD-MM 2023 in English and Khmer. Executive Summaries of all documents, prepared in Khmer language, will also be disclosed in hard copy in PDWRAM, PAFF and commune halls where subprojects are located. The final ESF package (English version) will be disclosed on the Bank's website following Bank's clearance.

Three ESMPs – that were prepared for Kantout, Svay Chrum and Srae Huy reservoirs will be disclosed in Khmer and English for consultation with local affected and interested people during subproject preparation, and before subproject appraisal.

Grievance Redress Mechanism

The World Bank's ESS10 required that the Borrower will respond to concerns and grievances of project-affected parties related to the environmental and social performance of the project in a timely manner. In connection with this purpose, the Borrower are required to to establish effective grievance mechanisms that help to facilitate resolution of such grievances and concerns. In line with this, the project has established a GRM to:

- Address the concerns promptly and effectively, in a transparent manner that is culturally

appropriate and readily accessible to all project-affected parties, at no cost and without retribution. The GRM process or procedure will not prevent access to judicial or administrative remedies. The Borrower will inform the project-affected parties about the grievance process during community engagement activities, and will make publicly available a record documenting the responses to all grievances received;

- Handle grievances in a manner that is culturally appropriate to the affected people and be discreet, objective, sensitive and responsive to the needs and concerns of the project-affected people. The GRM will allow for anonymous complaints to be raised and addressed.

The project has in place four complaint handling procedures for four types of risks and potential impacts: 1) land acquisition, 2) Labor and working conditions, 3) sexual exploitation and abuse and sexual harassment (SEA/SH), and 4) procedure for general complaints. These procedures are established based on the above principles for project's GRM, and in accordance with the requirements set out in pertinent national legislation. The GRM for complaints related to land acquisition is summarized in the project's Resettlement and Policy Framework (RPF). It provides steps to guide complainants through complaint resolution process, including timeframe specified for each step (see RPF for details). The GRM for workers regarding employment, wages, payment, working conditions, health, safety, etc. follows different procedure and are described in project's Labor Management Procedures (see LMP for details). The GRM related to sexual exploitation and abuse/ sexual harassment (SEA/SH) is also established in accordance with the pertinent national laws and the World Bank's guidance on SEA/SH, and is described in project's LMP (see LMP for details). During project implementation, SEA/SH risk will be evaluated at subproject level taking into account the local SEA/SH status, feedback from local people and other stakeholders (e.g. health services, NGOs). In case of need, local SEA/SH service provider(s) will be engaged by PMU before contractors are mobilized to subproject site. Below is a summary for these three GRM procedures that will be used for key issues identified under the project. In addition to these GRMs, different channels are available for receipt of complaints that may arise during construction, such as PMU's GRM focal point, Contractors' GRM focal points, village heads, local IP leaders, and other existing channels that local people use, such as commune government, etc (Please see Chapter 6 of SEP for detailed GRM procedures).

The GRM Focal Point, Project Manager and Project Director within the MOWRAM are responsible for establishment and effective functioning of a Project Grievance database. The MoWRAM will register all concerns/grievances that are submitted by project stakeholders into the PGL during project implementation. Data information received will be kept and maintained carefully to ensure privacy and confidentiality, particularly for grievances related to SEA/SH (See Sample PGL for Local and PMU levels). The sample for PMU level can be further eLaborated on Excel spreadsheet to effectively manage and maintain the growing database.

In case there is serious complaint, such as road accidents, SEA/SH cases, the World Bank shall be notified within 48 hours of complaint receipt and/or report on the incidence (See also Annex 3 of the SEP).

All grievances and concerns submitted to any project implementation agencies, either in written or verbal forms, are documented diligently in writing by the agency that receive and reported to the PMU at provincial level who will consolidate and reported montly to PMU (through the SEO in charge of grievances) for record and follow-up for grievance resolution. Grievances could be recorded and monitored using the form provided at Annex 9.1 of the ESMF.

Monitoring and Reporting

Monitoring aims to collect periodically necessary information so as to evaluate/assess how proposed The purpose of E&S monitoring is to determine if E&S implementation under the project is in full compliance with the principles and requirements set forth in respective subproject's E&S documents. The MOWRAM is responsible for overall regular monitoring of E&S implementation process and outcomes under the project. Monitoring by MOWRAM will cover all risks and potential impacts identified in the project's ESMF, including thoses identified at project level in the RPF, IPPF, LMP, SEP, ESCP, and those to be identified at subproject level as site-specific ESMP, C-ESMP, RP(s), IPP(s). MOWRAM will monitor how these risks and potential impacts are avoided or mitigated by relevant project stakeholders, particularly contractors who will be engaed to build identified subprojects andconsultants to be engaged to carry out trainings for E&S capacity building to ensure effective project implementation, and relevant project stakeholders whose works are associated with the identified E&S risks and impacts.

MOWRAM's PMU is responsible for conducting internal E&S monitoring. External monitoring will be carried through a qualified independent consulting firm, or think-tank (See Section 10.1.2 External monitoring) to undertake independent quarterly monitoring of the process and results achieved in E&S implementation that will be carried out by construction contractors and relevant stakeholders involved as per principles and requirement prescribed in project's ESMF (including RPF, IPPF, LMP), and SEP.

Both internal and external (independent) E&S monitoring will be carried at interval mentioned in Table below. An end-of-project review of E&S implementation process will be conducted by MOWRAM's PMU to confirm whether the objectives set forth in the ESMP (including RPF and IPPF), LMP and SEP have been achieved.

Indicative Costs and Budgets

The indicative ESMF implementation cost will include the development, implementation monitoring of the specific site-specific environment and social instruments, maintenance of civil works during operation. This includes also capacity building (e.g., trainings, workshop), consultation meetings, recruitment of additional consultants to support PMU (as indicated in Chapter 7). The total indicative cost reviewed by the World Bank and MOWRAM is estimated at 794,200 USD plus the costs of specific mitigation measures in the ESMP, RP and IPP (if applicable). This budget is indicative only and will be updated during project implementation. It is noted that costs related to compensation payment (RPs), implementation of (IPPs), and UXO screening and clearance cannot be determined and this stage (See Section 6 in Table below). These will be updated once subprojects are determined based on which relevant costs can be estimated. Funds for ESMP and IPP implementation will be sourced through IDA. Funding for RP implementation will be through government's funding.

1. INTRODUCTION

1.1. PROJECT'S GEOGRAPHICAL AREA

The project plans to cover potentially three river basins, including Sekong, Sesan and Sre Pok River Basins (3S), Prek Preah, Prek Krieng, Prek Kampi, Prek Te, Prek Chhlong (5P), and Staung. These basins span across seven provinces, including Mondulkiri, Kratie, Kampong Thom, Preah Vihear, Tboung Khmum, Stueng Treng, and Ratanakiri. These potential river basins are categorized as low development areas in which the population is vulnerable to livelihood constraints and climate change impacts. To optimize support provided to the RGC through ongoing and planned and new World Bank-financed operations including CASDP, LASEDIII, WaSSIP and WaSSAC, additional areas/river basins would also be considered, with potential to maximize benefits towards an integrated response of sustainable water service development for irrigation, water supply and flood protection.

1.1.1 3S River Basins

The 3S River Basins are the largest transboundary river basins in the Lower Mekong Basin. The headwaters of the Sesan and Sre Pok River Basins are in the Long-Range Mountains in Vietnam, and the headwater of the Sekong River Basin in southern Laos. Approximately a third – 26,960 km^2 (Sekong: 5,500km^2, Sesan 8,000 km^2, Sre Pok 12,300 km2) – of the total area of the 3S is in Cambodia. There are 25 subbasins (catchments) in this region: 6 in Sekong, 7 in Sesan and 12 in Sre Pok. The 3S region accounts for approximately 26% of the annual discharge – 125,000 MCM (87,000 MCM from within Lao and Vietnam, and 38,000 MCM within Cambodia) – from Cambodia to the Mekong Delta in Vietnam. Over the dry season, the total surface water generated from inflows from Laos and Vietnam and from run-off within Cambodia is approximately 30,000 MCM. Land cover is primarily forest (57%), then rainfed (mostly rubber) plantations (19%), paddy fields (18%), and grassland and wetlands (6%).

Soil composition is primarily made up of low quality Acrisols (66%) that can support forests and rice crops and good quality Cambisols (1%) that can support high value, non-rice crops. The morphology of the 3S basins has not yet been mapped including the shape and dynamism of the river channels, the locations of deep pools (to support fish breeding), sediment movement, stability of the riverbanks, etc. From recent observations the depth of the mainstream rivers' ranges from 10m to 20m and the width from 100m to 300m.

1.1.2 5P River Basins

These river systems are medium to large tributaries of the Lower Mekong Basin and are located entirely within Cambodia. They cover 16,834 km^2. The average annual rainfall ranges from 1,400 mm in the lower reaches to 1,800mm in the upper reaches. The average monthly rainfall ranges from 1-10mm over the driest period from January to March to 100-400mm over the wettest period from July to September.

The 5P region accounts for approximately 1% of the annual discharge of around 4,000 MCM from Cambodia to the Mekong Delta in Vietnam[2]. Over the driest period from January to April, the average monthly available water is 15 MCM in Prek Te, 11 MCM in Prek Kampi, 9 MCM in Prek Krieng, and 6 MCM in Prek Preah. Over the wettest period over July to September, the average monthly available water is 329MCM in Prek Te, 91 MCM in Prek Kampi, 317 MCM in Prek Krieng, and 247 MCM in Prek Preah.

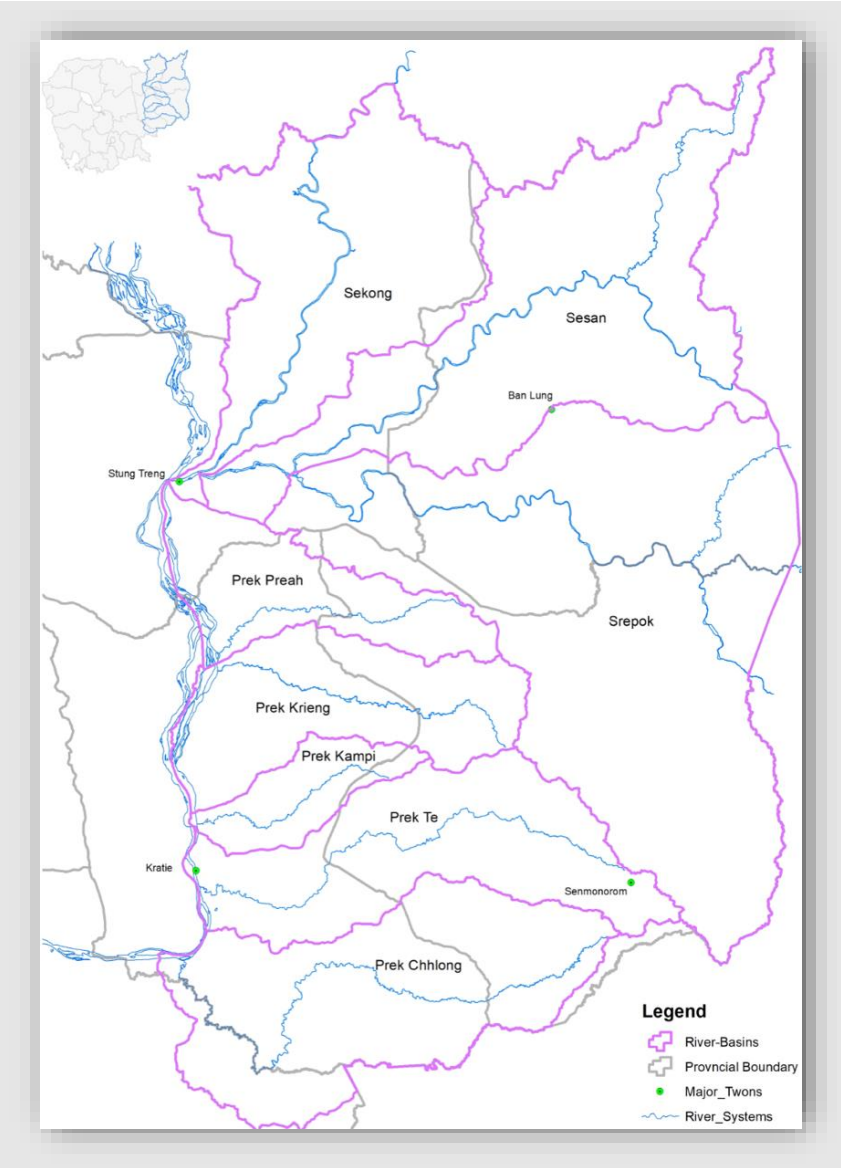
There are no regulators in the mainstream of these river systems and as such the water levels significantly vary throughout the year from <1m up to 10m (and more). The most significant water level reduction occurs over January to April when there is almost no rain. The morphology of the river channels has not

been recorded. From recent observation, the depth of the mainstream river's ranges from 4 m to 8 m and the width from 10 m to 50 m wide (See Map of 3S and 5P basins in Figure 1 below).

1.1.3 Stung Stoung sub-river basins

This sub-basin is located in Northern Cambodia and covers provinces of Preah Vihear and Kampong Thom. More than 300,000 people living in Stung Stoung river basin in Northern Cambodia rely on agriculture for their livelihoods. Access to a clean water supply is fundamental for wellbeing and health. The Stung Stoung river rises in the mountains of Northern Cambodia before flowing 213 km to the iconic Lake Tonle Sap, one of the largest freshwater lakes in the world. In its northern reaches, the river flows through forest before entering expansive cropland to the south. The majority of the 217 villages in the catchment are along the river in the farming districts which cover about a third of the catchment. More than a quarter of the people in the river basin live in poverty.

Figure 1 – Potential Project's Geographical Coverage – River Basins in North-East Cambodia



1.2 PROJECT DEVELOPMENT OBJECTIVE AND PROJECT COMPONENTS

1.2.1 Project Development Objective (PDO):

The project aims to improve water security and increase water productivity in selected river basins of Cambodia, and to provide immediate and effective response in case of an eligible crisis of emergency.

The achievement of the PDO will be measured through the following indicators:

1. Increased water availability for agriculture and domestic water supply in water scarce areas (MCM);
2. Area provided with improved irrigation or drainage services (ha);
3. Increased agricultural productivity (percentage).

1.2.2 Project Components:

The project will be implemented from 2024 to 2030 – through various investment activities organized in five project components:

- Component 1. Building foundations for improved water resource services (US$ 10m)
- Component 2. Sustainable Water Service Delivery (US$ 110m)
- Component 3. Increased Agricultural Productivity at Farm Level (US$ 20m)
- Component 4. Project Management, Coordination, and Monitoring and Evaluation (US$ 5m)
- Component 5: Contingency Emergency Response Component (CERC) (US$0m).

1.3 SCOPE AND NATURE OF WORK

1.3.1 Types and Nature of Subprojects/Interventions

Project's infrastructure typology will include:

- Embankment improvement, installation of steel gate outlets and the improvement and lining of the main irrigation canal
- Dam repair, building of new gate structures and spillways, extension of main canal and distribution systems
- Piloting of Nature Based Solutions (NbS) for flood risk management and erosion control
- Rehabilitation of off-stream reservoirs to augment water availability for expansion of existing command area and increased cropping intensity
- Establish O&M processes for weirs, barrages, and off-stream reservoirs to manage water releases in the dry season and minimize flooding impacts in the wet season
- Support PDWRAM to regularly monitor water flow and water levels and to effectively operate the regulators and off-stream reservoirs throughout the year
- Support the farmers transition of less water-intensive crops and higher value crops
- Strengthening of FWUC and RBC sustainable operational mechanisms and functionality
- Enhancing of new/existing regulatory framework through promotion of integrated sector policy improvement at national, sub-national, and river basin committee.

1.3.2 Negative List

To avoid subproject(s) that may result in high-risk classification, a Negative List is prepared for potential investment activities under project components 1,2 and 3 (Please see Annex 1.1).

1.4 PROJECT BENEFICIARIES AND POTENTIAL ADVERSELY AFFECTED PEOPLE

Project beneficiaries include both upstream and downstream farmers. The proposed investment activities are expected to result in (i) increase in certainty and control of existing irrigation areas; (ii) expansion of reliable irrigation for multiple plantings in a year; (iii) longer cropping periods in areas previously unavailable for parts of the year due to flooding; and (iv) more robust infrastructure and practices against climate change and natural disasters. This will not only lead to increases in irrigated area and yield but also to additional benefits, through capacity building and training, which will improve environmental conditions in the irrigated farming communes. It also enhances the resilience and capacity of local people and government in response to natural disasters, such as flooding, and the potential adverse impacts of climate change. Project's affected people may include individual farmers, communities, businesses, organizations, etc., in the upstream and downstream. The people in upstream and downstream may be adversely affected, temporarily and permanently during construction and operation stage. Adverse impacts may include loss of land, houses, crops, and income due to permanent acquisition of land to allow construction. However, the permanent impact on lands and houses are anticipated to be very small since dam structures are located within government managed land where local houses are absent or very rare. Also, expansion of the existing irrigation canal typically causes very small linear land impacts at the household level. Temporary impacts may include increased levels of dust, noise and vibration during the construction phase, and/or inundation upstream resulting in restricted land access and limited water access downstream of the reservoir due to water retention upstream for irrigation and water supply purposes.

Social risks may include risks related to child labor, sexual exploitation and abuse (SEA), sexual harassment (SH), Violence against Children (VAC), discrimination and social conflicts between upstream and downstream water users and between local people. Labor risks include influx of immigrant workers, working conditions, and risks of exclusion associated with vulnerable group such as ethnic minorities, etc. that are related to the influx of the labor force mobilized to serve construction activities.

1.5 INSTITUTIONAL ARRANGEMENTS

MOWRAM has an overall responsibility of the Project, with focus on Sustainable Water Services Delivery (Project Component 2). The Ministry of Agriculture, Forestry and Fisheries (MAFF) has responsibility for investment activities with regards to support increased productivity of the agriculture sector in the targeted basins under Component 3 (Increased Agricultural Productivity at Farm Level).

As project subprojects are identified, MOWRAM will liaise with relevant provincial and district departments MOWRAMto keep them informed of project activities, including environmental and social risks and potential impacts, mitigation measures, and consultations that are required to collect feedback of potentially affected people, including those who are interested in project activities. MOWRAM will also coordinate with relevant government stakeholders such as the Commune and Village chiefs, who are important links between national-, provincial-, and district-level government departments, and local communities. For example, the commune and village level will be essential to effective management of issues that may affect communities such as those related to SEA/SH, etc. At the commune level, there may also be various important committees such as the Commune Committee for Women and Children who are responsible for maintaining the welfare of women and children in their commune. Civil societies and NGOs may play important roles in supporting project and government in implementing mitigation measures that will be described in this ESMF. The project's SEP identifies and analyze these stakeholders and propose methods, schedule, and strategy to ensure effective stakeholder engagement during project design and project implementation.

1.6 PURPOSE, SCOPE, AND APPLICATION OF THE ESMF

Purpose

The Environmental and Social Management Framework (ESMF) sets out the principles, guidelines and procedures that guide the preparation of site-specific Environmental and Social Management Plans (ESMP), and any Resettlement Plan (RP) and Indigenous Peoples Plan (IPP), where relevant, that may be required for all subprojects that will be identified based on the Feasibility Study conducted during project preparation, and subprojects to be identified during project implementation. In particular, the ESMF provides guidance on how environmental and social risks and impacts are identified in relation to project's planned reservoir and irrigation rehabilitation, and construction methods, including how these risks and potential impacts are assessed at subproject level. The ESMF also suggests measures that could be adopted to avoid, minimize, or mitigate environmental and social risks and potential impacts. It also sets forth institutional arrangements, led by MOWRAM, to ensure environmental and social risks and potential impacts are identified and managed timely and effectively during project implementation, and during the operation phase when the project's water infrastruture is put into use. The ESMF also attempts to estimate a tentative total cost for budget planning purpose. This aims to ensure finance is timely available to faciliate the process of environmental and social risk and impact mangement for all subprojects that the project finances during project implementation. This ESMF is prepared in accordance with the laws and regulations of the RGC and the Environmental and Social Framework (ESF) of the World Bank.

Scope

The ESMF covers key identified environmental and social (E&S) risks and impacts anticipated as a result of rehabiliation/upgrading of existing reservoirs and irrigation canals, including auxiliaries such as construction of small diversion canals, reinforcement of riverbanks (e.g. levy), maintenance and operation of the upgraded reservoir and command areas, and policy actions that aim to improve for susstainable water resource management at sub-basin level. . The E&S risks and potential impacts anticipated in this ESMF are based on a) scope, nature, and scale of the subprojects, and b) Negative List to eliminate a potential subproject (See details at Section 1.3.2). The exclusion/ineligibility list aims to limit the scope and nature of identified environmental and social risks and impacts to ensure E&S risks for each subproject will not fall to "high risk". The ESMF will also provide impacts screening checklist and identification and preparation of E&S risk management tools that will be applied to subprojects to be identified/confirmed during project implementation.

The ESMF serves as an umbrella document, comprising the following elements:

- Project overview (rationale, locations, project affected people, contextual settings, project development objective, scope and nature of works, etc.);
- Applicable Legal and Institutional Framework, including legislation of the RGC and WB's ESF, including analysis of policy gaps;
- Rapid Environmental and Social Assessment, including E&S Baseline;
- Environmental and Social Risks and Impacts;
- Proposed Mitigation Measures;
- Procedures to address Environmental and Social Risks and Impacts;
- Implementation Arrangements;
- Stakeholder Engagement and Information Disclosure;
- Grievance Redress Mechanism;
- Monitoring, Evaluation, and Reporting;

- Estimated Costs and indicative Budget.

The ESMF also provides (in its appendices) key important documents, including the Indigenous Peoples Planning Framework, Labor Management Procedures, etc. which are, in aggregate, fundamental to effective management of E&S risks and potential impacts identified for each subproject – based on the nature and scope of potential subprojects to be selected from seven project provinces. The Appendices of this ESMF also have, among others, a suggestive outline for a site-specific ESMP, Chance-Find Procedures, Screening & Scoping Form, Environmental and Social Codes of Conduct and Monitoring Checklists.

1.7 STEPS IN ESMF PREPARATION

The ESMF has been prepared in accordance with the following key steps:

a) **Review of project related documents** (including review of the WB's Project Concept Note (PCN), Project Information Document (PID), Environmental and Social Review Summary (ESRS), Project Appraisal Document (PAD), relevant legal and institutional framework, MOWRAM's similar project documents);
b) **Conducting field visits to potential project sites** (field observation and meetings with local communities and stakeholders);
c) **Conducting consultation with project stakeholders** (at village, provincial, and national levels);
d) **Preparation of the ESMF**, including:
    - **Compiling project baselines** (environmental and social baseline conditions) at basin level;
    - **Identifying E&S risks and impacts** (positive and negative) typically associated with potential activities to be implemented under subprojects (based on shortlist of potential subprojects). E&S risks and impacts are identified for key activities under project components;
    - **Conducting Rapid ES assessment** (sample level) based on two potential subprojects (selected as representatives for future subprojects with regards to geographical location, scope, scale, type, and nature of potential infrastructure subprojects);
    - **Assessing E&S risks and impacts** (project level) based on 1) list of potential subprojects, 2) Feasibility Study, and 3) ongoing consultation with project stakeholders, and the World Bank Task Team;
    - **Identifying mitigation measures for identified E&S risks and impacts** (based on good E&S management practice, and feedback/suggestions from project stakeholders);
    - **Preparing E&S screening procedures** for potential subprojects, taking into account the scope, scale, and nature of the subproject under consideration;
    - **Formulation of environmental and social safeguard instruments;**
    - **Assessing E&S capacity of project stakeholders**, particularly PMU and governmental stakeholders at provincial/ district level, and preparing **E&S capacity development plan**;
    - **Compiling draft ESMF;**
    - **Disclosing draft ESMF for consultation;**
    - **Finalizing ESMF,** incorporating feedback from project stakeholders.

1.8 APPLICATION OF ESMF

This ESMF will be applied to all project components, and activities. However, it will focus more on Project Component 1 (Building foundations for improved water resource services), Component 2 (Sustainable Water Service Delivery), Component 3 (Increased Agricutural Productivity at Farm Level),

and Component 5 (Contingency Emergency Response Component) with which most identified E&S risks and impacts are associated. The ESMF will be applied during project implementation stage, and subsequently during the operation and maintenance of the subprojects during project implementation and following project closure. Costs for MOWRAM's implementation of this ESMF following completion of civil works subprojects and handover to MOWRAM – both during project implementation and after project completion, are estimated in Chapter 11 (Costs and Budget).

2 LEGAL AND REGULATORY FRAMEWORKS

2.1 NATIONAL LEGAL FRAMEWORK RELATED TO ENVIRONMENTAL ISSUES

The Constitution of the Royal Kingdom of Cambodia (1993) is the overarching legal document that defines and ensures the equal rights of all citizens in Cambodia, regardless of race, color, language and religious belief. The Constitution includes protections for social, indigenous, gender rights and equality (articles, 36, 45). It also includes provisions for the protection of workers (article 75) and worker's rights to establish associations (article 42) and representative unions (article 36). It specifically prohibits all forms of discrimination Against women (article 45). On environment, article 59 requires the State to protect the environment and balance of abundant natural resources and establish a precise plan of management of land, water, air, wind, geology, ecological system, mines, energy, petrol and gas, rock and sand, gems, forests and forestry products, wildlife, fish and aquatic resources and it is within this constitutional context that the Ministry of Environment (MOE) was established.

Aside from the Constitution, the Government of Cambodia has established specific laws and regulations for forests, protected areas, and land law to ensure sustainable development. The national agencies that oversee environment and natural resources management are listed below:

- Ministry of Environment (MOE)
- Ministry of Agriculture, Forestry and Fisheries (MAFF)
- Ministry of Water Resources and Meteorology (MOWRAM)
- Ministry of Land Management, Urban Planning and Construction (MLMUPC)
- Ministry of Industry, Science, Technology, and Innovation (MISTI)
- Ministry of Tourism (MOT)
- Ministry of Public Works and Transport (MPWT)
- National Climate Change Committee (NCCC)
- Ministry of Mines and Energy (MOME)

The MOE is the primary agency tasked to promote environmental protection and conservation of natural resources, thus contributing to improvement of environmental quality, public welfare, and the economy. The EIA Department of the MOE oversees and regulates the Environmental and Social Impact Assessment (ESIA) process, quality control on ESIA report and coordinates the implementation of projects in colLaboration with project executive agencies and concerned ministries. The MOE has the following responsibilities:

- Review, evaluate, and approve submitted environmental impact assessments in collaboration with other concerned ministries; and
- Monitor to ensure a project owner (the executing agency of the project) satisfactorily implements the Environment Management Plan (EMP) throughout pre-construction, construction, and operational phases of the projects.

The following laws and regulations aer relevant to the Project:

- Law on Environmental Protection and Natural Resources Management (1996)
- Law on Forestry Management
- Law on Fisheries (March 30, 2016)
- Sub-Decree on Environmental Impact Assessment Process #72 ANRK.BK (1999)
- Prakas on the Classification of Environmental and Social Impact Assessment for Development Projects
- Guidelines on the Delegation of Power to Municipal/Provincial Departments of Environment (2005)
- Sub-Decree on the Control of Air Pollution and Noise Disturbance, #42 ANK/BK1 (2000)
- Sub-Decree on Solid Waste Management (No. 36 ANRK.BK 2009)
- Draft Environmental and Natural Resources Code
- International Conventions and Treaties on Environment
- Law on the Management of Pesticides and Fertilizers
- Law on Seed Management and Plant Breeder's Rights

2.2 NATIONAL LEGAL FRAMEWORK RELATED TO SOCIAL ISSUES

- Law on Protection of Cultural and National Heritage (1996)
- Labor Law (1997)
- The Land Law (2001)
- Law on the Prevention of Domestic Violence and the Protection of Victims, (NS/RPM/1005/031),
- Law on Road Traffic, PREAH REACH KRAM NS/RKAM/0115/001, 2015
- Law on the Protection and Promotion of the Rights of Persons with Disabilities 2009 (Royal Kram NS/RKM/ 0709/010))
- Expropriation Law (2010)
- Prakas on the Prohibition of Hazardous Child Labor (MoSALVY #106, April 28, 2004)
- LaborPrakas on Light Work (2008)
- Standard Operating Procedures for Externally Financed Projects in Cambodia on Land Acquisition and Involuntary Resettlement (2018), Sub-Decree No. 22 ANK/BK
- National Policy on the Development of Indigenous Peoples (2009)
- Policy on Registration and Right to Use of Indigenous Communities (2009)
- The Organic Law (2008)
- Relevant International Agreements on Indigenous Peoples

2.3 NATIONAL REGULATIONS ON DAM SAFETY, IRRIGATION, WATER SUPPLY

- Law on Water Resources Management (June 29 ,2007).
- Law on Agricultural Cooperative (2013)
- Royal Decree (Preah Reach Kret) NS/RKT/0701/234 on the establishment and functioning of agricultural cooperatives, Union of the Agricultural Cooperatives and the Pre-Agricultural Cooperatives.
- Sub-Decree No. 73 on the establishment of the department of water farmers' communities of the ministry of water resources and meteorology
- Royal Decree on The Establishment and Management of the Tonle Sap Biosphere Reserve (2001)

[1] http://www.bigpond.com.kh/Council_of_Jurists/a00-Anukret/ANK00_07_42_E.htm80

- Sub-Decree on Water Pollution Control #27 ANRK.BK2 (1999)
- Law on Water Resources Management
- Sub-Decree FWUC
- Drinking Water Quality Standards

2.4 WORLD BANK'S ENVIRONMENT AND SOCIAL STANDARDS (ESS)

The following World Bank's Environmental and Social Standards (ESSs) are applied under this project:

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

The objectives of ESS1 are a) Identify, evaluate, and manage environment and social risks and impacts in a manner consistent with the ESSs, b) Adopt a mitigation hierarchy, b) Adopt differentiated measures so that adverse impacts do not fall disproportionately on the disadvantaged or vulnerable, and they are not disadvantaged in sharing development benefits and opportunities, c) Utilize national environmental and social institutions, systems, laws, regulations and procedures where appropriate, d) Promote improved environmental and social performance, in ways which recognize and enhance Government capacity.

- **ESS2: Labor and Working Conditions**

ESS2 aims to a) Promote safety and health at work, b) Promote the fair treatment, non-discrimination, and equal opportunity of project workers, c) Protect project workers, with particular emphasis on vulnerable workers, d) Prevent the use of all forms of forced Labor and child Labor, d) Support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law, and e) Provide project workers with accessible means to raise workplace concerns.

- **ESS3: Resource Efficiency and Pollution Prevention and Management**

The objective of ESS3 is a) Promote the sustainable use of resources, including energy, water, and raw materials, b) Avoid or minimize adverse impacts on human health and the environment caused by pollution from project activities, c) Avoid or minimize project-related emissions of short and long-lived climate pollutants, d) Avoid or minimize generation of hazardous and non-hazardous waste, and e) Minimize and manage the risks and impacts associated with pesticide use.

- **ESS4: Community Health and Safety**

The ESS4 objectives include a) Anticipate or avoid adverse impacts on the health and safety of project-affected communities during project life-cycle from routine and non-routine circumstances, b) Promote quality, safety, and climate change considerations in infrastructure design and construction, including dams , c) Avoid or minimize community exposure to project-related traffic and road safety risks, diseases and hazardous materials, d) Have in place effective measures to address emergency events, e) Ensure that safeguarding of personnel and property is carried out in a manner that avoids or minimizes risks to the project-affected communities.

- **ESS5: Land acquisition, Restrictions and Land Use and Involuntary Resettlement**

The objectives of ESS5 are a) Avoid or minimize involuntary resettlement by exploring project design alternatives, b) Avoid forced eviction, b) Mitigate unavoidable adverse impacts from land acquisition or restrictions on land use by providing compensation at replacement cost and assisting displaced persons in their efforts to improve, or at least restore, livelihoods and living standards to pre-displacement levels

[2] http://www.cambodiainvestment.gov.kh/wp-content/uploads/2011/09/Sub-Degree-27-on-Water-Pollution-Control_990406.pdf

or to levels prevailing prior to the beginning of project implementation, whichever is higher, c) Improve living conditions of poor or vulnerable persons who are physically displaced, through provision of adequate housing, access to services and facilities, and security of tenure, d) Conceive and execute resettlement activities as sustainable development programs, e) Ensure that resettlement activities are planned and implemented as sustainable development programs, with appropriate disclosure of information, meaningful consultation, and informed participation.

- **ESS6: Biodiversity**[3]

ESS6 aims to a) Protect and conserve biodiversity and habitats, b) Apply the mitigation hierarchy and the precautionary approach in the design and implementation of projects that could have an impact on biodiversity, c) Promote the sustainable management of living natural resources, and d) Support livelihoods of local communities, including Indigenous Peoples, and inclusive economic development, through the adoption of practices that integrate conservation needs and development priorities.

- **ESS7: Indigenous Peoples**

The objectives of ESS7 are a) Ensure that the development process fosters full respect for affected parties' human rights, dignity, aspirations, identity, culture, and natural resource-based livelihoods, b) Promote sustainable development benefits and opportunities in a manner that is accessible, culturally appropriate and inclusive, c) Improve project design and promote local support by establishing and maintaining an ongoing relationship based on meaningful consultation with affected parties, d) Obtain the Free, Prior, and Informed Consent (FPIC) of affected parties in three circumstances, e) Recognize, respect and preserve the culture, knowledge, and practices of Indigenous Peoples, and to provide them with an opportunity to adapt to changing conditions in a manner and in a timeframe acceptable to them.

- **ESS8: Cultural Heritage**

The objectives of ESS8 include a) Protect cultural heritage from the adverse impacts of project activities and support its preservation, b) Address cultural heritage as an integral aspect of sustainable development, c) Promote meaningful consultation with stakeholders regarding cultural heritage, and d) Promote the equitable sharing of benefits from the use of cultural heritage.

- **ESS9: Financial Intermediaries** (not applicable under this project)

- **ESS10: Stakeholder Engagement and Information Disclosure**

The objectives of this ESS are a) Establish a systematic approach to stakeholder engagement that will help Borrowers identify stakeholders and build and maintain a constructive relationship with them, in particular project-affected parties, b) Assess the level of stakeholder interest and support for the project and to enable stakeholders' views to be taken into account in project design and environmental and social performance, c) Promote and provide means for effective and inclusive engagement with project-affected parties throughout the project life -cycle on issues that could potentially affect them, d) Ensure that appropriate project information on environmental and social risks and impacts is disclosed to stakeholders in a timely, understandable, accessible and appropriate manner and format, and e) Provide project-affected parties with accessible and inclusive means to raise issues and grievances, and allow Borrowers to respond to and manage such grievances.

[3] The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species, and of ecosystems.

2.5 GAP ANALYSIS – WB'S ESSs AND RGC LEGISLATION

While Cambodia has a relatively strong enviornmental and social regulations and planning framework, some gaps exist between relevant national E&S regulations and the World Bank's ESSs. For instance, existing legal frameworks in Cambodia cover the rights of workers, deal with occupational health and safety, traffic laws, and measures that seek to protect women against violence. However, some of these regulations are enforced occationally which may need enhanced monitoring for effective enforcement. On land acquisition, the WB's ESS5 and the RGC's SOP both share the objectives and principles of land acquisition and involuntary resettlement. Principles of both are, indeed, largely similar but practicing is still diffent towards the shared objectives and principles. While there is consistency between the national legislation and international donor agencies' standards on indigenous peoples, national policies are not sufficiently detailed in terms of regulations or operating procedures to facilitate full implementation of Indigenous Peoples Plans in Cambodia. Key policy gaps between RGC's legislation and WB ESF are identified and clarifications/measures proposed to address identified gaps (See In Annex 12). It is noted that of all key gap assessment between RGC's legislation and WB's ESF, gaps between RGC's SOP and WB's ESS5 are particularly wider (See Items No.5, 6,7 and 8 in Annex 12 – Policy Gap Analysis).

3. ENVIRONMENTAL AND SOCIAL BASELINE CONDITIONS

The project plans to cover potentially three river basins, including Sekong, Sesan and Sre Pok River Basins (3S), Prek Preah, Prek Krieng, Prek Kampi, Prek Te, Prek Chhlong (5P), and Staung. These basins span across seven provinces, including Mondulkiri, Kratie, Kampong Thom, Preah Vihear, Tboung Khmum, Stueng Treng, and Ratanakiri. This chapter presents an overview of the environmental and social baseline conditions of each of the six provinces, followed with an overview on the entire project areas at sub-basin level with a particular focus on water resources.

3.1 OVERVIEW OF PROJECT PROVINCES

Mondulkiri Province

Mondulkiri has a population of 88,649 persons and comprised of 4 districts, 17 communes, and 92 villages. The main rivers running through Mondulkiri are tributaries of the Mekong River. Their catchment areas are thus oriented East-West and extend into Kratie and Stung Treng provinces. The most significant water body is the Srepok River, which is part of the 3S hydrographic system (Srepok, Sesan and Se Kong rivers). It originates in the central highland region of Vietnam and crosses the province through Kaoh Nheaek district. Many other water bodies in the province are intermittent and dry in the dry season. The other rivers that irrigate Mondulkiri province and their respective catchment areas are from South to North are Prek Chhlong, Prek Te, Prek Krieng and Prek Preah. The various land use categories pertaining to agriculture represent 9.8 percent of the total area in Mondulkiri province. Agriculture consists mainly of pepper plantations and unspecified annual or perennial crop plantation. Paddy rice is cultivated in Kaoh Nheaek district (North). Of note, a mosaic of forest and cultivated patches represents 2.2 percent of the total area. In Mondulkiri province, various IP groups (of different population size) are living in different parts of the province. IP groups in the provinces include Bunong (Phnong) is a major indigenous group (>= 1,000 people), Stieng, Kroul, L'moon (>= 100 people), and the other indigenous groups (<100 people) are Jarai, Kavet, Kuoy, Kreung, Praov, Tumpoun, Ja'ong, Mel, S'och, Kajrouk. The Bunong, an Austro-Asiatic population from the Mon-Khmer linguistic branch, represent 44 percent of the total population in the province. In Sokh Sant there are only one Bunong group with 2,874 persons (1,401 females) in 595

families. Organised in 4 IP's communities of each village, was recognized by MRD in 2013 and 2017 (Klang Le IP's community), with 81 community members (18 females). Separately, Sre Thom village there are 1,100 persons (544 females) with 235 families, and 30 community members (8 females).

Kratie Province

Kratie is located in the East of the country and is bordered to the North by Stung Treng, to the East by Mondulkiri, to the West by Kampong Thom and to the South by Kampong Cham. The province is bisected North-South by the Mekong River and its narrow flood plains. The population of Kratie province is concentrated close the banks of the Mekong; most communities are, on average, between 0.3 to 1.0 kilometers away from the mainstream Mekong and the Sekong (largest tributary of the Mekong). Away from the alluvial floodplain, the population density is very low. Kratie province is largely at elevation 20-29m with flat to gently sloping terrain. It is located on the Northern Plains, which features either flat sandstone plains or rolling terrain interrupted by occasional flat-topped hills or scarps, and rounded hills of Andesite and Basalt. Soils in Kratie are generally plinthite podzols and red, yellow podzols (acidic and low fertility potential), grey hydromorphic (high fertility and alluvial soils (alluvial lithosols). The provincial climate can be summarized as follows (a) Cool season: November- March (18-26^{0}C); (b) Hot season: March- May (27 – 35^{0}C); and (c) Rainy season: May - October (26-340C, with humidity up to 90 percent). The climate pattern in Kratie province is affected by the alternating monsoon system. The southwest monsoon takes place during May and November (wet season) with approximately 90% of annual rainfall. The northeast monsoon, which comes with hot and less humidity, particularly during high potential transpiration, takes place during March and April. The rainfall pattern, however, is variable enormously across the country. The annual rainfall of Kratie is 1,610 mm. The main hydrological contributions to the mainstream in this reach come from the Se Kong, Se San and Sre Pok catchments. Together, these rivers make up the largest hydrological subcomponent of the Lower Basin. Over 25 percent of the mean annual flow volume to the mainstream at Kratie comes from these three river basins. They are the key element in the hydrology of this part of the system, especially to the Tonle Sap flow reversal. One of the major issues here is the potential impacts on flow regimes that would result from hydropower regulation on the upper Se San in Viet Nam.

Kampong Thom Province

Kampong Thom Province is in the central part of Cambodia, covering an area of 15,061 square kilometers. It borders six other provinces: Kampong Cham, Kampong Chhnang, Siem Reap, Stung Treng, Kratie, and Preah Vihear. The province with its economy primarily based on agriculture has fertile land and an abundant water resource, allowing it to develop various agricultural products such as rice, cashew nuts, cassava, and peanuts as well as rubber. Kampong Thom has a total population of some 682,000 people as of 2019.

The rainfall in Kampong Thom Province is seasonal and mainly occurs between May and October. The annual rainfall ranges from 1,200 to 1,600 millimetres. The province has a network of irrigation systems that are essential for agriculture. The most common forms of irrigation are gravity-fed and pump-fed systems. The government has invested in modernizing the irrigation system, which has helped to increase the agricultural productivity of the province.

Kampong Thom Province has three important river basins, Stung Sen, Stung Stoung, and Stung Chinit. These rivers are the main sources of water for irrigation in the province. They also play a vital role in the fishery industry, providing a habitat for fish and other aquatic animals. In addition to these rivers, the province also borders the Tonle Sap Lake, which is the largest lake in Southeast Asia. The Tonle Sap River flows through the province, and it is an essential part of the irrigation system for the region.

Despite the abundance of water resources in the province, especially during rainy seasons, Kampong Thom has often faced challenges with water scarcity and drought in recent years. The government has implemented measures such as building new reservoirs and rehabilitating old ones to increase the province's water storage capacity. The government has also encouraged the adoption of more water-efficient farming practices and the use of drought-resistant crop varieties to mitigate the impact of water scarcity on the agricultural sector.

Aside from its agricultural and fishery industries, Kampong Thom Province is also known for its historical and cultural significance with significant tourism potential. The province is home to ancient temples and ruins, including the iconic Sambor Prei Kuk temple complex, which was declared a UNESCO World Heritage Site in 2017. The province is also known for its traditional handicrafts, such as silk weaving and pottery and sculpture carving.

Preah Vihear Province

Preah Vihear province is located in the northern part of Cambodia, adjacent to Thailand's and Lao's border and bordering Stung Treng, Siem Reap, Oddar Meanchey, and Kampong Thom provinces. The province, covering an area of 13,822 square kilometres, is known for its rich cultural and historical heritage, natural attractions, and agricultural production. As of 2019, the province's population was estimated to be around 255,000 people.

The province benefits from various water resources, including streams, rivers, and 219 reservoirs, which play a crucial role in agriculture and fishery production. The region experiences a tropical monsoon climate with a wet season from May to October and a dry season from November to April. The average annual rainfall in the province is about 1,300 mm.

Preah Vihear province has an irrigation system/network that supports its agricultural production. The irrigation system is primarily reliant on water from the Stung Sen River and other small rivers and streams, which are used for both agricultural and domestic purposes. The Stung Sen River is one of the important rivers in the province and plays a vital role in irrigation. The river flows through the northern part of Cambodian and provides water for agriculture and fishery production.

Accounting for some 85 percent, agriculture is the backbone of the province's economy, with rice being the primary crop. Other crops grown in the province include cassava, cashew nut, beans, and vegetables. The province's fishery sector is also of note, with many people also relying on fishing for their livelihoods. Additionally, because of its border with Thailand, cross-border trade has become another important sector of the province's economy.

Ratanakiri Province

Ratanakiri is situated on the northeast plateau (approximate altitude is around 200-400 meters above sea level). The province is bordered by Lao PDR to the north, Vietnam to the east, Mondulkiri Province to the south, and Stung Treng Province to the west. The Two main rivers crossing the province are the Sre Pok and Sesan River. The total area of Ratanakiri is about 10,782 square kilometers. The topography of Ratanakiri province extends from the mountains of the Annamite Range in the north, across a hilly plateau between the Tonle Se San and Sre Pok rivers, to tropical deciduous forests in the south. Ratanakiri has a monsoonal climate with a rainy season from November to January, and a hot season from March to May. The average daily high temperature in the province is 34.0^{o} C and average daily low temperature is 22.1 o^{C}. Ratanakiri Province has a climate like the other areas in the country, with three seasons. Rainy season lasts from June - October (24^{0}C). Hot season takes place during March- May with temperature ranging from 20 – 32^{0}C. Third season (dry months) lasts from November to February with temperature ranging from 20-28^{0}C. Ratanakiri's average temperature throughout the year is lower than in the other areas of

Cambodia (except Mondulkiri Province). The annual rainfall is approximately 2,200 mm. Ratanakiri province has two main major rivers, Sesan and Sre Pok, flow from east to west across the province to the Sekong River, a tributary of the Mekong. Based on the data from Provincial Planning and Investment Department (2011), Ratanakiri province has 9 natural reservoirs with the storage capacity of 2,300,000 cubic meter, 63 irrigation systems (Dike) of about 4,500m and main canal of 59,850 m and sub canal of around 78,750m.

Stung Treng Province

Stung Treng is the most northern province of Cambodia and most upstream of the Mekong in Cambodia. Stung Treng, which covers an area of 11,092 square kilometers, is a remote and sparsely populated province in the northeast of Cambodia. It borders Lao PDR (Champasak Province) to the north, Ratanakiri Province to the east, Preah Vihear Province to the west and Kratie and Kampong Thom provinces to the south. The province is divided into five districts, 34 communes and 128 villages. Stung Treng Province is an agricultural province of hills, mountain and riverside terraces. Land use in the subprojects area includes residential space, commercial and institutional space, agricultural fields, grazing land and sparse, degraded forest land. Land use is undergoing rapid change in the vicinity of Stung Treng, especially along the highway. The types of industry with some contribution to the provincial economy include the wood products industry, handicrafts, agro-industry and animal husbandry, and mining for iron ore, copper, gold and other metallic minerals. There are two distinct seasons in Cambodia – dry season from November to April and rainy season from May to November. The northeast monsoon (wet) brings 90% of the rainfall, which varies generally between 1,200 mm and 2,000 mm per year across the country. Rainfall in the central area covering the Tonle Sap Basin Lower Mekong Valley averages between 1,200 and 1,900 mm annually. The heaviest rainfall, over 3,000 mm per year, occurs along the coastal lowlands in the west. The northeast monsoon results in dry weather in the period, December to April. In any particular location, rainfall varies significantly from year to year. Relative humidity ranges from 65-70% in January/February to 85 to 90% in August and September. Stung Treng has dry periods in January, February and December—with January being the driest month. The warmest month is April with an average temperature of 35 °C. The coldest month is January with an average temperature of 18 °C. The Mekong River flows through Stung Treng province from north to south. In Stung Treng town, the Mekong meets the Sekong River, which has two more tributaries, the Se San and Sre Pok. All are upland rivers with deep pools, rapids and inundated forest, which do not provide a good situation for transportation, but are very important for fish spawning habitats and fish migration routes that need to be conserved because of special fish such as Trey Koul Raing (giant barb, *Catlocarpio siamensis*), Trey Pa Se Ee (M*ekongina erythrospila*), Trey Tra Sawk (seven-line barb, *Probarbus jullieni*) (Danida 2000). About 90% of the province's population lives along the four rivers and depend on fishing for daily food and income generation.

Tboung Khmum province

Tboung Khmum province is situated on the east of Mekong River and approximately 155 km on the north-eastern of Phnom Penh along national road #7. The province is bounded on the west by Mekong and Kampong Cham province, on the north and the east by Kratie and Vietnam (about 142.7 km), and on the south by Prey Veng province. 5. The province has a total land area of 5,250.51 km2 and consists of six districts (Tboung Khmum, Ou Reang Ov, Krouch Chhmar, Dambae, Ponhea Kraek, and Memot) and one municipality (Krong Suong). There are 62 communes, two sangkats with a total of 873 villages in the province. According to the national census (2020), the provincial population is 763,735 persons (51.7% is female and 48.3% is male). The total households are 178,942. Average household size is 4.3 person.

Tboung Khmum province is characterized as groups of flat, low-lying plains that are drained by the Mekong River. The majority part of the Tboung Khmum province is covered by plateau featuring rich

volcano soil. The province is generally formed by plateau, watershed lowlands/wetlands, streams, and rivers. Valleys are formed between plateaus, carrying water all the year round. Stream water goes to the Mekong River. The common soil types existing in the project include rich volcanic red soil and sandy soil such as those found near the Mekong River. The province' elevation is between 50 and 200 m above sea level (Tboung Khmum Municipality, 2017). In term of land use, Tboung province has a total paddy land of about 89,460 ha by 2019 (Tboung Khmum Provincial Department of Planning 2021).

3.2 OVERVIEW OF THE THREE SUB-BASINS

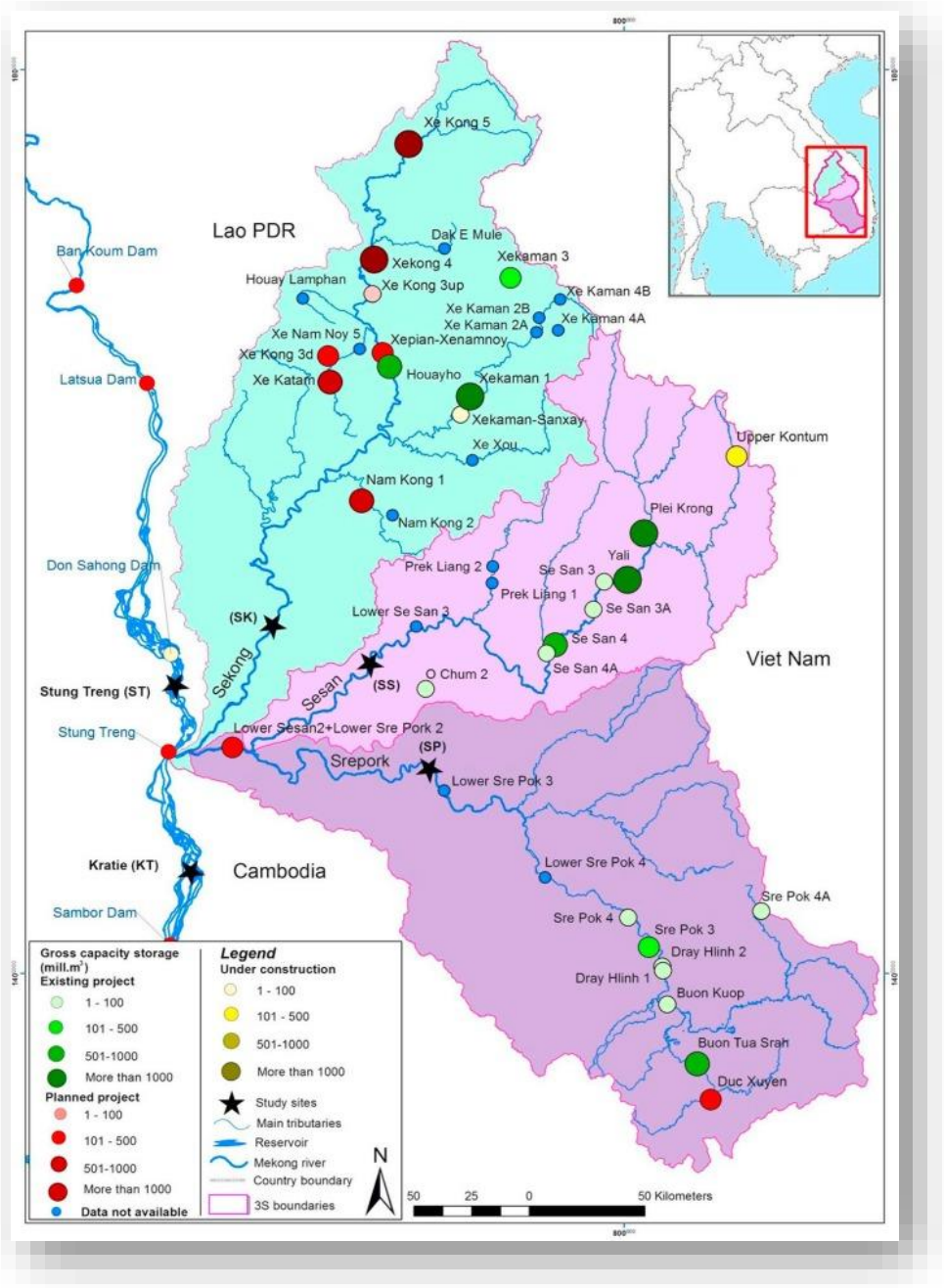
Cambodia's three sub-river basins (3S), the Sekong, Sesan, and Sre Pok rivers, are located in the North-eastern part of the country, sharing borders with Laos and Vietnam. These river basins, a major tributary of the Mekong River, cover a total area of some 26,000 square kilometres. The sources of the three rivers are in the Central Highlands of Viet Nam from where the Sekong flows through the Lao PDR before merging with the Sesan and Sre Pok over about 40 km before the confluence with the Mekong River at Stung Treng. Supporting a population of about 3.4 million people in three countries, the basins are vital sources of water for agriculture, fishery, and energy production in the region. Biodiversity will be assessed in detail and described in Environmental and Social Management Plans to be prepared for approved subproject.

The Sekong River Basin covers an area of approximately 5,565 square kilometres. The Sekong River originates in the Central Highlands of Vietnam and flows into Cambodia, eventually joining the Mekong River and contributes ten percent of the water flow to the Mekong River. The river basin is rich in natural resources, including waterfalls, wetlands, and forests, and supports a diverse range of flora and fauna. The Sekong River is an important source of water for irrigation, hydropower, and fishery production in the region.

The Sesan River Basin covers an area of approximately 7,630 square kilometres and is located in the eastern part of Cambodia. The river basin is rich in natural resources, including forests, wetlands, and wildlife, and supports a variety of agricultural activities, including rice cultivation, rubber plantations, and cashew nut farming. The Sesan River is also used for hydropower generation and fishery production. In 2018, the Sesan River Basin (lower Sesan II) had a total installed hydropower capacity of 400 MW.

The Sre Pok River Basin is the largest of the 3S in Cambodia, covering an area of 12,780 square kilometres and is located in the north-eastern part of Cambodia. The river basin is rich in natural resources, including forests, wildlife, and wetlands, and supports a variety of agricultural activities, including rice cultivation and rubber plantations. The Sre Pok River is also used for hydropower generation and fishery production. In 2018, the Sre Pok River Basin (lower Sre Pok II & III) had a total installed hydropower capacity of 552 MW (See Figure 2 below for locations of dams in existence and dams being planned).

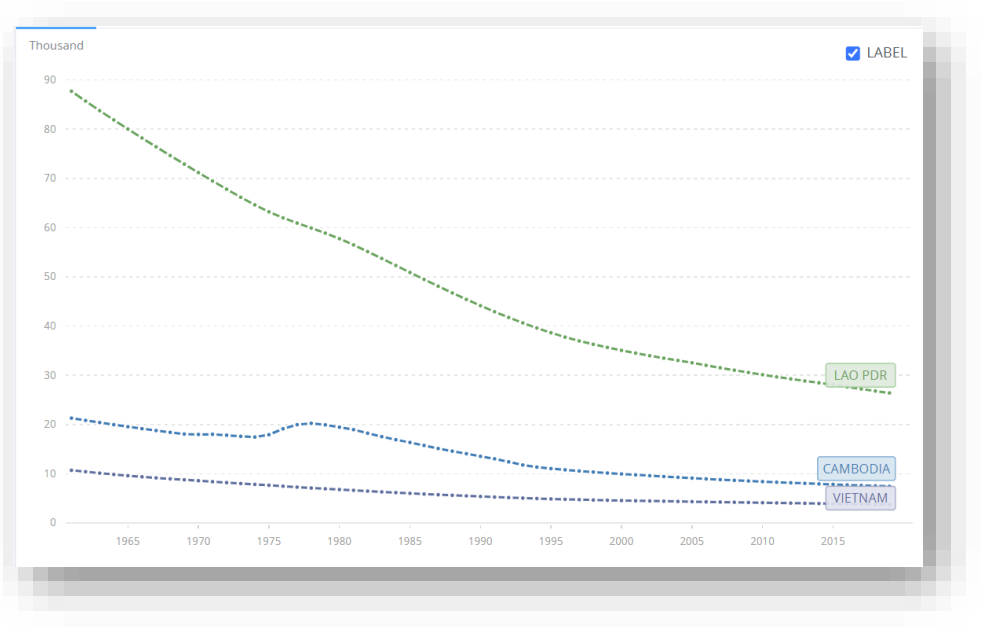
Figure 2 – Map of Existing, Under Construction, and Planned Dams in 3S Basin



Source: Peng Bun Ngor, Pierre Legendre, Thierry Oberdorff, Sovan Lek, 2018. Flow alterations by dams shaped fish assemblage dynamics in the complex Mekong-3S river system, Ecological Indicators, Volume 88, Pages 103-114

Despite the abundant water resources in these river basins, the region faces several challenges related to water management, including water pollution, droughts, floods, and climate change. Rapid economic development and population growth have also increased the demand for water, putting pressure on the already limited water resources in the region. According to the World Bank, in 2019, the water availability in terms of renewable freshwater resource per capita in Cambodia was 7,441 cubic meters per year, a 13-percent decline from 2009.

Figure 3 – Renewable internal freshwater resources per capita (cubic meters) - Cambodia, Lao, Vietnam



Source: World Bank & Food and Agriculture Organization, AQUASTAT data (Accessed 22 April 2023). https://data.worldbank.org/indicator/ER.H2O.INTR.PC?locations=KH-LA-VN)

4. PROJECT'S ENVIRONMENTAL & SOCIAL RISKS AND IMPACTS

4.1 APPROACH TO RISK AND IMPACT ASSESSMENT

The E&S risks and impacts presented in this document are identified as those potentially associated with key investment activities that will be implemented under project components 1, 2, and 3. These impacts, and risks, are *direct*, *indirect*, and *cumulative*[4] *in nature* – as defined in the WB's ESF, and are anticipated based on the following key factors: a) **project's potential investment activities**, b) **scope, scale**, and **nature** of such activities, c) **area of influence**[5] (based on the first three identified subprojects), d) **capacity of key project stakeholders** (e.g. MOWRAM, MAFF, GDR, and their implementation agencies at provincial

[4] **Direct impact** refers to an impact which is caused by the project, and occurs contemporaneously in the location of the project. **Indirect impact** is an impact that is caused by the project and is later in time or farther removed in distance than a direct impact, but is still reasonably foreseeable, and will not include induced impacts. **Cumulative impact** (of a subproject/project) refers to the incremental impact of the project when added to impacts from other relevant past, present and reasonably foreseeable developments as well as unplanned but predictable activities enabled by the project that may occur later or at a different location. Cumulative impacts can result from individually minor but collectively significant activities taking place over a period of time. The environmental and social assessment will consider cumulative impacts that are recognized as important on the basis of scientific concerns and/or reflect the concerns of project-affected parties. The potential cumulative impacts will be determined as early as possible, ideally as part of project scoping.

[5] The area likely to be affected by (i) project and borrower's activities and facilities that are directly owned, operated or managed (including by contractors) and that are a component of the project; (ii) impacts from unplanned but predictable developments caused by the project that may occur later or at a different location; or (iii) indirect project impacts on biodiversity or on ecosystem services upon which affected communities' livelihoods are dependent.

and district levels), e) **E&S management practices** in the same type of project (e.g. legal framework and current practices), and f) **expected capacity of contractors.** The assessment of E&S risk and impact is made assuming that financial and human resources, including risks management capacity, are sufficiently and timely available to bring all inherent risks – wherever they are (e.g., *high*, *substantial*, *moderate*), down to *low* level[6].

For Environment, High (H) means potential adverse impacts are large scale and in sensitive locations and high in magnitude or in spatial extent with potential significant cumulative impacts. Substantial (S) means there are potential adverse environmental or social impacts, but these are less severe. Moderate (M) means there are some adverse environmental or social impacts. Low (L) means there are few or no environmental or social adverse impacts.

The section below describes key E&S risks and impacts that are associated with key activities under project component 2 (rehabilitation of reservoirs and irrigation canals), component 3 (agricultural extension and crop production), component 1 (water resources institution). The approach to identification and evaluation of E&S risks involves: (i) identifying and assessing inherent risks associated with proposed project activities; and (ii) evaluating potential residual risks (that remain after adoption of proposed mitigation measures). It is noted that evaluation of residual risks is based on the capacity of project stakeholders to be involved in risk and impact management, resource availability.

During project implementation, additional risks and impacts may be identified, and evaluated at the subproject level. Additional risks and impacts will be added to the subproject's ESMP and mitigation measures proposed to assure effective risk and impact management.

It is planned that a rapid cumulative impact assessment (RCIA)[7] - from a series of investments within the river basins – will be conducted in the first year of project implementation, subject to the outcome of the E&S screening of the proposed subprojects. A sample ToR for RCIA has been provided in Annex 5.2. The RCIA may cover the subproject's area of influence (as defined in each ESMP) and/or beyond the subproject's area of influence which is sub-basin. A list of potential valued environmental and social components (VEC) are proposed for consideration when CIA exercise is carried out Year 1.

Where possible, depending on the nature, scale and scope of subproject activities, and stakeholder capacity and resources, risk exposures at subprojects will be overseen at the river basin level – as part of cumulative impact assessment, through considering/examining a plausible range of risks associated with identified valued environmental and social components (VEC), and potential interactions among these risks. It is also important to note the overall risk assessment under this project would be based on current residual risk taking into account the expected effect of proposed mitigation measures but not presuming any future additional mitigation measures, beyond mitigation measures that are already in place. This project is classified as "High" risk for environment and "Substantial" risk for social.

[6] It is noted under this project, a *Low, Moderate*, *Significant risk* means there is a (respective) Low/ Moderate/ Significant *likelihood* that identified Environmental or Social factors could adversely affect the achievement of the project's objectives or sustainability of project results, and meanwhile there is a Low/ Moderate/ Significant social, or environmental impacts.

[7] from Cumulative impact of a project refers to The incremental impact of the project when added to impacts from other relevant past, present and reasonably foreseeable developments as well as unplanned but predictable activities enabled by the project that may occur later or at a different location. Cumulative impacts can result from individually minor but collectively significant activities taking place over a period of time. The environmental and social assessment will consider cumulative impacts that are recognized as important on the basis of scientific concerns and/or reflect the concerns of project-affected parties. The potential cumulative impacts will be determined as early as possible, ideally as part of project scoping.

4.2 E&S RISKS AND IMPACTS

In this section, key social and environmental risks and impacts (associated with key investment under Project Component 1,2, and 3) are identified and described briefly. The identification of these risks and impacts paves the way for proposed mitigation measures described in the Chapter 5 – Mitigation Measures (See summary of risks, impacts and mitigation measures in table below).

Table 1 – Discription of E&S risks and impacts by project component and activities

ESS	Description of E&S risks and impacts	Nature & Scale	Potential Receptors	Key activities that cause risks and impacts	Project Component
ESS1	Assessment and Management of Environmental and Social Risks and Impacts[8]				
Gender inequality	Gender norms has been considered one of the key deep-rooted socio-cultural causes of gender inequalities in farming in Cambodia. Only 27% of female have land title (2013 agriculture census). Women also have limited to credit for agricultural production. Only 1 out of 5 women have loan access. Women also faced limited access to updated information and technology, farm equipment, market access… for enhanced economic engagement (from existing focus on domestic roles)[9]. Under CWSIP, gender risks and impacts associated with gender are relevant to ESS1, 2, 4, 5, 5, and 10.	Inherent risk Induced risk, (at least 7,000 ha at Svay Chrum, Kantout and Srae Huy)	Farmers in target command area	Scaling up of crop production that target command areas	Sub-Component 3.2 (for enhanced capacity for scaling up of labor, water, and crop productivity improvement techniques)
Elite capture	Some better-off people may take their own advantage (voice, local business…) to influence subproject design/investment (e.g. location, existing infrastructure access…) to bring more project benefit to them – vis-à-vis the poor and vulnerable in the same geographical area. This risk is anticipated in Project Component 2 (Sustainable Water Service Delivery) which may affect design of water distribution canal, and Component 3 (Increased Agricultural Productivity at Farm Level) which may bring investment to the better-off group (e.g., storage house, food processing facilities, and design of access road).	Inherent risk (Small in scale)	Farmers in target command area	Establishment of contract farming between farmers, agricultural cooperatives (AC)/producer groups (PG) and the private sector	Sub-Component 3.3 (Increased Private Sector Engagement for Agricultural Service and Sectoral Improvement)
Reduced net income	Crop intensification (in existing and new irrigated area) to increase crop yield combined with a) promoted contract farming model and b) increased transaction with middlemen is likely to cause reduced selling prices of farm produce, which in turn put farmers at risk of getting lower pay due to increased competition among farmers.	Induced risk, (at least 7,000 ha at Svay Chrum,	Farmers in target command area	Value chain development for rice (and other cash crops)	Sub-Component 3.3 (for increased private sector engagement for agricultural service

[8] The risks identified and described under ESS1 are not covered under other ESSs. These risks are identified as a way to address issues that are mentioned in WB's Good Practice Notes

[9] Phuong G Leapheng, 2018, The Important Role of Cambodian women in the Agriculture Sector. Parliamentary Institute of Cambodia,.

ESS	Description of E&S risks and impacts	Nature & Scale	Potential Receptors	Key activities that cause risks and impacts	Project Component
		Kantout and Srae Huy)			and sectoral improvement)
Adverse impact due to policy action	Policy actions (financed through policy reform/regulation update) that affect water use at basin, sub-basin, regional levels may affect adversely vulnerable groups/individuals	Direct risk (reg	Water users at basin, sub-basin, regional levels	Review key legislation and policy documents (e.g. water allocation and licensing regulation, water tenure assessment) to identify uses and users to recommend sound water allocation and licensing for piloting and implementation in targeted basins	Sub-Component 1.2 (National Policies and Institutional Strengthening)
ESS2	Labor and Working Conditions				
Child Labor	The risk of child involvement in project's labor force (e.g. contractors' labor) is foreseen because subproject activities will take place in rural areas where use of child labor is common. There is a possibility that local people under 18 years is engaged by construction contractors and sub-contractors to perform unskilled works, and these workers may be from ethnic minority groups.	Indirect risk	Unskilled workers (mostly local people)	Contractors' engagement of local people as short-term, unskilled workers	Sub-Component 2.1 and 2.2 (for multi-purpose infrastructure for irrigation, water supply, flood control, and environmental benefits, and for rehabilitation and modernization of existing irrigation facilities (weirs, canals and headworks)
Forced Labor	Forced labor refers to any work or service that are not voluntarily performed by an individual under threat of force or penalty. Forced labor could happen for both children under 18 and adults, particularly for households who are in high need to cash for specific family purpose (e.g. cover a medical bill, paying debt…). The risk of engaging of forced labor might be associated with workers that are considered as "primary supply	Indirect risk	Unskilled workers (mostly local people)	Local people to send their children to work for contractors for extra income	Sub-Component 2.1 and 2.2

ESS	Description of E&S risks and impacts	Nature & Scale	Potential Receptors	Key activities that cause risks and impacts	Project Component
	workers" as identified under the project's Labor Management Procedures.				
Occupational health and safety (OHS)	OHS risks identified under the project include physical hazards, chemical hazards, as follows: Physical Hazards. Physical hazards represent potential for accident or injury or illness due to repetitive exposure to mechanical action or physical activities. Physical hazards may result in a wide range of injuries, from minor that needs medical aid only, to disabling, catastrophic, and/or fatal. Accidents due to falls: falling from ladders, scaffoldings, and vehicles, etc. Drowning and water injury accidents: at construction sites, workers may have to walk on structure above the water, or beams across the river or stream. Accident due to falling objects: Tools, machinery, equipment, and materials used during construction may fall from the height, causing injuries or death. Fall into open holes: holes, manhole, and areas of deep excavation may be commonly found at works. Fall into these holes may cause injuries of various degrees. Physical injury related to the operations of heavy equipment: Injury or death may result during operations of heavy equipment, such as crane, excavator, cuts, and bruises on sharp objects etc. Chemical hazards. Chemical hazards represent potential for illnesses or injuries, both short and long term, and fatalities due to single acute exposure or chronic repetitive exposure to toxic, corrosive, sensitizing or oxidative substances. Common chemicals used in construction include Portland cement clinker (mineral binders), formaldehyde (wood-based materials), polyurethane, vinyl, cadmium, or lead (paints and resins), and solvents. They also represent a risk of uncontrolled reactions, including the risk of fire and explosion, if incompatible chemicals are inadvertently mixed.	Direct risk/impact	All project workers, but mostly with contractor's workers due to work condition	Engagement of workers to support: 1) construction activities by Contractors, 2) consulting/technical support by PMUs	Mostly associated with Sub-Component 2.1 and 2.2 but are related to any project activities of all five components that involve travel, and are related to work environment of project workers

ESS	Description of E&S risks and impacts	Nature & Scale	Potential Receptors	Key activities that cause risks and impacts	Project Component
	Fire and Explosions. Fires and or explosions resulting from ignition of flammable materials or gases can lead to loss of property as well as injury or fatalities to project workers. Corrosive, oxidizing, and reactive chemicals. Corrosive, oxidizing, and reactive chemicals present similar hazards and require similar control measures as flammable materials. Communicable diseases and outbreak. Project workers are prone to any diseases that are easy to spread under certain conditions if effective control measures are not in place. Common diseases include pandemic diseases (COVID-19, HIV/AIDS…), vector-borne diseases (malaria, dengue fever, and Chikungunya…), water-borne diseases (primarily diarrheal disease such as viral and bacterial gastroenteritis, dysentery, cholera, and other manifestations of gastrointestinal infections), typhoid, schistosomiasis, and so forth. Risk of UXO. This risk is identified with operation that involve dredging (if any), earthwork which involves excavation and soil compaction…)				
Underpaid pay and unequal treatment	Local and EM people recruited as unskilled workers by project contractors may not be offered a written working contract. As a result, there is a possibility that they may be underpaid compared to the nature, scope, and quantity of work that they are expected to perform. They may also be asked to work under conditions that are hazardous to them, such as working without Personal Protective Equipment (as may be required for such work). Underpayment may also take place on the basis of gender, temporary work status – at the discretion of contractors. The risks of late wage payment or failing to pay workers should be assessed and included as part of the contract. The risks not only cause Bank's reputation risk, but also delay civil works.	Indirect risk	Unskilled workers (mostly local people)	Engagement of workers, particularly local, unskilled workers by Contractors	Sub-Component 2.1 and 2.2
ESS3	Resource Efficiency and Pollution Prevention and Management				
Noise	Earthmoving activities and operation of machineries at construction sites will generate dusts and exhaust fumes. Construction activities, operation of heavy equipment and material blasting will generate noise and vibration and will be a nuisance to workers and residents near the site.	Direct impact (mostly at construction	People and animal near construction sites	Construction operations carried out by be contractors for upgrading a) reservoir/	Sub-Component 2.1 and 2.2

ESS	Description of E&S risks and impacts	Nature & Scale	Potential Receptors	Key activities that cause risks and impacts	Project Component
	Noise will be produced by vehicular movement, excavation machineries, concrete mixing, and other construction activities. Noise may be generated from workers' camp, particularly during living activities at nighttime, or due to certain maintenance/repair of equipment, machinery, vehicles.	sites, transportation routes, and sites of source material and disposal		dam/ barrage/ regulator, and b) irrigation, b) extension of irrigation canal Sub.1.1, 1.2). Constructing/upgrading farmlands, including the construction and rehabilitation of irrigation and drainage systems, land levelling, improvement of soil quality and fertility (Sub. 2.2). Construction may involve a) demolition of existing dam structure/old irrigation canal, b) transportation (vehicles), b) operation of machineries, c) excavation, soil compaction. Increased use of heavy machinery such as combine harvesters, laser-assisted land levelling.	

ESS	Description of E&S risks and impacts	Nature & Scale	Potential Receptors	Key activities that cause risks and impacts	Project Component
Air pollution	Dust will be generated by transportation of material, clearing, grading, excavation, levelling, truck hauling, stockpiling, waste disposal, access road rehabilitation. In addition, the emission is also expected from machineries and vehicles, especially during dry season Smoke may be generated due to use of harvest fires from burning of straw and stub for incorporation into soil may cause air pollution, particularly in area where synchronized cultivation could be practiced thanks to more liable water access for irrigation	Direct impact (mostly near construction site and neighboring areas	People and animal near construction sites	Construction operation at reservoir and irrigation site	Sub-Component 2.1 and 2.2
Water pollution	During construction, excavation may be carried out to allow upgrading of the existing dam structures. Earthwork and excavation may cause soil disturbance which result in water pollution, particularly when rehabilitation/construction of reservoir and irrigation canal are completed, and water is released which would bring disturbed soils and probably debris left over to the downstream through the released water.	Direct impact (mostly local around polluted source and main canals	People and environment inside water distribution canals	construction debris, leaked oil and chemicals, water disturbance may cause temporary/local water pollution	Sub-Component 2.1 and 2.2
	Increased use of chemical for intensified crop production may affect the overall water quality and affect people who rely on such water for domestic use. Impacts may include two levels: impact on surface water as immediate effect and underground water as long-term impact.	Induced impact (mostly at command area (at least 7,730 ha for Svay Chrum, Kantout, and Srae Huy)	Farmers directly involved in cultivation and crop care Those who use ground/surface water with connection from polluted source	Crop intensification from increased irrigation access (e.g. increased irrigated area and number of crops per year)	Sub-Component 2.1 and 2.2
Soil pollution	Solar panels used for drip irrigation may contain hazardous chemicals (used to make photovoltaic (PV) cells), and/or hazardous fluids (to transfer heat) and leaks of these materials could be harmful to the environment.	Direct impact (local, small-scaled)	Location where solar panel is used, and disposed of	Installation of solar panel for supplementary irrigation (dry season)	Sub-Component 2.1 (Increased water productivity through integrated crop water management)

ESS	Description of E&S risks and impacts	Nature & Scale	Potential Receptors	Key activities that cause risks and impacts	Project Component
	Leakage of oil, chemicals used for machinery and construction process at construction sites	Direct impact (local, small-scaled)	Construction site and camp site	During machinery operation and maintenance	
	Overuse of agrochemicals, e.g., chemical pesticides, fertilizers, due to crop intensification	Indirect impact/induced impact (farm wide, long-term)	Soil (including surface water)	During crop care	
Solid, hazardous, domestic waste	During construction process, waste of various kinds will be generated including solid wastes, hazardous wastes, and domestic solid waste (at workers' camp site). Solid waste may include surplus excavated materials, used lumber for trenching works, waste generated from demolition of existing camp, structures, construction debris, and so forth. Hazardous waste may include oil and chemical that are used during construction operations. Leakage of hazardous waste such as soil and chemical may cause soil contamination. Domestic waste will be generated by construction workers at construction site, workers' camp, and other facilities.	Direct impact (mostly local at construction site, camp sites, and make extend further if not managed appropriately (e.g. leaked oil going to reservoir and goes into water channels)	Soil, water sources, people, animal near discharge sources	Operation activities at construction site and worker's camp, warehouse, material transportation (e.g. at borrow pits, supply points, construction site & camp Overuse of agri-chemicals for crop diversification and intensification	Sub-Component 2.1 and 2.2 Sub-C 2.1
ESS4	Community Health and Safety				
Sexual Exploitation and Abuse, Sexual	The risk of Sexual Exploitation and Abuse (SEA), Sexual Harassment (SH SEA/SH) is anticipated to be "Moderate" due to 1) concentration of labor of about 250 workers) engaged for reservoir repair and construction of	Induced risk (mostly associated	Project workers and local peoples,	Construction activities, but not excluding any other project activities	Sub-Component 2.1 and 2.2

ESS	Description of E&S risks and impacts	Nature & Scale	Potential Receptors	Key activities that cause risks and impacts	Project Component
Harassment, and Violence against Children due to labor influx	irrigation channel for an estimated period of 2-2.5 years, 2) frequent visits of project workers, and 3) increased level of this risk due to pre-existing SEA/SH issues in the subproject's area of influence. It is noted that labor influx includes not only workers but also people who are local and non-local that gravitate to construction sites temporarily to provide logistics services for contractor's workers during construction stage. This risk of Violence Against Children (VAC) is also anticipated due to increased level of SEA/SH and pre-existing risk of local domestic violence that might be present before the project.	with labor influx (at construction site, camp site, nearby residential areas)	primarily with vulnerable individuals including female and children		
Dam Safety	There is a risk of dam break/ dam failure that may cause flooding to the downstream, resulting in loss of crop, houses, other assets, or even casualties for the downstream population.	Indirect impact (dam is designed to make this risk unlikely)	People, animal, and assets downstream the water flow	Upgrading of reservoirs/ dams	Sub-Component 2.1 and during operation stage
Road and Traffic safety	Increased risk of road accidents, particularly for people living in the vicinity of the civil works and those traveling near the construction areas – during construction phase, particularly when road condition is not good and safety measures are not effectively carried out by contractors. Risk of road accident may be due to people' failure in attending their children which put children at risks of accidents. Given increased traffic flow between construction sites and other destination such as borrow pit, quarry, material supply warehouses, there is a risk of road traffic accident on the part of contractors' workers, and local inhabitants such as pedestrians, motorcyclists, cyclists, and those on animals or animal drawn carts. Reasons may also include violation of speed limits, lack of awareness of pedestrian, drivers' behavior/drunk driving, or unexpected certain traffic circumstances. All project workers and local people near construction sites and routes connecting construction sites and material supply sites, quarry, borrow pits are exposed to traffic and road safety risks.	Direct impact	Associated with project workers and local people traveling near construction sites and on transportation routes. Risk is mostly with those making frequent road travel		Component 1,2, 3, 4 and 5
Disease transmission	Communicable diseases that are air-borne and water-borne may be spread due to concentration of the labor influx and their interaction with	Direct risk	Mostly workers at construction	Interaction between people carrying the	Sub-Component 2.1 and 2.2

ESS	Description of E&S risks and impacts	Nature & Scale	Potential Receptors	Key activities that cause risks and impacts	Project Component
	local inhabitants during the construction stage. Labor influx may include workers that are engaged by construction contractors from other localities, and including those who come to provide logistics services which include both local and non-local people. Recent common communicable disease may include COVID-19, STD (e.g. HIV/AIDS) and vector borne disease such as malaria, dengue fever that may arise in remote, mountainous area where dams and reservoirs are located. These risks are likely increased if areas with EM people who may not be aware of these risks and know/ take appropirate measures to avoid/reduce such risks.	Risk depends on factors such as season, endemic level	sites and local people who interact with these workers.	disease and healthy people, particularly between immigrant workers with others	
Unexploded Ordinance	Although effort has been made to demine across the country, mortar shells, aerial bombs, and other unexploded ordnance may be found within the subproject area. Some demining operations have been carried out at shallow depths, and UXO maps have been generated. However, it is not known if there is UXO that is located in proximity of the structures where structural upgrading would be made. Of particular concern is the hazard posed by unexploded ordinance left during the war, particularly in area where deep excavation is required. Risks of UXOs is identified, particularly with physical rehabilitation of dam such as at spillway or inside the reservoir if partial dredging is required for certain part of the dam, and construction to expand existing irrigation canals.	Direct risk (Small scale and local)	Workers at construction sites and local people passing by	Construction activities that involves excavation, earthworks.	Sub-Component 2.1 and 2.2
Health	Overall health Farmers and involved labor may be affected in terms of health (long-term) due to potential a) increased use of chemical inputs (e.g. pesticide) which affects them directly through inhalation, and through secondary sources such as polluted surface/ underground water and produced crop[10]. It may also affect consumer (in the long run) due to pesticide residue	Induced risk (small scale and long-term)	Farmers, hired labor for crop care	Crop intensification	Sub-Component 3.1 (Increased water and labor productivity through integrated crop water management)

[10] It is estimated that 61% of rice farmers in Cambodia consume the rice they produce (Cambodia Inter-Censal Agriculture Survey 2019).

ESS	Description of E&S risks and impacts	Nature & Scale	Potential Receptors	Key activities that cause risks and impacts	Project Component
	Risk of water pollution Increased use of chemical for intensified crop production may affect the overall water quality and affect people who rely on such water for domestic use in the nearby area (some kilometer) downstream of the farming area. Impacts may include two levels: impact on surface water as immediate effect and underground water as long-term impact.	Induced risk (small scale and long-term)	Farmers and people living in immediate vicinity	Crop intensification	Sub-Component 3.1
	Risk of increased vector-borne disease due to propagation of aquatic invertebrates. Increased command area and number of crops per year may provide favorable habitat for mosquitoes and snails, particularly vector-borne diseases such as malaria, dengue fever.	Induced risk (small scale and long-term)	Farmers and people living in immediate vicinity	Crop intensification	Sub-Component 3.1
ESS5	Land acquisition, Restrictions and Land Use and Involuntary Resettlement				
Land acquisition	At reservoir location, some households may have houses, shops, or livelihood activities on the embankment of the spillway. When spillway is upgraded to increase water storage, these houses, shops, livelihoods may be affected permanently. Houses, if any, may need to be relocated. In command areas where existing canals need to be extended, or new canal need to be built, minor land acquisition may be required to allow canal construction. The need for land acquisition for building canal will be minimized by aligning new canals along existing bund (field boundary) which helps minimize the land impact for individual households.	Direct impact (small scale, localized at dam site and linear for canal building)	People living near existing reservoir and farmers in command area	Upgrading of reservoir and expansion/upgrade irrigation canals	Sub-Components 2.1 and 2.2
Economic displacement	Risk of economic displacement is anticipated for a number of reservoirs were local households come inside the reservoir during dry season to grow crops. As the reservoir is upgraded to increase water storage, these informal farming areas may be flooded during dry season. Thus, these households may be affected and thus lose the opportunity to grow crop for food and/or income, particularly during dry season. It is noted that households	Direct impact (small scale, localized at dam site)	People living near existing reservoirs	Upgrading of reservoirs	Sub-Component 2.1 (Increased water and labor productivity through integrated crop water management)

ESS	Description of E&S risks and impacts	Nature & Scale	Potential Receptors	Key activities that cause risks and impacts	Project Component
	who grow crop inside the reservoir typically earn yield that is higher than that obtained from their land outside the reservoir thanks to good fertility of the soil inside the reservoir. Near construction sites where some local business may have shops, food shop (mainly for tourists), their income from these shops and business may be affected due to dust, noise, increased traffic, or restricted access during construction stage.				
Reduced Downstream Water Access	Retention of water for upstream use would cause direct impacts[11], to the downstream population – to varying degree. For instance, downstream population who currently use water for farming and/or domestic purpose, or for income generation activities, may be affected due to restricted water access during the dry seasons when water is stored in the reservoir (upstream) for the planned irrigation and water supply purpose. Downstream impacts, once happen, may result in temporary economic displacement, particularly when gates are closed to retain a pooled water body for later use during dry season. Downstream impacts may cause loss of food producing opportunities and income which may affect their daily livelihoods activities (e.g., fishing, farming, recreational activities), and may cause cumulative impacts beyond the sub-basin area[12] (e.g. transboundary impacts).	Direct impact and cumulative impact	Population living downstream the upgraded reservoirs	Upgrading of reservoirs for increased storage	Sub-Component 3.1 (Increased Water and Labor Productivity through Integrated Crop Water Management)
ESS6	Biodiversity Conservation and Sustainable Management of Living Natural Resources				
Biodiversity Conservation	Project's planned activities are located within three river basins (Staung, 3S, and 5P) which include Mondulkiri, Kratie, Tboung Khmum, Kampong Thom, Preah Vihear, Ratanakiri and Steung Treng where a large proportion has been designated as protected areas and wildlife sanctuaries rich with terrestrial, marine and aquatic biodiversity. The project would follow a dual approach: a framework approach and site-specific selection.	Direct impact, localised at reservoir and affected rivers, need substantive resources to	Aquatic and terrestrial species in general, and endangered species specifically (Svay Chrum	Rehabilitation of reservoirs and riverbank improvement	Sub-Component 2.1 and 2.2

[11] A direct impact is defined under ESS1 as an impact which is caused by the project and occurs contemporaneously in the location of the project.

[12] It is estimated that combined water storage for Svay Chrum, Kantout (Kratie province) and Srae Huy (Mondulkiri province) would be increased by 265%.

ESS	Description of E&S risks and impacts	Nature & Scale	Potential Receptors	Key activities that cause risks and impacts	Project Component
	For the site-specific selection, two sub-projects (Svay Chrum – covers the Svay Chrum Scheme and the Kantout Scheme – in Kratie Province, and Srae Huy in Mondulkiri Province) were selected. The Svay Chrum Scheme is inhabited by the Black Marsh Turtle (*Siebenrockiellla crassicollis*) - a freshwater turtle endemic to Southeast Asia. The turtle is listed by IUCN as Endangered (EN) due to widespread declines from overexploitation for subsistence use and export trade across most of the species' range. Considering the vast expanse of the Turtles habitat throughout the Southeast Asia and specifically in Cambodia, there is possibility that the current reservoir is not considered significant habitat for the Turtles species. This will be confirmed as part of the biodiversity assessment. The Kantout Scheme is located inside a community forest called "Kantout Community Forestry" – currently under the management of Ministry of Agriculture, Forestry and Fishery. There is no protected area (PA)/key biodiversity area (KBA) located within a radius of 2km from Kantout Reservoir. The nearest PA is located 24km from the reservoir, called the Prey Lang National Forest. During the operation stage of the reservoir, inundation caused by increased water storage may affect tree species located in the submerged area. The biodiversity screening conducted by the project suggests that three flora/tree species – *Pterocarpus macrocarpus, Afzelia xylocarpa, Vatica philastreana* – found in the area are listed by IUCN as endangered (EN). These tree species are native to Southeast Asia. The species have been more readily targeted for timber harvest.	manage potential impact	and Kantout Schemes)		
Farming ecosystem[13]	Increased use of agricultural chemicals may cause adverse impacts on non-target fauna and flora off-field due to runoff from rice field. Also, increased density of crops may crowd out the habitat that typically exist in less intensively used farmland. Increased use of chemical fertilizers	Field-wide and long-term impact	Farming ecosystem		Sub-Component 3.1

[13] Biodiversity assessment in rice/crop production does not only refer to the paddy field, but also to the landscape environment where paddy field is a part of

ESS	Description of E&S risks and impacts	Nature & Scale	Potential Receptors	Key activities that cause risks and impacts	Project Component
	may potentially affect spiders, frogs, snakes, rodents, and other animals that interact with animals in the rice field. Certain pesticides can lead to a decline in beneficial pest predators[14]. In due course of time, they get accumulated in plant parts, water, soil, air and biota[15]				
Hunting, trading, and consumption of animal from the wild	The presence of the project implementation workforce may lead to hunting or trapping of local wildlife at or nearby the subproject locations. This may be done for relaxation or in order to supplement protein in their diet. The risks can be quite severe where there is a large workforce or where the local wildlife is rare and endangered. There is also a risk to the aquatic species such as fish and frogs.			Labor influx (1-2 years) and local workers who may be interested in consumption of wild animal	Sub-Component 2.1 and 2.2
ESS7	Indigenous Peoples				
Exclusion of Vulnerable/ Disadvantaged Groups	People from vulnerable/ disadvantaged may be excluded from the consultation process because of various reasons. Common reasons include a) they live far away from the village centers, b) they don't speak the national language, c) they are typically silent in community meetings, d) women voices are not considered important because they don't know about water and irrigation which is mostly led by men, e) social norms prevent them from attending meetings outside their family. They may also be excluded/have limited access to temporary employment opportunities, e.g. jobs that are offered by construction contractors.				
ESS8	Cultural Heritage				
	Increased water storage (which would cause additional inundation to the upstream of the reservoir affecting tombs/graveyard to local people. For instance, at Kantout subproject, 34 tombs belonging to 18 Bunong IP households in Svay Chrum reservoir are potentially affected due to seasonal inundation (1-3 months each year) when Svay Chrum reservoir is upgraded to increase water storage.	Direct risk	IP/local people	Upgrading of reservoir to increase water storage	Sub-Component 2.1
ESS10	Stakeholder Engagement and Information Disclosure				

[14] http://www.oecd.org/environment/workingpapers.htm

[15] Sharma, A., Kumar, V., Shahzad, B. et al. Worldwide pesticide usage and its impacts on ecosystem. SN Appl. Sci. 1, 1446 (2019). https://doi.org/10.1007/s42452-019-1485-1

ESS	Description of E&S risks and impacts	Nature & Scale	Potential Receptors	Key activities that cause risks and impacts	Project Component
	No remarkable risks identified as associated with project activities (by nature and by implementation methods				

4.3 CURRENT CAPACITY & CAPACITY BUILDING

The E&S capacity and experience of MOWRAM and MAFF are fundamental to their effective ES management for the subprojects as well as other investment activities and policy actions. Assessing MOWRAM and MAFF's current knowledge state vis-à-vis ESF requirement help identify their knowledge gap and the needs to further build their capacity to address the E&S risks and impacts under the Project.

- 4.3.1 Existing ESF Capacity

MOWRAM had some experience in implementing environmental and social safeguards through previous World Bank- funded projects, component 2 (water resources management) of Mekong Integrated Water Resources Management III (P148647) and Agriculture Sector Diversification Project (P163264). MOWRAM had also experience in the application of safeguard policy of other development partners with record of limited safeguards capacity during project preparation and implementation on E&S risks management. The ESF is new to MOWRAM; and this is the first ESF project the Bank engaged with MOWRAM after disconnection of more than a decade.

MAFF has experience with both Bank's safeguard policy and ESF through current project implementation i.e., Cambodia Agriculture sector Diversification project (P163264) and Land Allocation and Socio-economic Development III (LASED III, P171331) respectively. Implementation of ESF policy has been supported by external E&S risk management consultants.

Given the above consideration, both ministries will require continuing support from external Environmental and Social (E&S) consultants during project preparation and implementation. Although their staff have experienced with the application of WBG safeguards and ESF of LASED III for MAFF, they still have limited exposure with the application of the World Bank Environmental and Social Framework (ESF) in the sector of water resources management especially for irrigation systems and rehabilitation of dams or reservoirs. This will be further complicated by challenges for sub-basins in the northeastern part of country where there are indigenous peoples and natural protected areas. In particular, the capacity of MOWRAM needs to be enhanced and strengthened to ensure E&S risks management of the proposed project including management of biodiversity impacts, natural resources, dam safety, managing risks associated with labor influx, and FPIC require dby ESS7. Meanwhile, MOWRAM is charged to enforce the country's legal system related to water resources management at the country level, e.g., sub-decree on river basin management and other instruments mentioned in Chapter 2 of this ESMF.

Some of the staff within MOWRAM and MAFF have participated in the World Bank's ESF training and have working experience in engineering, indigenous peoples, community development, environment, social and public administration. Some key staff of MOWRAM and MAFF have also recently undergone training on the WB's ESF for Water Security Improvement Project preparation but such trained staff are busy with other core tasks in MOWRAM and can't focus only on E&S risk management. Despite the above, staff need additional technical support during project implementation to assist MOWRAM and MAFF (in addition to consultants that MOWRAM and MAFF will engage) to fulfil E&S management responsibilities.

4.3.2 Capacity Building

MOWRAM and MAFF are committed to ensuring environment and social risks and impacts under the Project are effectively mananaged. It will be important that E&S staff on board of PMUs of MoWRAM and MAFF to get training on the World Bank's new Environmental and Social Framework, and project's

ESF documents – through hands-on training and through working other experienced consultants throughout project implementation.

At this stage, it is envisaged that the following topics are existing knowledge gaps at MOWRAM and MAFF that need to be strengthened, particularly in relation to the ESF requirements:

- Implementation of ESMPs including ESHS;
- Cumulative Impact Assessment and Environmental and Social Impact Assessment
- Monitoring of E&S compliance, including report writing;
- SEA/SH/VAC, including how to conduct public awareness raising activities;
- HIV/AIDS awareness, including how to conduct public awareness raising activities;
- Occupational Health & Safety, including monitoring and enforcement;
- Labor Management Procedures, including monitoring and enforcement;
- Grievance Redress, including monitoring and implementing GRM;
- Dam Safety, including how to conduct public awareness raising activities;
- Indigenous Peoples, including how to identify IPs as per WB's ESS7.
- Stakeholder Engagement
- Land acquisition and voluntary donations.

It is expected the above trainings would be started as soon as E&S consultants are recruited and E&S staff are appointed by MOWRAM and MAFF. E&S consultants will be engaged for the whole project life to provide support to PMUs, meanwhile providing practical support and hands-one experience to PMUs' SEO. Additional support from E&S staffs will be needed monthly or bimonthly during the construction phase, and quarterly or biannually during maintenance phase based on the need for support for the select road subprojects.

5. MITIGATION MEASURES

To mitigate environmental and social risks and impacts, the following approach to implementation of the mitigation hierarchy is adopted:

- Environmental and social risks and potential impacts will be anticipated and avoided;
- Where avoidance is not possible, risks and potential impacts are minimized or reduced to acceptable levels;
- Once risks and potential impacts have been minimized or reduced, further mitigation will be implemented; and
- Where significant residual impacts remain, compensate for or offset these impacts, where technically and financially feasible.

5.1 MITIGATION MEASURES FOR ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS

Based on the risks and potential impacts discussed in Chapter 4, this chapter outlines the overall approach to Environmental and Social Risk and Impact Management. A summary of the mitigation measures that will be taken by the MOWRAM to mitigate environmental risks and impacts during project implementation, including construction and operation phases, are presented in Table 1 below). These proposed measures will be adopted to guide the preparation of site-specific ESMP at subprojects level.

Table 2 – Types of Investment, Risks & Impacts, and Mitigation Measures

Types of Investment	Risks & Impacts	Proposed Mitigation Measures	ESS	Project Stage/ Responsibility
1. CONSTRUCTION, including ▪ **Rehabilitation of Dams/ Reservoirs/ Weirs** (Sub-Comp 2.1) ▪ **Construction of extended irrigation system** (Sub-Comp 2.2 & 2.2)	**Environment**			
	Air Pollution	- Spray or sprinkle water on work surfaces regularly in windy and dry weather, when necessary. - Avoid open burning of debris, cut vegetation (trees, undergrowth) or construction waste materials. - Reduce the operation hours of generators, machines, equipment, and vehicles as much as possible and control vehicle speed. - Ensure regular maintenance of generators, machines, equipment, and vehicles used at project site. - To protect against dust and fumes, spray water onto the ground. - Construction equipment maintained to a good standard. Immediate repairs of any malfunctioning construction vehicles and equipment. - Equipment and vehicles not in use should be switched off. - Machinery and vehicles causing excessive pollution (e.g., visible smoke) will be banned from construction sites. - All construction equipment and vehicles shall have valid certifications indicating compliance to vehicle emission standards. - Siting of concrete mixing plants, crushing plants, quarries and other facilities that cause high dust and/or gaseous emissions should be at least 500 m from settlements and other sensitive receptors (schools, hospitals, etc.). - Tightly cover trucks transporting construction materials (sand, soil, cement, gravel, etc.) to avoid spills and dust emission.	ESS1 ESS3	**During pre-construction stage** (e.g. setting up camp site, warehouse, UXO clearance), **Construction stage**/ Contractors
	Water Pollution	- Camp wastewater shall be fully treated first before discharged to adjacent or nearby waterbodies. - Spoils, construction wastes and construction materials stockpile area shall be located away from water bodies and under no circumstances will these materials be dumped into watercourses. - Where required, sediment traps are installed to prevent intense sediment transport that may occur during floods which may endanger downstream areas. Sediment trap may need to be designed with a guiding channel to avoid the risk of unwanted sediment flushing (massive self-cleaning). - Do not fill up canals and creeks at the construction site. In case filling of local drainage system is necessary, consultation with local authorities shall be undertaken and their permission obtained beforehand. An alternative drainage shall be established before the existing canal is filled-up. - Prohibit placement of construction materials, waste storage areas or equipment in or near drainage channels and water courses. - Discharge of oily wastewater, fuel, hazardous substances and wastes, and untreated sewage to watercourses/canals and on the ground/soil shall be prohibited.	ESS1 ESS3	During construction/ Contractors

Types of Investment	Risks & Impacts	Proposed Mitigation Measures	ESS	Project Stage/ Responsibility
		- Provide adequate drainage at the construction sites and other project areas to avoid flooding of surrounding areas and minimize flow obstruction of existing watercourses. - Include in engineering drawing the construction of retaining structures such as gabion baskets, riprap, etc. for riverbank protection. - Obtain required permits indicating water sources and permissible volumes - Maintain communication with local communities during construction stage to ensure that local water users provide timely feedback on water quality, if any, during construction process. - Water will be sampled from upstream and downstream of the reservoir for quality test, before and after construction, with baseline established for monitoring purpose (See Section 9.1 for more information). Water test aims to check if construction activities will have impact on water currently used by people downstream the reservoir. Testing parameters will be selected based on potential receptors (e.g., fish species, community who use the water released from the reservoir etc.). National water standards will be used for water quality test. - Water quality will be tested before and after construction using 10 parameters: pH, DO, BOD5, CODmn, TSS, Salinity, NO3-1, T-N, T-P, Oil & Grease. **Workers' Camp** Operation of workers' camps will generate solid wastes. Poor waste management could cause odour and vermin problems, pollution and flow obstruction of nearby watercourses and could negatively impact neighboring landscape. - Segregate and regularly collect wastes at worker camps and offices. - Construction/workers' camps shall be provided with garbage bins with covers. - Prohibit disposal of solid wastes into canals, rivers, other watercourses, agricultural fields and public areas. - There will be no site-specific landfills established by the contractors. All solid waste will be regularly collected and removed from the work camps and disposed to areas approved by local authorities. - Contractor to reuse materials whenever feasible to reduce waste. - Prohibit burning of construction and domestic wastes. - Recyclables shall be recovered and sold to recyclers. - Residual and hazardous wastes shall be disposed of in disposal sites approved by local authorities. - Ensure that wastes are not haphazardly dumped within the project site and adjacent areas. - Workers camp location and facilities shall be located at least 500 m from residential area and agreed with local communities and local officials. - Drainage shall be provided to facilitate the rapid removal of surface water from all areas and prevent flooding and accumulation of stagnant water. - Wastewater effluents from contractors' workshops and equipment washing-yards will be passed through gravel/sand beds and all oil/grease contaminants will be removed before wastewater is		

Types of Investment	Risks & Impacts	Proposed Mitigation Measures	ESS	Project Stage/ Responsibility
		discharged. Oil and grease residues shall be stored in tightly covered drums. Such wastes shall be disposed consistent with national and local regulations. - Construction/workers camps shall be cleaned up after use to the satisfaction of MRD and local community. All waste materials shall be removed and disposed to disposal sites approved by local authorities. - Land used for campsites shall be restored to the original condition as far as practicable and the area shall be planted with appropriate trees/shrubs as soon as practicable after it is vacated and cleaned.		
	Noise & Vibration	- Avoid night-time construction in village areas. - Use noise-control and abatement methods such as fences, barriers, in urban areas. - Minimize project transportation through community areas where possible. - Ensure proper maintenance and proper operation of construction machinery to minimize noise generation. - Where possible, maintain existing trees, bushes, vegetated areas, to prevent part of sound (that may be generated from construction site, vehicle, operating heavy equipment) from reaching nearby residential areas. - No noisy construction-related activities will be carried out from 21:00 hours to 06:00 hours along residential areas, hospitals, schools and other sensitive receptors. - Noisy construction activities will be avoided during religious or cultural events in close proximity to the subproject such as Friday prayers attended by Muslim Cham (if relevant), when ethnic Khmer are attending temple festivals or holding weddings, or similar applicable to IP if relevant, etc. - All construction equipment and vehicles shall be well maintained, regularly inspected for noise emissions, and shall be fitted with effective muffler and other appropriate noise suppression equipment consistent with applicable national and local regulations. - Use only vehicles and equipment that are registered and have necessary permits. Truck drivers and equipment operators shall avoid, as much as possible, the use of horns in densely populated areas and where there are other sensitive receptors found such as schools, temples, hospital, etc. - Impose speed limits on construction vehicles to minimize noise emission along areas where sensitive receptors are located (houses, schools, temples, hospitals, etc. - Provide temporary noise barriers (3–5-meter-high barrier can reduce 5–10 dB(A)), as necessary, if site works will generate high noise levels that could disturb nearby households, hospital, school and other sensitive receptors. - Restrict use of vibrating rollers and operation of heavy equipment near sensitive structures.	ESS1 ESS3	During construction/ Contractors
	Soil pollution	**In construction** - Schedule construction activities during the dry season as much as possible. - Store fuels, oils, and chemicals safely in areas on an impermeable surface with proper containment berms. Spillage of oil and chemical must be handled immediately to prevent infiltration. - Cover all restored areas with topsoil and re-vegetate (plant grass, fast-growing plants/trees) construction areas quickly once work is completed.	ESS1 ESS3	During construction/ Contractors

Types of Investment	Risks & Impacts	Proposed Mitigation Measures	ESS	Project Stage/ Responsibility
		Solar panel (used in irrigation) - Solar panels are made up of glass, metal, and plastic which can be used again once the panel has reached its life end. Recycling solar panels could be started by separating and isolating all the constituent components, including the special photovoltaic panel glass, aluminum frame, connection box, and connection cables. A local professional recycling unit should be identified to proceed reclycing. - Avoid throwing, burying unused batteries and panel in the field or at home which may cause soil pollution		
	Impacts on Flora and Fauna	- No cutting of trees or destruction of vegetation will be allowed other than on the construction site. - No hunting, fishing or collection of animal and plant materials will be permitted. - Choose siting of construction works to avoid the cutting and clearing of mature shady vegetation. - Inspection to ensure replanting and restoration work completed. - River biota and fisheries will be assessed as part of ESMP preparation for site-specific water structure works. Mitigation measures will be in place and will be implemented as part of Contractor's ESMP and is subject to PMU periodic monitoring and PMU's independent monitoring. River biota and fisheries assessment should also be based on seasons for water structure work where construction takes place across seasons. - Ensure for migratory fish passage/ladder - Chance Find Procedure include requirements that that if such above species are found, they must be kept intact, protected, and immediately reported to relevant site managers for appropriate handling. Wild animals spotted on the construction sites must not be caught for sale and/or consumption in any way.	ESS 1 ESS 3	Pre- and during construction/ Contractors
	Hazardous and Non-hazardous Waste	Segregate waste (e.g. hazardous and non-hazardous), collect, store and transport waste to designated waste disposal sites. **For hazardous waste in construction** - Setting up a systematic waste management and chain of custody system considering waste reduction at source, recycling, temporary storage, transport, and final disposal. - Develop procedures for the safe collection, storage, transport, and disposal of project hazardous waste at licensing/permitting site. - Never dispose spent oil on the ground and in water courses as it can contaminate soil and groundwater (including drinking water supplies). - Have a diluted wash wastewater disposal ground tank with internal water proofing layer to protect leakage. - Store fuel and hazardous substances and wastes on bunded paved area with roof and interceptor traps so that accidental spills do not contaminate the environment. If spills or leaks do occur, undertake immediate clean up.	ESS 1 ESS 3	During construction/ Contractors

Types of Investment	Risks & Impacts	Proposed Mitigation Measures	ESS	Project Stage/ Responsibility
		- Train relevant construction personnel in handling of fuels and other hazardous substances as well as spill control and clean-up procedures. - Ensure availability of spill clean-up materials (i.e. absorbent pads, etc.) specifically designed for petroleum products and other hazardous substances where such materials are being stored. - Segregate hazardous wastes (oily wastes, used batteries, fuel drums) and ensure that storage, transport and disposal shall not cause pollution and shall be undertaken consistent with national and local regulations. - Store waste oil, lubricant and other hazardous materials and wastes in tightly sealed containers to avoid contamination of soil and water resources. - Ensure all storage containers of hazardous substances and wastes are in good condition with proper labelling. - Regularly check containers for leakage and undertake necessary repair or replacement. - Store hazardous materials above flood level. - Storage areas for fuel, oil, lubricant, bitumen and other hazardous substance will be located at least 100 m away from any watercourses. - Storage, transport and disposal of hazardous wastes, including spill wastes, shall be consistent with national and local regulations. - Wherever possible, refueling will be carried out at a fuel storage area. - Refueling shall not be permitted within or adjacent to watercourses. - Where significant amount of oily wastewater or spill/leakage of oil and grease may occur (i.e. equipment maintenance areas), drainage leading to an oil- water separator shall be provided for treatment of wastewater. The oil-water separator shall be regularly skimmed of oil and maintained to ensure efficiency. - Vehicle maintenance and refueling will be confined to designated areas in construction sites designed to contain spilled lubricants and fuel. - Adequate precaution will be taken to prevent oil/lubricant/hydrocarbon contamination of channel beds. Spillage if any will be immediately cleared with utmost caution to leave no traces. - All areas intended for storage of hazardous materials will be quarantined and provided with adequate facilities (i.e. firefighting equipment, sorbent pads, etc.) to combat emergency situations complying with all the applicable statutory stipulation. - For canal rehabilitation works, the project will have proper sludge handling and management procedures under ECoPs to manage the excavated sludge materials and to prevent harmful exposure to workers and surrounding communities. **For hazardous waste in agricultural production** - Crop residue: straw and stub should be collected for use as animal feed or for other purpose such as for mushroom growing, or for sale, or reuse for other farming purpose (e.g. incorporating into soil to improve soil fertility)		

Types of Investment	Risks & Impacts	Proposed Mitigation Measures	ESS	Project Stage/ Responsibility
		- Empty pesticide containers: collected and kept appropriately as per recommendation in IPM good practices. Never through and leave empty pesticide contain in the field which may contaminate soil and surface water which may affect aquatic animal and even human. **For non-hazardous waste** - Reduce, recycle, and reuse waste [e.g. plastic wastes, electronic waste, agricultural waste (natural, animal faeces for later use as manure, plant waste)] wherever and whenever possible. - Latrines must be built at construction site and camp site for appropriate domestic waste management. **For dredging materials** - Use or reuse the dredge material on properties with a residential or recreational use - Prepare short-term placement of dredge material during off-loading or re-handling activities. The quantity of dredge material to be stored at the site must not exceed the quantity of material that can reasonably be managed at the site during the construction periods - Dewatering the dredge material prior to reuse of the materials - Manage dredge material in a manner so as to minimize the amount of material returned by spillage, erosion or other discharge to waters during transportation activities		
	UXO	- An UXO clearance plan will be developed as part of site-specific ESMP, and is implemented before commencing project activity. - Conduct assessment of UXO risks before site clearance. UXO screening/assessment will be carried by certified UXO experts before any physical/construction activities, including mobilization of contractors to construction site, are allowed. - In case UXOs are found by certified experts during on-site screening, removal of UXO will be carried out by certified experts. - A UXO clearance certificate shall be obtained from related authority for each subproject prior to commencing any subproject activities - As part of site-specific ESMP, conduct training and awareness activities for local community with regards to UXO risks and chance finds. - Chance Finds Procedures	ESS 1 ESS 3	Pre-construction / Contractors
	Quarry and Borrow Sites	- Sourcing of quarry and borrow materials from existing licensed sites shall be preferred over establishment of new sites, as much as possible. - Quarries and borrow pits shall not be established in national, provincial, district and village conservation forests and other ecologically sensitive and protected areas. . The required materials are to be sourced from the qualified and licensed quarries. You may put the quarries and burrow pits in the separate phrase. - Borrow/quarry sites shall not be located in productive land, avoid land acquisition and following the RPF.		Construction / Contractors

Types of Investment	Risks & Impacts	Proposed Mitigation Measures	ESS	Project Stage/ Responsibility
		- In case the Project will involve new quarry/borrow sites/spoil disposal sites, environmental assessment and approvals will be needed. Such sites shall be located over 500 m away from residential, school, hospital and other sensitive receptors. - Prior to extraction, topsoil (about 15 cm) shall be stockpiled, preserved and then refilled after completion of quarry/borrow pit operation for rehabilitation purposes after excavation is over. - Dust control during excavation and transport (i.e. water spraying on access roads and provision of truck cover) shall be undertaken in areas where there are sensitive receptors such as residential areas, school, hospital, etc. - Long-term material stockpiles shall be covered to prevent wind erosion. - During quarry and borrow site operation, provide adequate drainage to avoid accumulation of stagnant water. - The use of riverbed sources shall be avoided, as much as possible. However, if this is unavoidable, the contractor shall minimize use and avoid small rivers and streams. Alluvial terraces or alluvial deposits which lie on the riverbeds but not covered by water in normal hydrological conditions shall be preferred. Extraction of these materials, if necessary, shall have prior approval from MOWRAM, MOE and provincial authorities. - Confine quarrying of river bed materials to less than 20% of river width in any location and keep away from river banks. Extraction of materials shall have prior approval from MOWRAM, MOE and relevant provincial authorities. - In case riverbed material is extracted, protect and reinstate riverbanks in case unexpected erosion occurs. - Quarry and borrow sites must be selected amongst those offering the highest ratio between extractive capacity (both in terms of quality and quantity) and loss of natural state. - Upon completion of extraction activities, re-contour borrow/quarry pit wall or fill-up when there are available and suitable materials such as excavation spoils, replace topsoil, and re-vegetate with native species such as grasses and fast- growing shrubs and trees. - Upon completion of extraction activities, borrow pits shall be dewatered and fences shall be installed, as appropriate, to minimize health and safety risks. - Borrow pits will be left in a tidy state with stable side slopes and proper drainage in order to minimize soil erosion, siltation of nearby bodies of water and to avoid creation of water bodies favorable for mosquito breeding. - To avoid or prevent people from drowning when pits become water-filled, measures such as fencing, providing flotation devices such as a buoy tied to a rope, etc. shall be implemented. - It is possible that villagers may request borrow pits to be left excavated so that they may be used as water reservoirs or fishponds. If this were to be agreed between the contractors and the villagers, all the full safety measures detailed above must be observed. Such agreements would be formalized in writing between the contractors and the villagers after full discussion with all concerned parties.		

Types of Investment	Risks & Impacts	Proposed Mitigation Measures	ESS	Project Stage/ Responsibility
	Biodiversity	- Strip and store topsoil separately, in the nearest location clear of vegetation; - Pile up excavated earth separately from topsoil, in the convenient location clear of vegetation; - Minimize the time of keeping the excavated tranches open; - Backfill excavated material to full extent and remove residual amount to the preliminary agreed upon location; - Reinstate the work site by spread topsoil and stimulating re-vegetation as appropriate; - Apply slope stabilization techniques (terracing, drainage, gabions, greening, etc.) as appropriate on the steep slopes prone to erosion; - Do not extract gravel from watercourses. Mine for the material in the river bed away from the water rivers and reinstate the area by leveling; - Ensure proper lining of canals and adequate assembling of pipes to avoid water filtration, which may cause soil erosion along canals.	ESS 1 ESS 3 ESS 6	During construction / Contractors
	Protected Areas, wetlands, biodiversity zones	- Screening would need to be undertaken to assess whether PAs or other zones are impacted. The project will not finance the subproject that could lead to depletion of critical habitats such as wildlife sanctuaries and/or protected areas or those that may cause deforestation. - If necessary, MOWRAM will undertake the preparation of Biodiversity Management Plans to ensure any impacts and mitigation measures are properly identified and assessed.	ESS 1 ESS 3 ESS 6	During design / PMU
	Damage to community facilities/ Disruption to access	- Every effort and care will be exercised by contractors and subcontractor not to damage existing public facilities such as irrigation channel, cable, electricity lines, roads, paths, etc. - If damaged, contractors will repair damaged facilities at Contractor's costs and restore the functionality of the damaged facilities shortly – to the satisfaction of the community, so as not to affect community's living and production activities. - Contractors and subcontractors will take necessary measures to avoid disruption of access by local people to their home, road, path leading to the field, or irrigation channels, etc., which affect their daily living and production activities.		During construction / Contractors
	Social			
	Land Acquisition & Economic Displacement	- Avoid/minimize impact on land, assets on land, and land-based livelihood activities. - Where avoidance is not feasible, prepare Resettlement Plan, including livelihood restoration measures where necessary.	ESS 1 ESS 5 ESS 7	Pre-construction / PMU
	Labor Influx	- Recruit a portion of the workers required for the project locally. Bid and contract documents will encourage contractors to hire local workers. - Train local workers within a reasonable time frame to meet project requirements. Costs for training will be borne by contractors. - Manage workers accommodation (commute or reside on site) effectively depending on project's need. - Avoid and when avoidance is not possible, minimize and manage laborLabor influx.	ESS 1 ESS 2 ESS 7	During construction / Contractors, PMU

Types of Investment	Risks & Impacts	Proposed Mitigation Measures	ESS	Project Stage/ Responsibility
		- Prepare Code of Conduct (CoC), inform and train workers in the CoC and ensure it is signed by all workers. - ImplementSEA/SH training. - Ensure equal pay for equal work for women. - Hiring of people under 18 years of age is not permitted.		
	SEA/SHLabor	- Explicitly state zero tolerance for sexual harassment, exploitation, and abuse within the workplace. - Require CoC to be signed by all construction workers. - For victims coming forward: referral to qualified SEA/SH service provider. The GRM will include a confidential channel for reporting SEA/SH. - Strict Code of Conduct for workers with no tolerance for physical or verbal abuse of women or children - Training to workers on maintaining good community relations, with emphasis on proper conduct around women and children. - Training on SEA/SH and VAC for community members, in particular women and girls (may be done separately for men and women). - Ensuring workers sites are situated (at least 500m) from schools and/or other areas where children congregate. - Children prohibited from construction site and worker's camp. - Ensure access to grievance redress mechanisms. - Support (in the form of training, awareness raising, etc.) to local law enforcement to act on community complaints regarding SEA/SH and VAC. - Provision of information to local communities about the contractor's policies and responsibilities, including the Contractor's Code of Conduct and minimum working age (see Annexes 5.2 & 5.3). - Provide counselling services for male and female workers, wives and other female partners of contractors workers. - Build partnerships with local health providers and SEA/SH service providers to conduct community awareness activities, and referrals. - Implement public awareness campaigns to address sexual harassment in transport services and hubs, and training of police on women's security needs when using transport.Labor	ESS 1 ESS 2	Pre- and during construction / Contractors, PMU
	Social Conflicts	- Inform local officials and affected residents, regularly and in advance, of the location and schedule of construction activities which may cause impacts on the environment and life of people. - Ensure construction camps are located at least 500 m away from communities to avoid social conflict in using resources and basic amenities such as water supply and to avoid close contact between workers and the community (in particular children). - Ensure all workers engaged by contractors (both main and subcontractors) read and sign Worker's and Manager's Conduct of Conduct (Annex 2.2 and 2.3). - Maximize number of local people employed in construction and non-construction jobs and provide on the job skills training for local people employed.		Pre- and during construction / Contractors

Types of Investment	Risks & Impacts	Proposed Mitigation Measures	ESS	Project Stage/ Responsibility
		- Maximize goods and services sourced from local commercial enterprises. - Ongoing consultations and awareness raising of local communities and raising awareness in each community on GRM.		
	Water Use Conflict between Upstream and Downstream	- During subproject design, water availability, storage capacity, and water needs of upstream and downstream population is calculated to inform design, and water use coordination during project operation. - Water user groups should be established for upstream and downstream population and should be coordinated by a higher level committee/group to negotiate and optimize water coordination - Guidelines/Manual should be developed (under Subcomp 3.2) to provide guideline for upstream and downstream communities at subprojects to meet, discuss, and achieve consensus on how water is distributed for equal use between upstream and downstream population	ESS 1 ESS 7 ESS 10	Design, Operation/ PMU/Local governments/ Farmers Water Users Group
	Exclusion of Disadvantaged/ Vulnerable Groups	- Vulnerable/Disadvantaged group will be identified for each subproject (based on guidance from SEP) - Consultation is conducted with identified groups using the consultation methods (based on guidance from SEP) - Needs and expectation of vulnerable group is assessed in relation to the overall intended benefit of the subprojects which include both irrigation access (Comp 2) and access to improved farming technologies that are appropriate to the groups (e.g. culturally appropriate for EM peoples)	ESS 1 ESS 7 ESS 10	Design, during construction / Contractors, PMU
	Elite capture	- Consultation will be conducted farmers in potential command area, focusing on vulnerable/disadvantaged groups - Alternative livelihoods for vulnerable group are identified based on their needs vis-à-vis project's investment eligibility - Conduct consultation at community level (in the command area) to achieve a consensus on how water needs is balanced between different groups in one command area.	ESS 1 ESS 7 ESS 10	Design, Operation / PMU
	Health and Safety Impacts	- Display safety warning signs in all workplaces where safety hazards are present. - Provide all necessary protective equipment for workers exposed to hazardous and danger activities. - Maintain first aid kits on site for construction workers. - Provide clean potable water on site. - Deliver training on ECoPs to all construction workers. - Provide occupational health and regular safety training and toolbox briefings. - Make sure all construction workers are aware of the GRM and that they can access it.	ESS 1 ESS 2 ESS 4	
	Community Health and Safety	- Fence off all work sites adjacent to communities to avoid unauthorized access to the project sites and to prevent potential injuries. - Display warning signs including at unsafe locations. - If school children are in the vicinity, include traffic safety personnel to direct traffic during school hours.	ESS 1 ESS 2 ESS 4	Pre- and during construction / Contractors

Types of Investment	Risks & Impacts	Proposed Mitigation Measures	ESS	Project Stage/ Responsibility
		- Control driving speeds of project vehicles particularly when passing through communities or nearby schools, health centers or other sensitive areas. - Make sure the community is aware of the GRM and that they can access it. - Appoint an Environmental Health and Safety Officer (EHSO) who shall be responsible for training, monitoring and reporting on ESHS concerns and implementing health and safety related-programs. - Conduct orientation for construction workers regarding emergency response procedures and equipment in case of accidents (i.e. head injury from falling, burns from hot bitumen, spills of hazardous substances, etc.), fire, etc.; health and safety measures, such as on the use of hot bitumen products for paving of project roads, etc.; prevention of HIV/AIDS, malaria, diarrhea, and other related diseases, as well as Code of Conduct (including discussion of SEA/SH/VAC). - Regularly train/remind drivers of strictly observing speed limits and exercise good driving practices when driving construction supported vehicles through residential areas as well as other sensitive areas such as schools, pagodas, hospitals, markets, and other populated areas, including parking. - Educate drivers on safe driving practices to minimize accidents and to prevent spill of hazardous substances and other construction materials by providing covers over transporting dump trucks. - Barriers (i.e., temporary fence) shall be installed at construction areas to deter pedestrian access to these areas except at designated crossing points. - Sufficient lighting at night as well as warning signs shall be provided in the periphery of the construction site. - The general public/ local residents, and in particular children, shall not be allowed in high-risk areas, i.e., excavation sites and areas where heavy equipment is in operation. - Provide fencing on all areas of excavation greater than 2m deep. - Ensure reversing signals are installed on all construction vehicles. - Measures to prevent malaria if in areas where malaria is an issue, shall be implemented (i.e. provision of insecticide treated mosquito nets to workers, spraying of insecticides, installation of proper drainage to avoid formation of stagnant water, etc.). - Discharge of untreated sewage shall be prohibited. - Conduct road safety trainings for workers and roadside community. - Provide trainings on HIV/AIDS and STDs to workers and the community (separately) - Provide trainings on SEA/SH and VAC to workers and the community (separately) - Ensure particular attention is provided to the needs of women and other vulnerable persons. For instance, specific trainings for them should be facilitated by appropriate trainers (i.e. women-only training on HIV/AIDS and/or SEA/SH should be led by a female trainer). - Ensure access to grievance redress mechanism. - Ongoing consultations and awareness raising of local communities.		
	Dam Safety	- Adopt recommendations from dam safety reports, including recommendation from dam safety due diligence, proposed emergency preparedness and response plan	ESS 1 ESS 2 ESS 7	Design, Construction, Operation /

Types of Investment	Risks & Impacts	Proposed Mitigation Measures	ESS	Project Stage/ Responsibility
		- As part of dam safety assessment, an independent dam specialist will be engaged to: (i) inspect/evaluate safety status and its performance history, review/evaluate the operations and maintenance (O&M) procedures, and provide a written report of findings and recommendations for any remedial or safety-related measures; (ii) based on the results from the assessment, the project will develop relevant instruments: (a) for those dams with low and moderate risks: ESMP/IEE will be prepared, or (b) high risk subprojects will not be financed under the project. - The project will also develop the Emergency Preparedness and Response Plan for each dam and will adopt recommendations from all relevant dam safety reports/plans.	ESS 10	PMU, Contractors, PoWRAM
	Child Labor	- Apply LMP for age check prior to engagement of labor		
	Underpaid pay and unequal treatment	- Encourage Contractors to provide equal pay for men and women doing the same type and amount of works, particularly when works are offered to unskilled, local workers (including ethnic minority)		
	Road and Traffic safety	- Conduct public awareness raising activities (IEC) to ensure local people and road user are aware of road safety regulations and risks and take action accordingly while using road; - Monitor and observe speed limit;		
	Disease contraction/ transmission	- Conduct public awareness raising activities (IEC) to ensure local people and contractors know about the risks of contracting and spreading communicable diseases (e.g. COVID-19, HIV/AIDS) - In the event of disease outbreak (e.g. COVID-19), provide immediate training/awareness raising to the risk groups. - Contractor's workers will be trained on communicable diseases prior to mobilization to construction sites. - For water-borne diseases that arise due to polluted or contaminated water, mitigations measures may include: ○ Ensure the water is visibly clean and free from sand and silt. Filter the water to get rid of visible dirt. ○ Drink only clean and safe water – either portable water or water filtered through water purifiers. ○ Get water purifying devices like filters, RO unit, etc., regularly serviced and maintained. ○ Ensure stored water is germ-free. ○ Add antiseptic liquid, such as Dettol in dubious-looking bathing water. ○ Hand hygiene – regularly wash hands with soap after returning home, after using the toilet, before and after preparing food, before eating or drinking anything. ○ Teach hand hygiene to children. Children should make it a habit to always wash hands when returning home after playing games. ○ Ensure food is washed and thoroughly cooked.		

Types of Investment	Risks & Impacts	Proposed Mitigation Measures	ESS	Project Stage/ Responsibility
		○ Use disposable glass and plates whenever possible when eating outside food, particularly street food. ○ Avoid eating stale cooked food, unrefrigerated food kept exposed outside for long hours. - Take vaccinations for immunization against preventable diseases like Typhoid, Hepatitis A, Polio, etc.		
	Hunting, trading, and consumption of animal from the wild	- Conduct public awareness raising activities (IEC) to ensure local people and contractors - Contractor's workers are trained not to consume and ask for food made from animal from the wild, and are not involved in trading of wild animals		
	Environmental and Health and Safety Impacts	- Avoid obstructing or deviating the flow of natural water (e.g. fence off water bodies from gazing animals). - Prepare an integrated pest and disease management plan. - Apply appropriate farming techniques, systems, and methods. - Apply Good Agricultural Practices wherever possible. - Avoid permanent seed production zone in one certain place. - Do crop rotation system with other cereal crops. - Use mulch, grasses, or compacted soil to stabilize exposed areas. - Regularly collect and store manure for composting to limit spread of pathogens. - Animal breeds or strains chosen should be adapted to the local climate, diseases, parasites, and nutrition. - Animals should be periodically checked for the presence of parasites, and any corrective treatment deemed necessary to prevent distress and suffering should be administered as soon as possible. - Any sick or injured animals should be treated or cared for to alleviate pain and distress as soon as practically possible, including being isolated or humanely destroyed if necessary. - Animals should be confirmed dead before disposal, and any if still alive should be euthanized immediately. Dead animals should be removed promptly and buried in an approved location. - Identify and contain sick animals and develop containment and culling procedures for adequate removal and disposal of dead animals. - Regularly clean the operational area (e.g. livestock sheds and feeding pens at breeding farms). - Regularly collect and store animal feces to reduce noxious odor (which can be later use as manure). - Ensure proper storage and disposal of all spent/expired vaccines and needles.	ESS 1 ESS 4 ESS 7 ESS 6 ESS 10	Design, Implementation/ MAFF, DAF
2. TRANSFER OF AGRICULTURAL TECHNOLOGIES Crop intensification and value chain development	**Farming ecosystem**	- Integrated Pest Management will be adopted for each command area that benefit from more reliable irrigation access from the project. - Current practices of farmers with regard to pesticide and fertilizers use will be studied as a baseline, and will be monitored and reviewed at project's mid-line and endline - Where agrochemicals such as artificial fertilizers and pesticides use is needed:	ESS1 ESS3	Design, Implementation/ MAFF, DAF

Types of Investment	Risks & Impacts	Proposed Mitigation Measures	ESS	Project Stage/ Responsibility
(Sub 3.1, 3.2, and 3.3)		→ In order to prevent, reduce, or control the potential contamination of soils, wildlife, groundwater, or surface water resources caused by accidental spills during the transfer, mixing, storage, and application of agrochemicals and pesticides, they should be stored, handled, and applied in a manner consistent with the recommendations for hazardous materials management presented in the WBG General EHS Guidelines and Good International Industry Practice (GIIP). → Prepare a pesticide management plan (PMP), if required, that includes procedures for the selection, procurement, storage, handling, and ultimate destruction of all out-of-date pesticide stocks that should be prepared in accordance with FAO guidelines and consistent with country regulations. → Personnel must have appropriate training including certification, where relevant to handle and apply pesticides safely. → Ensure that any pesticides to be used are manufactured, formulated, packaged, labelled, handled, stored, disposed of, and applied according to the FAO International Code of Conduct on Pesticide Management. → Use selective pesticides with low environmental impact quotient (EIQ) where appropriate, rather than broad-spectrum products, to minimize impacts on non-target species. - Avoid using banned or prohibited pesticides and agrochemicals and encourage using bio-control agent instead.		
	Risk of increased health problem	- Regular monitoring of surface and underground water quality and make recommendation to use of surface and underground water for domestic water use, particularly in area where water is collected for domestic use - Water quality will be tested before and after commencing intensification of crop production in the target command area	ESS 1 ESS 4	Design, Implementation/ MAFF, DAF
	Risk of loss of net income	- A business plan should be developed – at village level as a minimum, to explore how selling prices are not affected as a result of increased yield and productivity as a result of project's outcome - Contract farming should be considered at Farmers' Cooperative (Village/commune level) to enhance the bargain capacity of Farmers Cooperative - Establish partnership with private sector (through PPP) to promote long-term development of the select value chain such as for rice, bean, banana, and other select crops.	ESS 1 ESS 10	Design, Implementation/ MAFF, DAF
	Gender inequality	- As an entry point, female of beneficiary households will be invited to consultation to learn about their need from project (e.g. area of knowledge, improved cultivation techniques, loan needs, households' labor division). - Vulnerable groups will be focused to promote the participation of female in the process of technology transfer and adoption, including participation in selling/marketing produce and in value chain development.	ESS1	Design, Implementation/ MAFF, DAF

Types of Investment	Risks & Impacts	Proposed Mitigation Measures	ESS	Project Stage/ Responsibility
	Greenhouse gas emissions	- Promote use of Alternative Wet Dry (AWD) - Pilot monitoring of GHS emission		
	Exclusion and Potential Impacts on Vulnerable/ Disadvantaged Groups	- Apply SEP to identify vulnerable groups and apply/conduct recommended consultation methods to solicit feedback from vulnerable groups	ESS 1 ESS 10	Design, Implementation/ MOWRAM
3. TECHNICAL ASSESSMENT & POLICY ACTIONS (**Sub-Component 1.2**– National Policies and Institutional Strengthening, **Sub-Component 1.3–** Strengthening of basin governance and planning	**Lack of E&S Mainstreaming**	- All financing for policy actions, such as revision/formulation of a) legal documents, b) technical guidance/manuals, and so forth, that target water use/water use coordination at sub-basin/ river basin level, are subject to E&S screening for potential impact on the community, particularly vulnerable/disadvantaged group of such affected community. - All policy actions will be subject to Environmental and Social Impact Assessment (ESIA) to assess distributional impact of the financed policy actions. ESIA is an *ex-ante* analysis of expected poverty and social effects of policy actions to inform policy design. - In this project, ESIA is required to: o Focus on risks and impacts of proposed policy action on vulnerable/disadvantaged group; o *Ex-ante* impact of policy actions will be conducted using qualitative methods. Findings from ex-ante assessment will be monitored and evaluated as part of mid-line and endline evaluation of the project o Where impacts are potential significant, quantitative methods (e.g. water modelling) may be required to ensure intended impact are predicted with reliability based on which mitigation measures are proposed to address potential adverse impacts, particularly adverse impacts on vulnerable groups.		Design, Implementation/ MOWRAM, PDWRAM, MAFF, DAF

5.2 APPROACH TO CUMULATIVE IMPACT ASSESSMENT

5.2.1 Purpose of Rapid Cumulative Impact Assessment (RCIA)

The implementation of infrastructure investment (Component 2) and non-infrastructure investments (under Component 3) for selected subprojects are expected to result in cumulative impacts over the project lifespan and larger geographical area at sub-basin/basin levels. The identification and management of cumulative impacts will be limited to those effects generally recognized as important based on a) **scientific concerns** and/or b) **concerns of affected communities** (including both adversely affected people and project's beneficiary community).

As a preliminary approach, a Rapid Cumulative Impact Assessment (RCIA) - a simplified version of a CIA – will be conducted based on the outcome of the E&S screening of the proposed subprojects. The RCIA can be an integral component of the ESIA/EIA or a separate process (i.e., standalone RCIA). The RCIA will be conducted in accordance with the IFC Good Practice Handbook: Cumulative Impact Assessment and Management. It entails a desk review of available information, including existing ESIAs, strategic, regional, and/or resource planning documents, and reports from nongovernmental organizations (NGOs), the scientific community and other interested parties. The assessment will follow the six-step RCIA process outlined in the IFC Good Practice Handbook; described in Section 5.2.2 below.

The RCIA to be carried out under this project aims to:

- Evaluate the contribution of the relevant CWSIP's subprojects – including its associated facilities – towards cumulative impacts on Valued Environmental and Social Components or VECs;
- Assess the status and condition of each VEC;
- Assess cumulative impacts of the subprojects in conjunction with other projects/investments (past, present and future) on the VECs;
- Identify appropriate actions for the subprojects to address their contribution to cumulative impacts and identify additional management actions beyond the project level to manage cumulative impacts for each VEC.

5.2.2 Steps for RCIA Implementation

Step 1: Scoping: Identification of Valued Environmental Components (VECs) and Spatial and Temporal Boundaries

The objectives of this step are:

- Identify and agree on Valued Environmental and Social Components (VECs) in consultation with stakeholders.
- Determine the time frame for the analysis.
- Establish the geographic scope of the analysis for each VEC.

During this step, the following key questions would be answered:

- Whose involvement is key?
- Which VEC resources, ecosystems, or human values are affected?
- What is the temporal boundary of the project?
- What are the spatial boundaries of identified VECs?
- Are there concerns from existing cumulative impacts?

Step 2: Identification of other Projects, Activities and External Stressors

The objectives of this step include:

- Identify other past, existing, or planned activities within the analytical boundaries.
- Assess the potential presence of natural and social external influences and stressors (e.g., droughts, other extreme climatic events).

The following key questions would be answered during this step:

- Are there any other existing or planned activities affecting the same VEC?
- Are there any natural forces and/or phenomena affecting the same VEC?

Step 3: Establish Baseline Conditions of VECs

Objectives of this step include:

- Define the existing condition of each VEC.
- Understand its potential reaction to stress, its resilience, and its recovery time.
- Assess trends.

Questions to be answered in this step include:

- What is the existing condition of the VEC?
- What are the indicators used to assess such condition?
- What additional data are needed?
- Who may already have this information?

Step 4: Assess Cumulative Impacts on VECs

Objectives:

- Identify potential environmental and social impacts and risks on the VEC.

Questions to answer:

- What are the key potential impacts and risks that could affect the long-term sustainability and/ or viability of each VEC?
- Are there known or predictable cause-effect relationships?
- Can these impacts and risks interact with each other?

Step 5: Assess Significance of Anticipated Cumulative Impacts

Objectives:

- Define appropriate “thresholds” and indicators.
- Determine impact and risk magnitude and significance of cumulative impacts in the context of past, present, and future actions.
- Identify trade-offs.

Questions to answer:

- Do these impacts affect the sustainability and/or viability of the resource and/or VEC?
- What are the consequences and/or trade-offs of taking the action versus no action?

Step 6: Design and Implement Cumulative Impact Management Measures

Objectives:

- Use the mitigation hierarchy.
- Design management strategies to address significant cumulative impacts on selected VECs.
- Engage other parties needed for effective collaboration or coordination.

- Propose mitigation and monitoring programs.
- Manage uncertainties with informed adaptive management.

Questions to answer:

- How can cumulative impacts be avoided, minimized, and/or mitigated?
- How can the effectiveness of proposed management measures be assessed?
- What are the triggers for specific adaptive management decisions?

5.2.3 Conducting a Rapid CIA (RCIA)

For 2 subprojects identified during project preparation (including Svay Chrum, Kantout, and Srae Huy Schemes)

1. In Year 1, Svay Chrum and Kantout Schemes which are located Prek Te river basin in Kratie Province would be selected for a the RCIA.
2. The nature of this proposed RCIA will be ex-ante[16] and will be based on 1) scientific concerns, 2) concerns of affected communities within the sub-basin, or beyond the sub-basin located downstream, 3) consultation with the WB and concerned project stakeholders and interested stakeholders.
3. Based on the output of step 2, a list of VECwill be proposed to define the scope of the proposed RCIA.
4. Once the above is completed, the TOR for the proposed RCIA will be developed with reference to the sample TOR provided in Annex 5.2

For new subprojects to identified during project implementation, the decision to conduct a Rapid CIA will be based on a) E&S screening of subprojects, b) ESIA/EIA results, and c) consultation with WB and project stakeholders (e.g affected water dependent downstream community, particularly vulnerable/disadvantaged groups).

6. PROCEDURES FOR ENVIRONMENTAL & SOCIAL RISK & IMPACT MANAGEMENT

6.1 SCREENING

This section describes steps that Project Implementation Units of MOWRAM and MAFF will use to screen for E&S risks and potential impacts associated with subprojects, activities, policy actions, technical assistance that come under Component 1 (Building foundations for improved water resource services), Component 2 (Sustainable Water Service Delivery) and Component 3 (Increased Agricultural Productivity at Farm Level), and Component 5 (Contingency Emergency Response Component).

The purpose of E&S screening is to ensure only subprojects and investment activities that meet pre-defined criteria are considered for financing. The pre-defined criteria aim to avoid financing subprojects of significant adverse social and environmental impacts that cannot be adequately mitigated during project implementation. It is noted that the ES screening execise is reiterative by nature and could be repeated from time to time considering new information that may become available during subproject/activities/TA preparation.

[16] Ex-ante effect is assessed based on either modeling of original data collected under the Project, or on secondary data sources that are plausible to make an informed judgement.

6.1.1 Screening Procedure for Component 2 (Sustainable Water Service Delivery)

This subcomponent finances:

- Rehabilitation and modernization of existing irrigation facilities (weirs, canals and reservoirs);
- Rehabilitation of multi-purpose reservoirs for water supply, irrigation and flood control;
- Piloting of NbS to manage extreme climate events, including floods and droughts;

For civil works subprojects that support rehabilitation of existing reservoir, weir, regulators, extension of water distribution system, etc., the following steps will be followed:

Step 1. Conduct E&S and technical screening for candidate subprojects

This step involve two stages:

- ***Eligibility Screening:*** all proposed subprojects (rehabilitation of reservoirs, weirs, regulators, and construction of water supply treatment plant, …) will be screened vis-à-vis the Negative List (see Annex 1.1 for Component 1). Only subprojects that pass all criteria in the Negative List are advanced to next stage – Technical Screening (See Annex 1.2). It is noted that any subprojects that meet one of the negative criteria is deem ineligible for project financing.
- ***Technical Screening:*** Subprojects that pass Eligibility Screening will undergo Technical Screening which covers screening for E&S risks and impacts and other technical aspects required for the viability and cost-effective of a subproject (See Annex 1.2). The purpose of the Technical Screening is: (i) identify the World Bank's ESS that are applicable; (ii) assess to see if subprojects are likely high risk or not; (iii) conduct E&S scoping to validate subproject risk classification.

Step 2. Selection of ESF Instruments

- Based on the preliminary E&S risks and impacts, an instrument will be prepared to address the identified E&S risks and impacts. Key subproject-level instruments may include:
  - Site-specific instrument(s) (site-specific full ESIA or site-specific ESMP or ECoP);
  - Abbreviated/Resettlement Plan,
  - Ethnic Minority Development Plan,
  - Pest Management Plan,
  - Environmental Codes of Practice (ECoP),
  - Dam Safety Assessment,
  - Emergency Response and Preparedness Plan,
  - Biodiversity Assessment/ Biodiversity Management Plan
  - Due Diligence report

These above instruments shall be prepared in line with this ESMF, and relevant RPF, IPPF, SEP and LMP, as well as the World Bank's ESF and relevant Government's legislation.

6.1.2 Screening Procedure for Component 3 (Increased Agricultural Productivity at Farm Level)

This component will finance:

- Increased Agricultural Productivity through Integrated Crop Water Management;
- Enhanced Capacity for Scaling up of Water and Crop Productivity Improvement Techniques;
- Increased Public Private Partnerships for Agritrade Promotion and Sectoral Improvement.

For subprojects that build collection centers, storage facilities, rural roads, market sheds, training centers etc;

Step 1. Conduct E&S and Technical Screening for candidate investment activities

This step involves two stages:

- ***Eligibility Screening:*** all subprojects (e.g. collection centers, storage structure, roads to markets, market sheds etc; farm mechanization …) will be screened vis-à-vis the Negative List (see Annex 1.1 for Component 2). Only investment activities that pass all Negative List are subject to Technical Screening (Appendix 1).
- ***Technical Screening:*** investment activities that pass Eligibility Screening will undergo Technical Screening which covers screening for E&S risks and impacts and other technical aspects required for the viability, cost-effectiveness and sustainability of the proposed investment (See Annex 1.2). The purpose of the Technical Screening is: (i) identify the World Bank's ESS that are applicable; (ii) classify investment into a E&S risk category (low, moderate, significant, and high); (iii) conduct E&S scoping and identify the ESF instrument that needs to be prepared (e.g. site-specific ESMP, ECoP).

Step 2. Selection of ESF Instruments

- Based on the preliminary E&S risks and impacts, an instrument will be prepared to address the identified E&S risks and impacts. Key subproject-level instruments may include:

    - Site-specific instrument(s) (site-specific full ESIA or site-specific ESMP);
    - Abbreviated Resettlement Plan,
    - Environmental Codes of Practice (ECoP),
    - Emergency Response and Preparedness Plan,
    - Due Diligence report

6.1.3 Screening Procedure for Component 1 (Building foundations for improved water resource services)

This component will finance:

- Development of River Basin Management Plans and Strengthening formation of River Basin Councils;
- Water Allocation Planning and Enhanced Coordination; and
- Addressing sustainable operation and management of built infrastructure.

For policy action and technical assistance (TA) that involve water use planning, water use coordination at sub-basin, basin, and national level (e.g. decree, sub-decree, national guidance…) with involvement of various stakeholders, including water user community, the following steps will be followed:

Step 1. Conduct E&S Screening for target policy actions and Technical Assistances

- *Eligibility Screening:* all policy actions and TAs will be screened vis-à-vis the Negative List (Annex 1.2 – Component 1). Only activities that pass the Negative List are screened for E&S Risks and Impacts (Annex 1.2).
- *E&S Risk and Impact Screening:* all subprojects are subject to E&S Risk and Impact Screening (using Annex 1.2) to assess the scope of E&S risks and impacts on water use community, particularly those who are from vulnerable/disadvantaged groups.

Step 2. Conduct Environmental and Social Impact Assessment (ESIA)

Step 2 is proceeded E&S risk and impact screening from step 1 indicates there are potential adverse impacts on the population affected by the policy action. The purpose of ESIA is to analyse/assess the distributional impact of target policy reforms on the well-being or welfare of different stakeholder groups, with particular focus on the poor and vulnerable.

- A Terms of Reference will be prepared by MOWRAM with inputs from MAFF. TORs will be subject to Bank's review prior to implementing the ESIA.

- Conduct ESIA based on final TOR as per method proposed in Chapter 6 (Mitigation Measures).

6.1.4 Screening Procedure for Technical Assistance

Under CWISP, technical assistance (TA) will be provided to governmental agencies and target beneficiary groups to enable them to address existing gaps in both financing and technical capacity. The topics of the TA are wide and may include such studies as market development research, agricultural technical solutions, and policy formulation, etc. Since specific TAs have not been yet determined at this stage, during project implementation, relevant beneficiary agencies will prepare a Terms of Reference for their intended technical assistance. All ToR for TAs will be subject to review by the WB (as part of E&S screening) to ensure E&S risks and impacts that may arise as a result of the TA are identified and mitigation measures proposed.

6.2 PREPARATION OF SITE-SPECIFIC ESIA AND E&S MANAGEMENT PLAN

6.2.1 E&S Preparation and Implementation Process

Site-specific ES instruments will be prepared by MOWRAM for approved construction subprojects, which covers both rehabilitation of the reservoir (to increase storage) and repair of existing or building of new canals to increase irrigated area. Site-specific ESIAs will be prepared for all subprojects under this project. Each ES instrument sets forth specific measures that will be adopted by involved stakeholders to manage identified E&S risks and impacts during subproject design, pre-construction, construction and operation phases.

ES instruments shall be in line in accordance with the process summarized in Figure 4 below:

Figure 4 – E&S Management Implementation Process

E&S IMPLEMENTATION PROCESS	COMPONENT 2		COMPONENT 3		COMPONENT 1	
	▪ **Reservoir upgrade** ▪ **Repair/extend existing irrigation canal** ▪ **Build new irrigation canal, and road along canal**		▪ **Crop intensification** ▪ **Adopt improved agri-technologies** ▪ **Value chain development in partnership with private sector**		▪ **Policy actions (update existing legal document, develop new governmental decree/guidance)** ▪ **Technical assistance**	
	Application condition	**By**	**Application condition**	**By**	**Application condition**	**By**
1. SCREENING & SCOPING						
	1. Eligibility Screening (Negative List) 2. Technical Screening	MOWRAM			Eligibility Screening (Negative List) Technical Screening	MOWRAM
2. SELECTION AND PREPARATION OF ES INSTRUMENTS						
✓ ESIA/ESMP, including the following, where relevant	To be prepared	MOWRAM			Environmental, Social Impact Assessment (ESIA)	MOWRAM
✓ Resettlement Plan	To be prepared if there is land acquisition	MOWRAM & GDR				
✓ Pest Management Plan			Prepared for the target Command area	MAFF		
✓ Integrated Crop Management Plan			Prepared for the target Command area	MAFF		
✓ Dam Safety (DS) assessment	To be prepared	MOWRAM				
✓ Biodiversity Assessment	To be conducted as part of ESIA or	MOWRAM	WIll be conducted as part of ESIA			
✓ Emergency Preparedness Plan (DS)	To be prepared	MOWRAM				
✓ Indigenous People Plan (IPP)	If IPs are subproject beneficiaries and/or adversely affected	MOWRAM Elements of EMDP integrated into ESMP	If IPs are subproject beneficiaries and/or adversely affected			

		considering guidance from SEP on consultation with and incorporation of feedback from vulnerable groups				
ECOP, Do & Don't Do			Construction of small-scale storage/processing facilities Installation of drip irrigation, solar pumping	PDAFF		
3. REVIEW AND APPROVE		WB		MAFF		WB
4. IMPLEMENTATION		PDWRAM		PDAFF		PDWRAM
	Bidding	MOWRAM				
	Contractor's ESMP	Reviewed and Approved by MOWRAM				
5. M&E		M&E by PDWRAM Oversight by MOWRAM		M&E by PDAAF Oversight by MAFF		MOWRAM & PDWRAM

6.2.2 Responsibilities for Preparation and Bidding Documents

MOWRAM will have overall responsibility for the preparation of site-specific ESMPs, and any other instruments required, e.g. site-specific ESIA, ESIA for policy actions (if applicable), RPs, IPPs, RCIA. All documents will need to be disclosed and consulted with affected parties before review and clearance by the World Bank. Documents disclosed for consultation shall be publicly disclosed in Khmer (in Executive Summary) and in English (full text). Key E&S requirements will be included as part of the bidding documents for civil works contractors (for Component 2). Contractor would be in charge of implementation of the mitigation measures during construction while supervision consultant will be in charge of monitoring of Contractor's implementation of mitigation plan. During project implementation, site-specific ESIA will be updated to include Integrated Management Plan and Integrated Crop Management Plan (for Component 3) which will be prepared by MAFF/DAFF for each subproject.

Key ES requirements (e.g. risks and impact identification, mitigation measures, requirements on labor and working conditions will be included as part of bidding documents. The contractor will prepare a Contractor ESMP (C-ESMP) and submit it to the PMU of MOWRAM for review and approval prior to implementation.

6.3 REVIEW AND APPROVAL FOR E&S INSTRUMENTS

- **Government's review and approval.**

If a subproject requires review and approval according to the government's declaration No.021 dated on 03 February, 2020 on the Classification of Environmental Impact Assessment for Development Project, the subproject owner (respective PDWRAM) will prepare and submit Environmental Management Contract (with the Site-Specific ESMP as attachment), or an Initial Environmental Impact Assessment, or Full Environmental Impact Assessment reports for review and approval by the Department of Environmental Impact Assessment of the Ministry of Environment prior to subproject appraisal. The Department of Environmental Impact Assessment of the Ministry of Environment will review and approve in accordance with the procedures and process for reviewing and comment.

- **World Bank's review and clearance.**

All subproject ESIA (including Biodiversity Assessment), ESMPs, Rapid CIA at sub-basin/basin level), and other E&S instruments (e.g., RP, IPP) for subprojects to be prepared by MOWRAM/MAFF are subject to Bank's prior review and approval before implementation of the assessment and plans.

- **PMU Review and Clearance.**

MOWRAM (through ESO and E&S Consultant) will review all E&S instruments prepared for the subproject's implementation prior to submission to the Bank for review and clearance. Contractor's ESMP(CESMP) will be reviewed and cleared by the PMU prior to civil work commences.

- **Annual review by PMU.**

PMU/EA will prepare bi-annual report to submit to the Bank before each Implementation Support Mission and conduct annual ESMF/ESCP performance reviews for effective E&S project risks management.

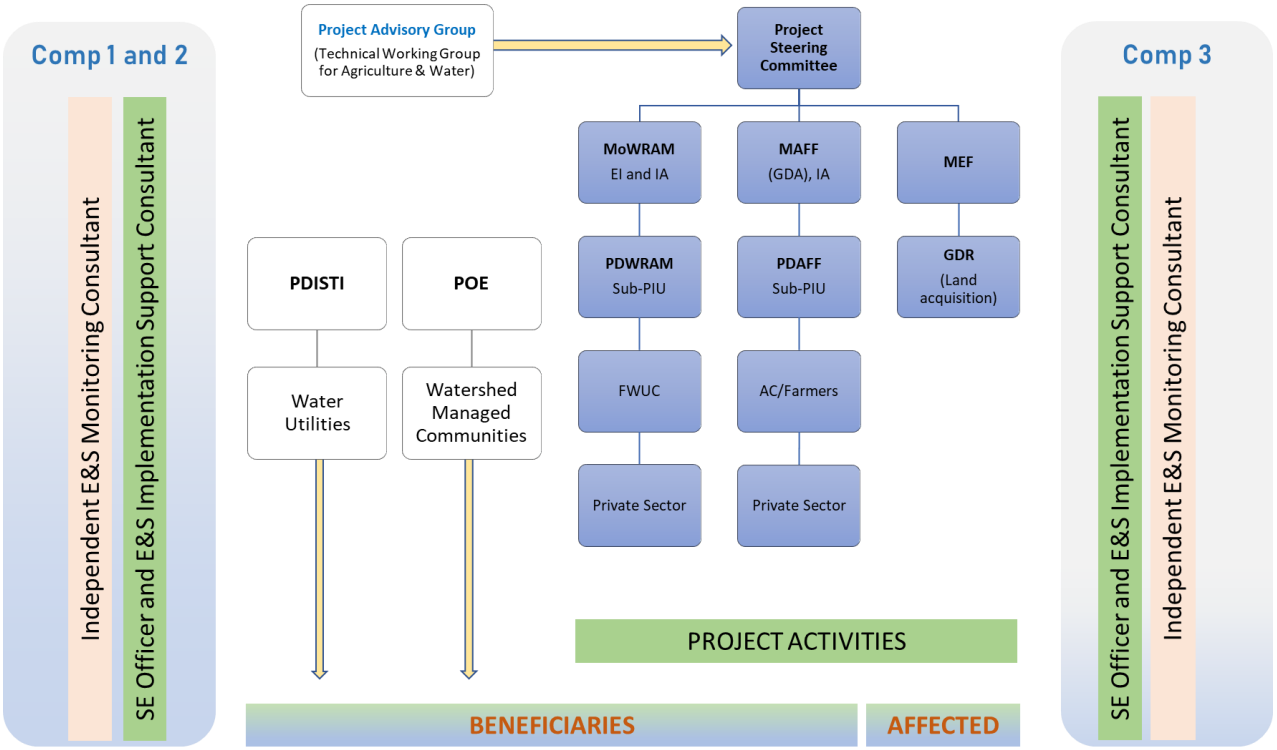
6.4 DAM SAFETY ASSESSMENT FRAMEWORK

A Dam Safety Assessment Framework and Emergency Preparedness Plan are prepared. Please see Annex 6 for details.

7. IMPLEMENTATION ARRANGEMENTS FOR ES RISKS MANAGEMENT

7.1 PROJECT STEERING COMMITTEE

The Project Steering Committee (PSC), which will be established jointly by the MOWRAM, MAFF, MISTI, MOE, CNMC, and the Ministry of Economy and Finance (MEF), will be responsible for overall project oversight. The PSC will be chaired by the MOWRAM retary of State and will be responsible for overall oversight of project implementation. During the implementation of the project, the PMU with the abovementioned responsibilities, shall engage relevant technical departments; and will gradually be handed over the responsibilities to the line departments of the ministries and relevant government agencies.



7.2 MINISTRY OF WATER RESOURCES AND METEOROLOGY

The MOWRAM is the Execution Agency (EA) of the overall Project. MOWRAM will be responsible for direct implementation of project components 1, 3, 4 and 5 (except for component 2 which is implemented by MAFF). At the technical level, a national project management office (NPMO) with a project director and dedicated multi-disciplinary staff (technical, procurement, financial management, environmental and social safeguards, M&E) will be hosted within MOWRAM for overall project implementation management and day-to-day coordination. Project Implementation Units (PMUs) will be set up in MOWRAM for project implementation for project components 1, 3,4,and 5. MOWRAM will implement project activities based on the existing institutional arrangements within the MOWRAM with its technical department at central level, and departments (PDWRAM) at provincial level. The MOWRAM will ensure this ESMF is implemented fully by relevant parties, including contractors, sub-contractors, local authorities at sub-project level. MOWRAM,

through PMU, will also ensure environmental and social monitoring, evaluation and reporting is carried out as per Chapter 10 of this ESMF).

The Project Director (PD) at MOWRAM will be responsible for overall guidance, policy advice, internal coordination, discussion and resolution of project related matters to ensure smooth implementation. The project manager (PM) at MOWRAM will provide day-to-day support to the PD and is responsible for ensuring the Project Operation Manual (POM) is followed, and that environment and social safeguards performance is in compliance with Project's ESMF, and that all consultants follow their terms of reference and delivery schedule. The PM will also ensure project activities are carried out in accordance with implementation schedule and within the allocated budget, including ensuring that financial management reports are prepared and submitted on time and submit to the Bank for review and approval.

The MOWRAM is responsible for:

- Ensuring the project has adequate staffing: PD, PM, Fulltime Environmental Officer (EO), Social Officer (SO) and consultants;
- Provide agreed counterpart funds for project activities in a timely manner;
- Comply with provisions set forth in the Environment and Social Commitment Plan (ESCP).

The PD and PM at MOWRAM are responsible for:

- Ensure that all E&S risks management requirements, and relevant obligations in the ESCP, are implemented timely and appropriately;
- Effective communication between all stakeholders;
- Recruiting consultants;
- Finalizing needed surveys, detailed design, bidding documents, and contract awards;
- Monitoring and evaluating project activities and outputs, including periodic reports;
- Involving stakeholders in all stages of project design and implementation as per the SEP;
- Conducting consultations and disclosure of project documents as per the SEP;
- Assuring quality of works, and services of consultants and counterpart staff;
- Establishing and monitoring project grievance redress mechanism in accordance with the SEP;
- Providing monitoring reports to the World Bank on a quarterly basis, and a project evaluation at the end of the project.
- Conducting annual ESCP implementation reviews.
- Make reporting arrangements
- Provide guidance on how ESMF is incorporated into POM
- Ensure key provisions of subproject ESMP are included in bidding documents

7.2.1 PMU

The PMU of MOWRAM will be responsible for day-to-day project implementation, monitoring and evaluation. It will focus on Project Component 1, 3 and 4 (PMU of MAFF will be in charge of Component 2). The PMU will work under the oversight and guidance of MOWRAM and will be responsible for all aspects of environmental and social performance, including E&S monitoring and evaluation, reporting of E&S performance, and relevant incidence during project implementation.

7.2.2 Environmental and Social Officers (ESOs) of MOWRAM

The MOWRAM will appoint at least one Environmental Officer (EO) and one Social Officer (SO) (*cum* Grievance Redress Focal Point) for full time E&S risk management supports for the project, as follows:

- **Social Officer** is in charge of resettlement & ethnic minorities, *cum* Grievance Redress Focal Point.

- **Environmental Officer** is in charge of environmental management related to rehabilitation of the reservoir, irrigation canals, and construction of road alongside irrigation canal.

The EO and SO (or ESOs) of MOWRAM will be instrumental in ensuring the environmental and social performance of the project. The ESOs, supported by E&S consultant(s), will be responsible for ensuring effective environmental and social management for all project activities. The EO and SO and E&S consultants will work together as a team in which both EO and SO play the lead role in E&S monitoring for the whole project. In particular, EO and SOwill review all related project and E&S documents which are prepared by E&S consultants. Where necessary, EO and SO will conduct site visits, interview contractors and construction supervisors, workers, provincial-level government staff of MOWRAM, local authorities and local communities, to collect necessary E&S information for the purpose of internal monitoring. The SEO, with the support from supervision consultant, will monitor Contractors' compliance with C-ESMP and will visit each subproject location at least once a month during construction. Upon completion of each site visit, the MOWRAM'S EO and SO should prepare a Monitoring Report reflecting main issues found, resolution arrangements and timing for the resolution.

The EO and SO will be responsible for:

- Implementing and monitoring performance of environment and social mitigation measures, including dam safety;
- Conducting screening and scoping on environment and social impacts (see Annex 1.2), including screening for land acquisition impacts based on the guidance in the RPF and presence of Indigenous Peoples based on the guidance in the IPPF;
- Conducting trainings on dam safety, gender, SEA/SH, VAC, Labor rights, HIV/AIDS and the grievance redress mechanism to project communities, and monitoring contractor's training for their workers on Workers' Code of Conduct which covers SEA/SH/VAC, and HIV/AIDS;
- Monitoring environmental and social activities of the project, in particular the implementation of the ESMPs for subprojects, and any other relevant project documents such as RP and IPP;
- Monitor, including ensuring effective functioning of project's Grievance Redress Mechanism and solve grievances submitted to PMU level;
- Leading all stakeholder engagement activities, including information disclosure, consultations, reporting back to stakeholders –as per provisions in the SEP;
- Working closely with Provincial Department of Water Resources and Meteorology, General Department of Resettlement, and other line ministries and/or relevant departments as necessary;
- Prepare monthly reports on E&S implementation and submit to the PM and PD.

7.2.3 E&S Consultants

The E&S consultants are responsible for assisting the EO and SO in monitoring and reporting on the safeguard implementation performed by the contractors.

- Develop screening checklist to assess risks and potential environmental and social impacts for each subproject;
- Take lead in building capacity for the project (based on list of potential training topics at Section 7.3 (below), including periodic provision of on-the-job training to contractors, EO and SOand PMU on the implementation and management of E&S risks and impact at subproject level;
- Review C-ESMP and ensure that the C-ESMP is consistent and cover all risks and potential impacts identified in site-specific ESMP, particularly risks related to OHS, CHS, SEA/SH/VAC taking into account local knowledge and experience in prevention and management of these risks.
- Ensure C-ESMP have actionable plan to addressed identified risks and potential E&S risks and impacts, including allocation of resources to implement fully such actions.

- Make recommendation for improvement before PMU's approval of C-ESMP;
- Conduct site visit to construction sites and worker camp and make above assessment as part of monitoring and reporting responsibility;
- Develop E&S monitoring checklist and reporting template;
- Participate and support EO and SO in monthly safeguard monitoring and reporting;

7.2.4 Independent Environmental and Social Monitoring Consultant (IESMC)

MOWRAM's PMU will engage an IESMC to assist in periodic monitoring the social and environmental performance of construction contractors. Specifically, the IESMC shall:

- Support the PMU in establishing a monitoring system and systematically monitor the social and environmental performance of construction contractors in all subprojects in seven project provinces;
- Conduct period field visits to collect information for project stakeholders, including adversely affected peoples, vulnerable groups such as indigenous peoples, etc. and make recommendation for corrective actions;
- For social performance, the IESMC will monitoring E&S implementation of contractors and other consultants against requirements and indicative indicators set forth in project's ESMF (including RPF and IPPF), SEP, and ESCP;
- For environmental performance, the IESMC will evaluate environmental quality at the areas affected by the construction activities, including site observations, review of environmental quality data provided by PMU, contractors and other relevant project stakeholders, review of other available documents, and additional sampling, where needed;
- Review contractor's environmental performance to evaluate contractors' compliance with mitigation measures proposed in C-ESMP and C-LMP;
- IESMC will also provide technical advice and assistance to MOWRAM's PMU, EO and SO, in the area of environmental and social matters.

7.3 MINISTRY OF AGRICULTURE, FORESTRY, AND FISHERIES

The Ministry of Agriculture, Fishery and Forestry (MAFF) will lead the implementation of Project Component 3 (Agricultural Productivity at Farm level). Project Implementation Unit (PMU) will be set up within MAFF for implementing Component 3. PMU will be tasked with implementing water productivity activities for agriculture development. It will be responsible for tapping the expertise of technical departments within the ministry. Together with the PDAFFs, the MAFF will be responsible for the planning, coordination and implementation of agriculture support activities and quality assurance of goods and services provided to project beneficiaries (e.g., the farmers, FWUCs, and Acs). This will include: (i) coordinating and ensuring implementation of all water productivity activities for agriculture-based livelihood; (ii) planning and implementation of the RF&M; (iii) procurement of goods and services necessary for the implementation of related activities; and (iv) engagement and supervision of required consultants, contractors, and suppliers to support the implementation of subprojects. It may also be complemented by other third-party service providers/delivery organizations (e.g., NGOs and firms) which could be contracted for the provision of front-line support activities to help provide adequate agricultural services, improve the agricultural productivity, livelihoods and food security situation in the target areas, and for RF&M-related activities.

7.3.1 PMU

The PMU of MAFF will be responsible for day-to-day project implementation, monitoring and evaluation of Project Component 3 (Increased Agricultural Productivity at Farm Level). It will work under the oversight and

guidance of MAFF and will be responsible for all aspects of environmental and social performance, including E&S monitoring and evaluation, reporting of E&S performance, and relevant incidence during project implementation. MAFF is responsible for preparing Integrated Pest Management Plan and Integrated Crop Management Plan, collecting baseline that assist monitoring of adoption of recommended GAP such as reducing seed rate, fertilizers and pesticide, alternative wet dry.

7.3.2 Environmental and Social Officers (ESO) of MAFF

MAFF will appoint one Environmental Officer (EO) and one Social Officer (SO), as follows:

- The Social Officer will be in charge of ethnic minorities, gender mainstreaming, social behavior change communication (*cum* GRM Focal Point) for full time E&S support for the project.
- The Environmental Officer will be responsible for providing overall support and management of environmental risks and impacts associated with activities under Project Component 3, including, for instance, design, implementation, and monitoring & evaluation of agricultural extension program that PMU implements that may cover pest management, integrated crop management, and water saving technology (e.g. Alternative Wet Dry, drip irrigation).

These ESOs will ensure identified environmental and social risks and impacts (as outlined in Chapter 4) are managed effectively – through key measures described in Chapter 5. The ESOs will also review documents which PMU's technical implementation support consultants (for above program) prepare. The review aims to ensure training materials and its content are in line with government's related regulations and in line with the WB's ESS, and proposed E&S mitigation measures. Where necessary, the ESOs will conduct site visits, interview farmers, ethnic minorities, provincial-level government staff, local authorities and local communities, etc. to collect information for the purpose of program support, and for internal monitoring, and evaluation. The ESOs, with the support of PMU, will monitor the performance on agricultural extension program that will be designed by PMU. These programs include pest management, integrated crop management, adoption of specific technologies that are climate-smart, resource efficient, and sustainable .

Upon completion of each site visit, the MAFF's ESOs should prepare a Monitoring Report reflecting main issues found, resolution arrangements and timing for the resolution.

7.4 MINISTRY OF ECONOMY AND FINANCE

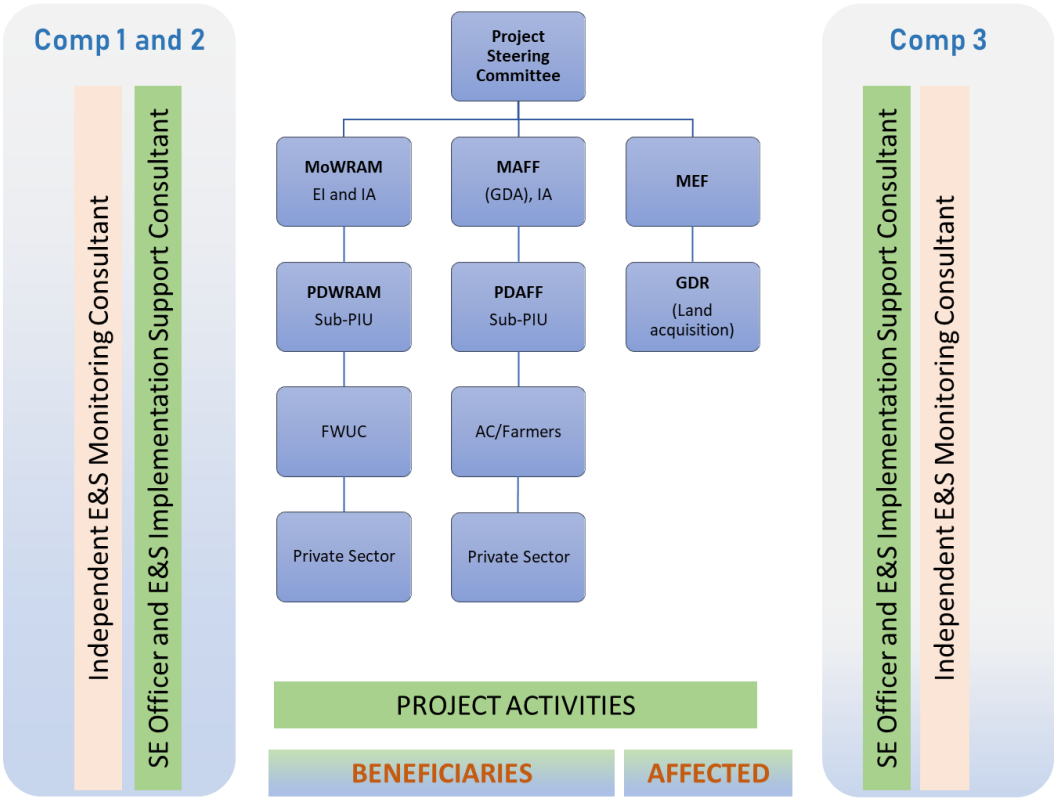
Ministry of Economy and Finance (MEF) will oversee the financial services support. MEF will also carry out the selection of the external auditor under the audit bundling contract arrangement. MEF will make cash contributions to the project, and funding will be allocated to each PMU to cover staff costs for Government personnel who are working on the project, as well as for covering the payments of annual audit fees. The fund flow will be at the request of the PMUs to the MEF, and the National Treasury will release the payments to the PMUs. The counterpart funds will be available in the AWPB and the IFR submitted to the World Bank.

In addition, under this project, MEF − through its Inter-Ministerial Resettlement Committee (IRC), is also responsible for carrying out land acquisition activities in accordance with the project's RPF. The General Department of Resettlement (GDR) which is the permanent Secretariat of the IRC will lead the preparation, implementation, monitoring and reporting of land acquisition and resettlement activities. In particular, GDR will conduct surveys to prepare an inventory of loss, census survey, detailed measurement survey, oversee the replacement costs survey (which will be conducted by an independent competent consultant engaged by GDR), and pay compensation to affected households. GDF will be responsible for the whole land acquisition and compensation process if negotiated settlement is adopted. When negotiated settlement is not adopted and a RP needs to be prepared, the RP will be prepared by MOWRAM's E&S consultant in accordance with the project's RPF and the requirements of ESS5.

There is also an IRC-Working Group at the provincial level and Provincial Resettlement Sub-Committees (PRSC) and their working groups which are established when there are land acquisition activities. The MOWRAM'S ESOs, and the contractor will work closely with these agencies in case land acquisition is required – as detailed in the RPF.

Below is the flow chart summarizing the E&S implementation support and monitoring by project component.

Figure 5 – E&S Implementation Support and Monitoring Arrangements



7.5 PROVINCIAL AGENCIES

7.5.1 Provincial Department of Water Resources and Meteorology (PDWRAM)

The PDWRAMs will work closely with MOWRAM in planning and implementation of the subprojects located within their provinces. The PDWRAMs will also supervise project officers at the district-level Department of Water Resources and Meteorology, and are responsible for:

- Executing and monitoring the civil works in the respective provinces;
- Coordinating effectively with all project stakeholders, including MOWRAM's ESOs, consultants, contractors, local authorities, provincial departments and project communities;
- Supporting district-level project officers in monitoring and evaluating progress and performance of consultants and contractors;
- Supporting MOWRAM'S ESOs to conduct trainings on COVID-19, Labor, gender, SEA/SH,VAC, HIV/AIDS, and dam safety;

- Supporting MOWRAM'S ESOs to disseminate project information and conduct consultation activities, as well as ensuring effective grievance redress resolution within their province;
- Supporting MOWRAM'S ESOs to conduct screening and scoping of the subprojects, and identifying environment, social, land acquisition impacts and screening for presence of IPs in the subproject area;
- Liaising with village authorities in subproject area to encourage vulnerable group to apply for jobs that may be offered by project's contractors;
- Collaborating with relevant departments involved in land acquisition and/or other environment or social mitigation measures.
- Work with PDISTI in technical discussions regarding water source development for water supply and will actively participate in overall planning for water resource development considering water source demand and growth.
- In addition, PDWRAM will undertake other specific task as assigned by MOWRAM and will be responsible for oversight and carrying out operation and maintenance of the project-built infrastructure.

7.5.2 Provincial Department of Agriculture, Forestry, and Fisheries (PDAFF)

- PDAFFs is responsible for field level implementation of Project Component 3 (Increased Agricutlural Productivity at Farm Level).
- Collaborate with other relevant technical departments, including the Provincial Department of Industry, Science, Technology, and Innovations (PDISTI), during project implementation.
- Provide oversight and are responsible for routine O&M of the rehabilitated water irrigation system.
- Line departments within PDAFF (provincial and district level) will ensure coordination between provincial and district levels and are responsible for most field-level monitoring activities.
- Participate in capacity development activities that are supported under the project (e.g. through technical assistance) to facilitate smooth project implementation as necessary.

7.6 CONTRACTORS

7.6.1 Contractors

The Civil Works contractor is responsible for implementing E&S mitigation measures set out in the ESMP and C-ESMP prepared for the subproject, including relevant activities set out in respective RP and IPP (if any) as part of the C-ESMP, and SEP. The contractor will:

- Prepare and submit a contractor's site- specific Environmental and Social Management Plan (C-ESMP) for each contract package and submit to the PMU for review and clearance, as well as to the Bank for review to ensure the C-ESMP is consistent with the requirements set out in the ESMF/ESMP and in line with the scope and nature of the contract package, including environmental and social risks and potential impacts;
- C-ESMP will detail how the contractor will mitigate construction impacts and documents the contractor's response to inspecting, monitoring, verifying, internal auditing and rectifying or improving environmental and social performance. The C-ESMP must be site-specific and include details on risks and impact management measures that will be adopted by the contractor at the assigned construction site to avoid/minimize potential environmental and social risks and impacts arising from the works and activities to be carried by the contractors, including the subcontract of the main contractors, if any.
- If the proposed works and activities described in the C-ESMP are changed during the contract liability period, the C-ESMP shall be updated by the contractor to reflect such changes. The C-ESMP should include the followings:

- A statement of policy, providing a definition of the contractor's environmental policy and an indication of commitment to the execution of its site-specific ESMP.
- A brief document description, including date of issue; revision status; distribution list; and preparation personnel details and signatures;
- Applicable laws and regulations associated with the requirements in the site-specific ESMP. Provision of contractor licenses, permits and approval associated with the C-ESMP.
- Details on how environmental and social risks and impacts identified in site-specific -ESA will be managed, including: 1) site-specific measures to mitigate identified risks and impacts during construction (ECOPs); 2) Workers' Code of Conduct; 3) Contractor's LMP (based on project's LMP);
- List of detailed environmental and social trainings that all contractor's personnel (including subcontractors) are required to undertake. As a minimum, all contractor's staff and workers mobilized to the subproject site should be: i) familiar and understand the requirements and mitigation measures proposed in the C-ESMP; ii) aware of the legal obligations of the contractors under the contracts, and their relevant responsibilities; and iii) provide the following training to all staff on site, including: occupational health and safety, risks related to SEA/SH/VAC, community health and safety (CHS), and emergency response;
- Capabilities, support mechanisms, and financial resources to be allocated to ensure full and satisfactory implementation of the proposed C-ESMP. Detailed environmental and social responsibilities of contractor's personnel including subcontractors working on site, specific trainings to be provided to contractors and subcontractor's staff, including local peoples to be engaged as contracted workers, and training schedule;
- The contractor shall be responsible for preparing monthly environmental reports (as required in Word Contract), including reporting accident and incident, if any, to MOWRAM within 48 hours. The contents of these reports include the followings:
- Implementation of the Contractor's C-ESMP complying with the agreed program;
- Activities that have been carried by the contractor during the reporting period to ensure their compliance with the C-ESMP;
- Difficulties encountered during C-ESMP implementation, including proposed remedial actions for improvement;
- Highlight the number and the type of non-compliances and proposed corrective actions;
- Reports activities/actions that have been carried out by Subcontractors involved that contribute to achieving the objective of the C- ESMP, including minutes of meetings and discussions held by the main contractor;
- Minutes of meeting from discussions held with MOWRAM regarding-ESMP implementation;
- Implementation of the Worker's and Manager's Code of Conduct, Occupational Health and Safety Management Plan, including Community Health and Safety;

- Prepare and submit a contractor's LMP to PMU for review and to the MOWRAM for approval;
- Ensure sufficient funding and human resources are timely in place for effective implementation of the C-ESMP including Contractor's LMP;
- Ensure appropriate and timely implementation of required pre-construction and construction mitigation measures as described in the C-ESMP;
- Implement additional environmental and social mitigation measures as necessary.

7.6.2 Contractor's Safety, Social and Environment Officer

- The contractor shall appoint competent staff(s) as the contractor's on-site safety, social and environment officer (SSEO). The SSEO must be appropriately trained in environmental management and must possess skills necessary to effectively and efficiently all contractor's and subcontractors'

personnel engaged under the subproject. The SSEO will be responsible for monitoring and reporting on the contractor's compliance with the C-ESMP requirements. The SSEO's responsibility include, but not be limited to, the followings:

- Supervise subcontractors' construction works, including their implementation of the Contractor's LMP and C-ESMP;
- Submit Contractors' LMP and C-ESMP to PMU for review and approval prior to commencing staff mobilization to the project site for the awarded assignments;
- Carry out environmental and social site inspections to assess and audit the contractors' site practices, equipment and work methods with respect to pollution control and adequacy of environmental mitigation measures being implemented;
- Monitor E&S compliance with approved C-ESMP and contractual requirements;
- Monitor implementation of environmental and social mitigation measures;
- Prepare audit reports for the site environmental and social conditions;
- Investigate complaints and recommend corrective measures;
- Advise the contractor on environmental and social management improvement;
- Recommend mitigation measures in the case of non-compliance;
- Carry out additional monitoring of noncompliance as instructed by PMU;
- Inform the contractor, PMU, of any environmental and social issues/problems, submit contractor's ESMP Implementation Plan to PMU, including relevant authorities, if required by PMU;
- Maintain detailed recording of all site activities related to environment and social issues;
- Appoint qualified staff to undertake necessary actions and measures to ensure Labor related issues;
- Work closely with the appointed staff in charge of Labor issues to prepare a Labor Management Procedures (Contractor's LMP) and a C-ESMP (Contractor's ESMP) including OHS regulations) which will apply to their contracted workers who work on the projects;
- Maintain recruitment and employment records for contracted workers (including subcontractors), including documentation that verifies minimum Labor age as set forth in the Contractor's LMP as well as copies of signed Workers' CoC;
- Provide regular training to contracted workers on issues, but not limited to, such as occupational safety and health, and other social risks such as SEA/SH/VAC, code of conduct to maintain good relationship with local community, etc;
- Require primary supplier to identify and address risks of SEA/SH/VAC, child Labor, forced Labor, and occupational safety and health for primary supply workers;
- Develop and implement the contractor grievance mechanism based on the GRM set forth in the project's LMP for contracted workers, including ensuring that grievances received from contracted workers are resolved promptly, and reporting the status of grievances and resolutions to PMU/SEO. This grievance mechanism will be part of the Contractor's LMP.
- Ensure that all contractor and subcontractor workers understand and sign the Code of Conduct prior to commencement of the works; maintain them as a record and report on it
- Implement all necessary measures to address the risks of sexual exploitation and abuse (SEA)/sexual harassment (SH) as specified in the contractor's LMP, C-ESMP and ensure full implementation of these measures;
- Develop plans and take actions for prevention and mitigation of COVID-19 outbreaks.

Incident reporting

The contractors are required to inform PMU any incidents listed below within agreed timeframe:

- Notify the Bank no later than 48 hours after learning of the incident or accident
- Any violations to national laws, regulations or international agreements;

- Any serious accidents or fatalities;
- Significant impacts that cause losses to personal property such as traffic accidents, damages to local houses/roads and other incidents;
- Serious surface/ground water pollution;
- Failures of embankments at disposal sites that cause serious pollutions to the surroundings;
- Fire related to worker's behaviors;
- Any claims related to SEA/SH/VAC, or any other incidents related to children;
- Receive a complaint about pollution or damages.
- And take immediate remedial measures where required.

7.7 MAINSTREAMING E&S RISKS AND IMPACTS MANAGEMENT INTO PROJECT CYCLE

The table below summarizes key milestones and decision-points that are mainstreamed into project cycle to ensure E&S mitigation actions are taken timely and effectively during project preparation, and during sub-project preparation, approval, and implementation. This table present key activities that are sequenced, including, among other things, the need for timely appointment and support of E&S specialists during design and implementation phases, allocation of budget/resources as per stakeholder to confirm stakeholder accountability. This table may be updated in proportion to the E&S risks and impacts which are confirmed based on final and approved Feasibility Studies and future subprojects (which will be identified during project implementation). The table also include procurement as a process and control-point to ensure important aspect of E&S risks, impacts and mitigation measures are integrated into responsibility of the stakeholders in charge.

Table 3 - Mainstreaming E&S risks and impacts into subproject lifecycle

No.		PROJECT PREPARATION				PROJECT IMPLEMENTATION			
		Feasibility Study (draft design)	**Project Appraisal**	**Approval**	**Detailed Subproject Design**	**Subproject Approval**	**Pre-Construction**	**Construction & Decommission**	**Operation**
A	***ASSSESSMENT***								
1	First consultation	✓							
2	Second consultation	✓							
3	National stakeholder consultation	✓							
4	E&S Capacity Assessment & Development Plan	✓							
5	Mobilization of E&S Specialists for project preparation	✓			✓				
6	Mobilization of E&S Specialists for project implementation				✓				
7	Budget allocated based on estimated costs (subject to update based on impact scope confirmed in final detailed design)			✓					
	Maintain ongoing consultation with affected stakeholders on evolving E&S risks and impacts				✓		✓	✓	✓
B	***PROCUREMENT***								
1	Engage E&S Consultant on board at PMU (as per ESCP timeline)			✓					
2	Engage E&S Consultant for update/prepare site-specific instruments (e.g. ESIA/CIA, ESMP, RP, IPP)				✓				
2	Integrate E&S requirements into				✓				

No.		PROJECT PREPARATION				PROJECT IMPLEMENTATION			
		Feasibility Study (draft design)	**Project Appraisal**	**Approval**	**Detailed Subproject Design**	**Subproject Approval**	**Pre-Construction**	**Construction & Decommission**	**Operation**
	Request for Proposal (for prospective Contractors)								
3	Integrate E&S requirements into Work Contract with selected Contractors				✓				
C	***SUBPROJECT IMPLEMENTATION***								
1.	PMU's ES specialist (PMU's staff and independent monitoring consultant)					✓	✓	✓	
2	Contractors					✓	✓	✓	
3	Project affected community						✓	✓	✓
4	Subproject Owner						✓	✓	✓
5	Interest parties				✓	✓	✓	✓	✓

8. CONSULTATION & INFORMATION DISCLOSURE

8.1 CONSULTATION WITH STAKEHODLERS

8.1.1 Requirements of Stakeholder Consultation

Under a WB financed project, it is important that open and transparent engagement process be established and maintained between the Borrower and project stakeholders. When effective stakeholder engagement can be ensured, this process helps improve the environmental and social sustainability of project, enhance public support for project implementation and contribute to successful project design and implementation.

8.1.2 Summary of Consultation Results

Please see a summary of consultation during project implementation in Appendix 3 of this ESMF.

8.2 INFORMATION DISCLOSURE

Information disclosure refers to making information accessible, and in a manner that is appropriate and understandable to interested and affected parties. Information Disclosure will be an ongoing process under CWSIP. During all stages, project information will be disclosed in a way that is accesible to a wide range of stakeholders (in both English and Khmer). For EM groups and communities, information disclosure will also be in a language and manner accessible to them, as necessary.

The following guiding principles will be used:

- Project information, including project/subproject purpose, activities, environmental and social risks and potential impacts, proposed mitigation measures, complaint handling procedures, etc, will be disclosed at the earlier stage of project/ subproject preparation;
- Information will be disclosed to the target group well ahead of consultations to promote understanding about the project and allow meaningful feedback of stakeholders;
- Project information will be disclosed in local languages of the target audience;
- In case the target IPs do not have written language, national language (Khmer) will be used in Project Information Booklet to be distributed to them. However, consultation will be conducted in their native language using verbal translation to promote communication and feedback of the EM during consultation;
- Project information will be disclosed in the written form, and in various formats for convenient use of various project stakeholders, including Project Information Booklet, Executive Summary, and full documents;
- Project information will be disclosed through different channels for convenient access of various project stakeholders. Project's dedicated channels for information disclosure include webpage of MOWRAM and MAFF.

Information Disclosure during Project Preparation

Before project appraisal, all draft ES documents, including ESMF, RPF, IPPF, LMP, SEP, and ESCP, will be disclosed on the website of MOWRAM and MAFF. In particular, at national level, the full documents (English) and Executive Summary (Khmer) will be disclosed on the websites of MoWRAM and MAFF. At project level, the same documents will be disclosed in hard copy at the offices of Provincial Departments of Water Resources and Meteorology and the Provincial Department of Agriculture, Forestry and Fisheries. At subproject level, Executive Summary (Khmer) will be posted at Communes' Hall where identified subprojects are located. All these documents will be finalized following project appraisal and

will be re-disclosed through the same channels. All ES documents will be disclosed in English on the WB's website.

Information Disclosure During Project Implementation

Site-specific ESMPs, including RP(s) and IPP(s) (if required) will be disclosed in Khmer and English for consultation with affected people during subproject preparation, and before subproject appraisal.

9. GRIEVANCE REDRESS MECHANISM

9.1 WB's ESF REQUIREMENTS ON GRM

The World Bank's EES2 (GRM for workers) and ESS10 ( ) requires that the Borrower will respond to concerns and grievances of project-affected parties related to the environmental and social performance of the project in a timely manner. In connection with this purpose, the Borrower are required to to establish effective grievance mechanisms that help to facilitate resolution of such grievances and concerns.

The grievance mechanism should be proportionate to the risks and potential impacts of the project and will be accessible and inclusive. Where feasible and suitable for the project, the grievance mechanism will utilize existing formal and/or informal grievance mechanisms, supplemented as needed with project-specific arrangements. In particular, the project established GRM is expected to be:

- Address the concerns promptly and effectively, in a transparent manner that is culturally appropriate and readily accessible to all project-affected parties, at no cost and without retribution. The GRM process or procedure will not prevent access to judicial or administrative remedies. The Borrower will inform the project-affected parties about the grievance process during community engagement activities, and will make publicly available a record documenting the responses to all grievances received;
- Handle grievances in a manner that is culturally appropriate to the affected people and be discreet, objective, sensitive and responsive to the needs and concerns of the project-affected people. The GRM will allow for anonymous complaints to be raised and addressed.

9.2 PROJECT'S GRM

The project has in place three complaint handling procedures for three types of risks and potential impacts: 1) land acquisition, 2) Labor and working conditions, and 3) sexual exploitation and abuse and sexual harassment (SEA/SH). These procedures are established based on the above principles for project's GRM, and in accordance with the requirements set out in pertinent national legislation. The GRM for complaints related to land acquisition is summarized in the project's Resettlement and Policy Framework (RPF). It provides steps to guide complainants through complaint resolution process, including timeframe specified for each step (see RPF for details). The GRM for workers regarding employment, wages, payment, working conditions, health, safety, etc. follows different procedure and are described in project's Labor Management Procedures (see LMP for details). The GRM related to sexual exploitation and abuse/ sexual harassment (SEA/SH) is also established in accordance with the pertinent national laws and the World Bank's guidance on SEA/SH, and is described in project's LMP (see LMP for details). It is noted the risks for SEA/SH rated "Moderate" at project level. During project implementation, SEA/SH risk will be evaluated at subproject level taking into account the local SEA/SH status, feedback from local people and other stakeholders (e.g. health services, NGOs…). In case of need, local SEA/SH service provider(s) will be engaged by PMU before Contractor is mobilized to subproject site. Below is a summary for these three GRM procedures that will be used for key issues identified under the project. In addition to these GRMs, different channels are available for receipt of complaints that may

arise during construction, such as PMU's GRM focal point, Contractors' GRM focal points, village heads, local IP leaders, and other existing channels that local people use, such as commune government, etc (Please see Chapter 6 of SEP for detailed GRM procedures).

9.3 RECORDING GRIEVANCES IN LOGBOOK

The GRM Focal Point, Project Manager and Project Director within the MOWRAM are responsible for establishment and effective functioning of a Project Grievance database. The MOWRAM's SEO will register all concerns/grievances that are submitted by project stakeholders into the PGL during project implementation. Data information received will be kept and maintained carefully to ensure privacy and confidentiality, particularly for grievances related to SEA/SH (See Sample PGL for Local and PMU levels). The sample for PMU level can be further eLaborated on Excel spreadsheet to effectively manage and maintain the growing database.

In case there is serious complaint, such as road accidents, SEA/SH cases, the World Bank shall be notified within 48hours of complaint receipt and/or report on the incidence (See also Annex 3 of the SEP).

All grievances and concerns submitted to any project implementation agencies, either in written or verbal forms, are documented diligently in writing by the agency that receive and reported to the PMU at provincial level who will consolidate and reported montly to PMU (through the SEO in charge of grievances) for record and follow-up for grievance resolution. Grievances could be recorded and monitored using the form provided at Annex 9.1 of the ESMF.

10. MONTORING AND REPORTING

10.1 MONITORING

The purpose of E&S monitoring is to determine if E&S implementation under the project is in full compliance with the principles and requirements set forth in respective subproject's E&S documents. The MOWRAM is responsible for overall regular monitoring of E&S implementation process and outcomes under the project. Monitoring by MOWRAM will cover all risks and potential impacts identified in the project's ESMF, including thoses identified at project level in the RPF, IPPF, LMP, SEP, ESCP, and those to be identified at subproject level as site-specific ESMP, C-ESMP, RP(s), IPP(s). MOWRAM will monitor how these risks and potential impacts are avoided or mitigated by relevant project stakeholders, particularly contractors who will be engaed to build identified subprojects andconsultants to be engaged to carry out trainings for E&S capacity building to ensure effective project implementation, and relevant project stakeholders whose works are associated with the identified E&S risks and impacts.

11.1.1 Internal monitoring

To ensure effective E&S monitoring, MOWRAM will put in place a technical team within MOWRAM's PMU to support PMU's internal E&S monitoring. This team, hereinafter referred to as Safeguard Team of PMU will consist existing staff of MOWRAM's EO and SO, and individual E&S consultants which PMU will engage to support PMU in day-to-day E&S implementation and monitoring. The Safeguard Team of PMU is responsible for internal E&S monitoring at project level and will oversee the E&S performance of all relevant stakeholders, especially construction contractors and E&S consultant who will be engaged for different activities as required in the project's ESMF, RPF, IPPF, LMP, SEP, and ESCP and those identified at subproject level as in site-specific ESMP, RP(s), IPP(s), and Contractors' ESMP.

Key performance indicators, suggested in respective ESMF, RPF, IPPF and SEP, will be used for internal monitoring. During subproject implementation, the Safeguard Team of PMU will conduct monthly

monitoring of implementation of the site-specific ESMPs, RPs, and IPPs (to be prepared for subprojects) to determine if mitigation measures are implemented satisfactorily, including assessment the level of compliance in accordance with respective E&S documents. The Safeguard Team of PMU (including staff of EO and SO, and individual E&S) will also monitor to ensure effective functioning of project's grievance redress mechanism. This include grievances that may arise in relation to land acquisition, voluntary land donation, Labor and working conditions, SEA/SH and VAC. The PMU Safeguard Team will collect information from various sources, such as Contractors, Consultants, and other stakeholders to prepare monthly, quarterly and bi-annual Internal Monitoring Reports which will be reviewed by project PM and PD and will be submitted to the World Bank.

10.1.2 External monitoring

Because of the high number of subprojects that are located in seven provinces, and the complexity of social and environmental issues as identified in the ESMF, in addition internal monitoring that is conducted by MOWRAM's EO/SO, MOWRAM will consider engaging an independent E&S monitoring consulting firm (IESMC) to assist PMU in conducting periodic, independent E&S monitoring for the entire project. This aims to ensure a consistent and systematic approach to E&S monitoring is adopted based on information collected from affected and interested parties which PMU Safeguard Team will need to consolidate to prepare periodic Internal Monitoring Report for PMU. In conducting external monitoring, the independent E&S monitoring consulting firm will adopt the same set of E&S performance monitoring indicators that MOWRAM's EO and SO use (See these indicative performance monitoring indicators in respective RPF (Annex 5) and IPPF (Annex 5).

10.2 REPORTING

MOWRAM's PMU is responsible for conducting internal E&S monitoring. External monitoring will be carried through a qualified independent consulting firm, or think-tank (See Section 10.1.2 External monitoring) to undertake independent quarterly monitoring of the process and results achieved in E&S implementation that will be carried out by construction contractors and relevant stakeholders involved as per principles and requirement prescribed in project's ESMF (including RPF, IPPF, LMP), and SEP.

Both internal and external (independent) E&S monitoring will be carried at interval mentioned in Table below. An end-of-project review of E&S implementation process will be conducted by MOWRAM's PMU to confirm whether the objectives set forth in the ESMP (including RPF and IPPF), LMP and SEP have been achieved.

E&S monitoring and reporting requirements are summarized in table below.

Table 4 – Reporting Arrangements

No.	Report Prepared by	Submitted to	Frequency of Reporting
1	Contractors to PMU	MOWRAM's PMU	Once before construction commences and monthly thereafter
2	Environmental Officer (EO), and Social Officer (SO)	MOWRAM's PMU	Monthly, as soon as possible, as required
3	IESMC	MOWRAM's PMU	Every six months
4	MOWRAM's PMU	WB	Monthly and quarterly reports for providing brief updates on implementation progress. Bi-annually for M&E report

11. INDICATIVE COSTS AND BUDGET

11.1 COSTS

The indicative ESMF implementation cost will include the development, implementation monitoring of the specific site-specific environment and social instruments, maintenance of cilve works during operation. This includes also capacity building (e.g. trainings, workshop), consultation meetings, recruitment of additional consultants to support PMU (as indicated in Chapter 7) . The total indicative cost MOWRAMis estimated at $794,200 USD (Table 5) plus the costs of specific mitigation measures in the ESMP, RP and IPP (if applicable). This budget is indicative only and will be updated during project implementation. It is noted that costs related to compensation payment (RPs), implementation of (IPPs), and UXO screening and clearance can not be determined and this stage (See Section 6 in Table 2 below). These will be updated once subprojects are determined based on which relevant costs can be estimated.

It is noted that during subproject design (and prior to subproject appraisal), cost of optimizing subproject design to enhance E&S risk management (including costs related to seeking and responding to affected community as part of stakeholder engagement during subproject design) will be mainstreamed into the technical design process and overall project management system.

Table 5 – Estimated Costs for implementation of the ESMF

Items	Estimated Costs (in USD)
1. DEVELOPMENT OF Site Specific (SS)-ESMPs, RP(s), IPP(s) (Comp 1)	**160,000**
• Prepare site-specific ESMPs, RP(s) and IPP(s) (where applicable), updating ESF instruments (if needed) • Monitoring of E&S implementation, including assisting MOWRAM'S ESOs in preparing monthly monitoring reports *Note:* + Costs for UXO screening and clearance will be covered under civil work contract. • Cost for land acquisition will be estimated in RP to be prepared. • Cost for IPP implementation will be estimated in IPP to be covered under the project.	
2. PREPARATION OF CUMULATIVE IMPACT ASSESSMENT	**70,000**
For RCIA covering Svay Chrum and Kantout in Kratie province	
3. DEVELOPMENT OF PLAN FOR TECHNOLOGY TRANSFER*, e.g., IPM, Integrated Crop Management to manage risks under Comp. 2*	**150,000**
4. E&S MONITORING (through Independent E&S Monitoring Consultant) *Monitoring will be conducted every six month and maintained until subproject completion. Social monitoring will be maintained until livelihoods of severely affected households (if any) restore to pre-project level.*	**180,000**
• Salaries • Travel • Accommodations • Communication • Others	

Items	Estimated Costs (in USD)
5. E&S DUE DILIGENCE OF CIVIL WORKS DURING OPERATION PHASE STAGE	**20,000**
• Supervision & Documentation/Reporting	
6. TRAINING (for PMU/EO and SO)	**50,000**
Training topics for the PMU/EO and SO include (may be expanded based on training need assessment): • Implementing the ESMP; • Monitoring E&S compliance, including reporting; • SEA/SH, HIV/AIDS including how to conduct public awareness raising; • Occupational Health & Safety, including how to monitor and enforce this aspect; • Labor Management Procedures, including how to monitor and enforce this aspect; • Grievance Redress, including how to implement and monitor grievance resolution process; • Indigenous Peoples, including screening for IPs and how to conduct targeted social assessment.	
7. CONSULTATION/ MEETINGS/ MONITORING & SUPERVISION	**92,000**
Budget for PMU/SEO to conduct travel to provinces to conduct consultation, meetings, and monitoring, activities, etc. • Number of field trips per year: 12 • Number of trainings/refresher trainings per year: 05 • Number of workshops per year: 05 • Number of reports/leaflet/booklets printed, etc.): 50	
• Translation of E&S documents, printing and/or materials for consultations or trainings	12,000
• National consultation in Phnom Penh and additional local consultations throughout the project	20,000
• National Consultants (TBD)	50,000
• Budget to implement Grievance Redress Mechanism, including associated trainings and mobilization of additional staff that may be required	10,000
8. CONTINGENCY (10%)	**72,200**
TOTAL (Plus, variable costs related to mitigation measures in SS-ESMPs, RPs and IPP(s) (to be estimated once identified during project implementation)	**794,200**

11.2 BUDGET

Funds for ESMP and IPP implementation will be sourced through IDA. Funding for RP implementation will be through counterpart funding.

APPENDICES

APPENDIX 1 – Screening and Checklist for Investment Schemes

Annex 1.1 – Negative List for Subproject Selection

The purpose of the Negative List is to ensure subprojects that potentially cause significant environmental impacts and risks, and/or involve investments that the World Bank will not finance, are not considered for financing.

It is noted that initial risk classification carried out by MOWRAM and MAFF is subject to review/due diligence and concurrence of the World Bank as to risk classification for subprojects under consideration.

For Component 2 – Sustainable Water Service Delivery

- Sub-project(s) with high probability of dam break due to increased water storage which has adverse impact on community safety (as mentioned in ESS4).
- Located in protected area, including zones that are classified by the Ministry of Environment as core, conservation, and sustainable use zones[17].
- Cause significant negative impacts on sensitive ecosystems/ habitats, or cause significant environmental impacts that cannot be mitigated, or require complex mitigation measures.
- Affect species adversely that are listed by IUCN as Endangered, Critically Endangered with no effective mitigation measures.
- Interventions with significant adverse E&S risks and impacts that cannot be mitigated or specific mitigation measures that require complex and/or unproven mitigation, compensatory measures or technology, or sophisticated social analysis and implementation.
- River training of large scale/significant scale that require complex mitigation measures.
- Activities that cause significant physical displacement, including permanent land acquisition affecting more than 200 persons.
- Require permanent acquisition of land that the IPs are in the process of requesting RGC's recognition as IP's collectively owned land.
- Affect land that has disputed ownership, legacy issues, tenure or user rights;
- Cause loss of, or damage of any degree to cultural properties, such as archaeological sites of high historical, religious, cultural and natural values….

For Component 3 – Increased Agricultural Productivity at Farm Level

Subprojects/activities that involve the following will not be financed by the project:

- All activities that are mentioned under Component 1 (above).
- Purchase of pesticides, insecticides, herbicides and other banned agro-inputs;
- Purchase and use of goods and equipment for military or paramilitary purposes;
- Introduction of non-native species, unless these are already present in the vicinity or known from similar settings to be non-invasive;
- Purchase of chain saws, asbestos, dynamites, destructive hunting and fishing gears and other investments detrimental to the environment;
- Activities that increase erosion/land slide risks;

[17] It is noted if a subproject is located in a community zone, confirmation by MOE is still required before a subproject is confirmed eligible for implementing proposed activities.

- Exploitation of limited/ nonrenewable natural resources (such as ground water);

For Component 3 – Integrated Water Resources Management

- Policy actions that involve transboundary water use/conflicts;
- Policy actions that affect adversely or increase the risk of adverse impacts on vulnerable/ disadvantaged group;

For Component 5 – Contingency Emergency Response Component (CERC)

Subprojects with the following potential impacts will not be eligible for financing under the CERC:

- All activities that are mentioned under Component 1,2 and 3 (above).
- Do not meet minimum design standards with poor design or construction quality, particularly if located in vulnerable areas; and
- Require or involve: (i) purchase, application or storage of pesticides or hazardous materials (e.g., asbestos); (ii) use of asbestos-based construction materials for reconstruction works; (iii) building a dam, structures that will alter river course or disrupt breeding sites of protected species; and (iv) sand mining or land reclamation (i.e. drainage of wetlands or filling of water bodies to create land).

Annex 1.2 – Checklists for Technical Screening

CHECKLIST FOR ENVIRONMENTAL & SOCIAL SCREENING

Circle screening conclusion:

- If the answers to the checklist questions are "No", there is no need for further action.
- If the answers to the questions are "Yes", then consult the relevant procedures /guidelines for assistance in addressing issues of concerns.

A	Environmental and Social Impacts	No	Yes	Notes
Location				
1	Are there environmentally sensitive areas (forests, pastures, rivers and wetlands) or threatened species that could be adversely affectedby the sub-project?			
2	Does the sub-project area (or components of the project) occur within or adjacent to any protected areas designated by government(national park, national reserve, world heritage site, etc.)?			
3	If the sub-projects are outside of, but close to, any protected area, is it likely to adversely affect the ecology within the protected areas (e.g., interference with the migration routes of mammals, fish orbirds)?			
4	Will the sub-projects reduce people's access to the pasture,			

	water, public services or other resources that they depend on?			
5	Might the sub-projects alter any historical, archaeological or cultural heritage site or require excavation near such a site?			
Physical and biological environment				
6	Will sub-projects require large volumes of construction materials (e.g. gravel, stones, water, timber, firewood)?			
7	Might the sub-projects lead to soil degradation or erosion in the area?			
8	Might the sub-projects affect soil salinity?			
9	Will the sub-projects create solid or liquid waste that could adversely affect local soils, vegetation, rivers, streams or groundwater?			
10	Might river or stream ecology be adversely affected due to theinstallation of structures such as weirs, etc.?			
11	Will the sub-projects have adverse impacts on natural habitats that will not have acceptable mitigation measures?			
12	Do the sub-projects have human health and safety risks, during construction or later?			
13	Might the sub-projects lead to migration into the area?			
Alternatives				
14	Is it possible to achieve the objectives above in a different way, with fewer environmental and social impacts?			
B	**Land Acquisition and Social Issues**			
1	Have all groups within the community been consulted about the proposed sub project?			
2.	Which groups have not been consulted?			
3	Will the sub-projects require acquisition of land (public or private)and/or other assets for its development?			
	Will the sub-projects require voluntary land donations?			
4	Will anyone be prevented from using economic resources (e.g.pasture, community place, forests etc.) to which they have had regular access?			
5	Will the sub-projects result in the involuntary resettlement of individuals or families?			
6	Will the sub-projects result in temporary or permanent loss of crops, fruit trees and household infrastructure such as granaries,toilets, kitchens etc.?			
7	Will the sub-projects affect the livelihoods of particular groups within the communities,, especially vulnerable groups such as thelandless?			
8	Will the sub-projects affect the well-being and livelihoods of			

	women, particularly female-headed households?			
9.	Will the sub-projects benefit all groups within the community equally?			
10.	Are there ongoing land or water disputes within the community/ with neighboring communities?			
C	**Local Indigenous Peoples**			
1	Might the project adversely affect local minority groups or vulnerable people living in the area?			
2	Are there members of these groups in the area who could benefit from this project?			
D	**Pesticides and Waste Materials**			
1	Will the project result in the introduction of pesticides or an increase of pesticide use if use of such products currently exists?			
2	Will the project result in the production of solid or liquid waste (e.g. water, domestic or construction waste), or result in an increasein waste production, during construction or operation?			
E	Is there probability of the presence of unexploded ordinance (UXO) at or near the proposed sub-project area?			

CHECK LIST FOR WATERSHED MANAGEMENT FOR SOIL, WATER CONSERVATION

No	Checklist questions	Yes	No
1	Is any person living on or near the land needed for the subproject, or is anyperson farming there, using the land for grazing or watering of animals or for any other purpose?		
2	Reduce biodiversity?		
3	Adversely affect downstream users?		
4	Affect areas of water sources extraction?		
5	Affect wetland/swamps areas?		
6	Affect rare/endangered species?		
7	Adversely affect human health?		
8	Cause changes in land, water morphology and physical characteristics as well as quality and quantity of resources?		
9	Reduce quality of land, water, or health of plants or animals?		

CHECK LIST FOR REHABILITATION OF INFRASTRUCTURE

No	Checklist questions	Yes	No
1	Will it cause land use conflicts?		
2	Is any person living on or near the land needed for the subproject, or is any person farming there, using the land for grazing or watering of animals or forany other purpose?		
3	Generates excessive dust and noise pollution?		
4	Leads to creation of open borrow? Pits?		
5	Reduces biodiversity?		
6	Leads to construction wastes?		
7	Leads to loss of vegetation?		
8	Leads to any disruption to or affect local people's daily activities?		

CHECK LIST FOR USE OF RAINWATER HARVESTING TECHNIQUES

No	Checklist questions	Yes	No
1	Is any person living on or near the land needed for the subproject, or is any person farming there using the land for grazing or watering of animals or forany other purpose?		
2	Lead to increased incidence of water-borne disease?		
3	Lead to land degradation at livestock watering points?		
4	Increase risk of flooding during heavy rain?		
5	Lead to siltation due to erosion?		
6	Provide benefits to men and women?		

CHECK LIST FOR IMPROVEMENT OF IRRIGATION SCHEMES

No	Checklist questions	Yes	No
1	Is any person living on or near the land needed for the subproject, or is any person farming there, using the land for grazing or watering of animals or for any other purpose?		
2	Result in increased salinity of soil or water?		
3	Increase incidence of water borne disease?		
4	Adverse impact on downstream users?		
5	Land and water use conflicts?		
6	Provide benefits to both men and women?		

CHECK LIST FOR DAMS AND IMPOUNDMENTS

No	Checklist questions	Yes	No
1	Are the appropriate standards and acceptance criteria established to guide the subproject development? ie is the flood capacity, design loads, defensive design principles, specifications etc appropriate?		
2	Is there a quality process to manage the subproject, and does it include appropriate independent review?		
3	Is best practice monitoring included in the subproject development? ie is there a surveillance plan, instrumentation and monitoring, inspection and reporting, emergency preparedness and exercise?		
4	Is there an increase in the risk to downstream communities? ie does enlargement increase risk, or have existing risks been reduced, for example by good design?		

APPENDIX 2 – Labor Management Procedures

(Final version to be inserted here)

Annex 2.1 – Occupational Health and Safety Guideline

The objective of the Occupational Health and Safety (OHS) guideline is to provide guidance on the:

- Key principles involved in ensuring the health and safety of workers is protected;
- Preparation of Health and Safety plans

The key reference document for this Guideline is the World Bank Group's *Environmental, Health, and Safety (EHS) Guidelines* (April 2007)[18] and the World Bank's ESS 4.

1. Principles

Employers must take all reasonably practicable steps to protect the health and safety of workers and provide and maintain a safe and healthy working environment. The following key principles are relevant to maintaining worker health and safety:

1.1 Identification and assessment of hazards

Each employer must establish and maintain effective methods for:

- Systematically identifying existing and potential hazards to employees;
- Systematically identifying, at the earliest practicable time, new hazards to employees;
- Regularly assessing the extent to which a hazard poses a risk to employees.

1.2 Management of identified hazards

Each employer must apply prevention and control measures to control hazards which are identified and assessed as posing a threat to the safety, health or welfare of employees, and where practicable, the hazard shall he eliminated. The following preventive and protective measures must be implemented order of priority:

- Eliminating the hazard by removing the activity from the work process;
- Controlling the hazard at its source through engineering controls;
- Minimizing the hazard through design of safe work systems;
- Providing appropriate personal protective equipment (PPE).

The application of prevention and control measures to occupational hazards should be based on comprehensive job safety analyses (JSA). The results of these analyses should be prioritized as part of an action plan based on the likelihood and severity of the consequence of exposure to the identified hazards.

1.3 Training and supervision

Each employer must take all reasonably practicable steps to provide to employees (in appropriate languages) the necessary information, instruction, training and supervision to protect each employee's health and to manage emergencies that might reasonably be expected to arise in the course of work. Training and supervision includes the correct use of PPE and providing employees with appropriate incentives to use PPE.

[18] www.ifc.org/ehsguidelines

1.4 General duty of employees

Each employee shall:

- Take all reasonable care to protect their own and fellow workers health and safety at the workplace and, as appropriate, other persons in the vicinity of the workplace;
- Use PPE and other safety equipment supplied as required; and
- Not use PPE or other safety equipment for any purpose not directly related to the work for which it is provided.

1.5 Protective clothing and equipment

Each employer shall:

- Provide, maintain and make accessible to employees the PPE necessary to avoid injury and damage to their health;
- Take all reasonably practicable steps to ensure that employees use that PPE in the circumstances for which it is provided; and
- Make provision at the workplace for PPE to be cleaned and securely stored without risk of damage when not required.

2. Design

Effective management of health and safety issues requires the inclusion of health and safety considerations during design processes in an organized, hierarchical manner that includes the following steps:

- Identifying project health and safety hazards and associated risks as early as possible in the project cycle including the incorporation of health and safety considerations into the worksite selection process and construction methodologies;
- Involving health and safety professionals who have the experience, competence, and training necessary to assess and manage health and safety risks;
- Understanding the likelihood and magnitude of health and safety risks, based on:
    - The nature of the project activities, such as whether the project will involve hazardous materials or processes;
    - The potential consequences to workers if hazards are not adequately managed;
- Designing and implementing risk management strategies with the objective of reducing the risk to human health;
- Prioritising strategies that eliminate the cause of the hazard at its source by selecting less hazardous materials or processes that avoid the need for health and safety controls;
- When impact avoidance is not feasible, incorporating engineering and management controls to reduce or minimize the possibility and magnitude of undesired consequences;
- Preparing workers and nearby communities to respond to accidents, including providing technical resources to control such events effectively and safely, in particular relating to traffic;
- Improving health and safety performance through a combination of ongoing monitoring of facility performance and effective accountability.

3. Implementation

3.1 Documentation

A Health and Safety Plan must be prepared and approved prior to any works commencing on site. The H&S Plan must demonstrate the Contractor's understanding of how to manage safety and a commitment to providing a workplace that enables all work activities to be carried out safely. The H&S Plan must detail

reasonably practicable measures to eliminate or minimize risks to the health, safety and welfare of workers, contractors, visitors, and anyone else who may be affected by the operations. The H&S Plan must be prepared in accordance with the World Bank's EH&S Guidelines and the relevant country health and safety legislation.

3.2 Training and Awareness

Provisions should be made to provide health and safety orientation training to all new employees to ensure they are apprised of the basic site rules of work at / on the site and of personal protection and preventing injury to fellow employees. Training should consist of basic hazard awareness, site-specific hazards, safe work practices, and emergency procedures for fire, evacuation, and natural disaster, as appropriate. Training should also include HIV/AIDS awareness training.

Visitors are not permitted to access to areas where hazardous conditions or substances may be present, unless appropriately inducted.

3.3 Personal Protective Equipment (PPE)

Personal Protective Equipment (PPE) provides additional protection to workers exposed to workplace hazards in conjunction with other facility controls and safety systems.

PPE is considered to be a last resort that is above and beyond the other facility controls and provides the worker with an extra level of personal protection. The table below presents general examples of occupational hazards and types of PPE available for different purposes. Recommended measures for use of PPE in the workplace include:

- Active use of PPE if alternative technologies, work plans or procedures cannot eliminate, or sufficiently reduce, a hazard or exposure;
- Identification and provision of appropriate PPE that offers adequate protection to the worker, co-workers, and occasional visitors, without incurring unnecessary inconvenience to the individual;
- Proper maintenance of PPE, including cleaning when dirty and replacement when damaged or worn out. Proper use of PPE should be part of the recurrent training programs for Employees
- Selection of PPE should be based on the hazard and risk ranking described earlier in this section, and selected according to criteria on performance and testing established

Objective	Workplace Hazards	Suggested PPE
Eye and face protection	Flying particles, molten metal, liquid chemicals, gases or vapors, light radiation.	Safety Glasses with side-shields, protective shades, etc.
Head protection	Falling objects, inadequate height clearance, and overhead power cords.	Plastic Helmets with top and side impact protection.
Hearing protection	Noise, ultra-sound.	Hearing protectors (ear plugs or ear muffs.
Foot protection	Falling or rolling objects, pointed objects. Corrosive or hot liquids.	Safety shoes and boots for protection Against moving & falling objects, liquids and chemicals.

Hand protection	Hazardous materials, cuts or lacerations, vibrations, extreme temperatures.	Gloves made of rubber or synthetic materials (Neoprene), leather, steel, insulating materials, etc.
Respiratory protection	Dust, fogs, fumes, mists, gases, smokes, vapors.	Facemasks with appropriate filters for dust removal and air purification (chemicals, mists, vapors and gases). Single or multi-gas personal monitors, if available.
	Oxygen deficiency	Portable or supplied air (fixed lines). On-site rescue equipment.
Body/leg protection	Extreme temperatures, hazardous materials, biological agents, cutting and laceration.	Insulating clothing, body suits aprons etc. of appropriate materials.

4. Monitoring

Occupational health and safety monitoring programs should verify the effectiveness of prevention and control strategies. The selected indicators should be representative of the most significant occupational, health, and safety hazards, and the implementation of prevention and control strategies. The occupational health and safety monitoring program should include:

- **Safety inspection, testing and calibration**: This should include regular inspection and testing of all safety features and hazard control measures focusing on engineering and personal protective features, work procedures, places of work, installations, equipment, and tools used. The inspection should verify that issued PPE continues to provide adequate protection and is being worn as required.
- **Surveillance of the working environment**: Employers should document compliance using an appropriate combination of portable and stationary sampling and monitoring instruments. Monitoring and analyses should be conducted according to internationally recognized methods and standards.
- **Surveillance of workers health**: When extraordinary protective measures are required (for example, Against hazardous compounds), workers should be provided appropriate and relevant health surveillance prior to first exposure, and at regular intervals thereafter.
- **Training**: Training activities for employees and visitors should be adequately monitored and documented (curriculum, duration, and participants). Emergency exercises, including fire drills, should be documented adequately.
- **Accidents and Diseases monitoring**. The employer should establish procedures and systems for reporting and recording:
    - Occupational accidents and diseases
    - Dangerous occurrences and incidents

These systems should enable workers to report immediately to their immediate supervisor any situation they believe presents a serious danger to life or health. Each month, the contractor shall supply data on trainings delivered, safety incidents prevented and any accidents to the Client's Consulting Engineer for reporting to the PMU. These data are to also include incidents related to any sub-contractors working directly, or indirectly, for the Contractor.

The MOWRAM and SEO shall be notified of any incident in accordance with the standards below:

Incident Severity Class	Incident Classification	Notification Timeframe
Class 1	Fatality	As soon as possible
	Notifiable injury, illness, or incident	Notification Timeframe
Class 2	Lost Time injury	As soon as possible
	Medical treatment	Within 72 hours

All Class 1 and Class 2 health and safety incidents must be formally investigated and reported to the MOWRAM and SEO through an investigation report. This report shall be based on a sufficient level of investigation by the Contractor so that all the essential factors are recorded. Lessons learnt must be identified and communicated promptly. All findings must have substantive documentation. As a minimum the investigation report must include:

- Date and location of incident;
- Summary of events;
- Immediate cause of incident;
- Underlying cause of incident;
- Root cause of incident;
- Immediate action taken;
- Human factors;
- Outcome of incident, e.g. severity of harm caused, injury, damage;
- Corrective actions with clearly defined timelines and people responsible for implementation;
- Recommendations for further improvement.

Annex 2.2 – Manager's Code of Conduct

Instructions: This Code of Conduct should be included in bidding documents for the civil works contractor(s) and in their contracts once hired. This Code of Conduct should also be included in bidding documents, and the contracts, of MOWRAM's Consultant. This Code of Conduct is to be signed by the main party (head or manager) in the Contractor/Consultant.

Manager's Code of Conduct

The contractor is committed to ensuring that the project is implemented in such a way which minimizes any negative impacts on the local environment, communities, and its workers. This will be done by respecting the environmental, social, health and safety (ESHS) standards, and ensuring appropriate occupational health and safety (OHS) standards are met. The contractor is also committed to creating and maintaining an environment where children under the age of 18 will be protected, and where sexual abuse and sexual harassment have no place. Improper actions towards children, Violence against Children (VAC), and/or Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH) will not be tolerated by any employee, sub-contractors, supplier, associate, or representative of the company.

Staff at all levels have a responsibility to uphold the contractor's commitment after they have read and acknowledged the commitment. Contractors need to support and promote the implementation of the Workers' Code of Conduct. To that end, staff must adhere to and sign the Workers' Code of Conduct. This commits them to supporting the implementation of the Contractor's Environmental and Social Management Plan, the OHS Management Plan, and developing systems that facilitate the implementation of the SEA/SH Action Plan.

Staff, in particular Managers, need to maintain a safe workplace, as well as a SEA/SH-free environment at the workplace and in the local community. Their responsibilities to achieve this include but are not limited to:

Implementation

a. To ensure maximum effectiveness of the Code of Conduct:

   (i) Prominently displaying the Code of Conduct in clear view at workers' camps, offices, and in public areas of the workspace. Examples of areas include waiting, rest and lobby areas of sites, canteen areas and health clinics.

   (ii) Ensuring all posted and distributed copies of the Code of Conduct are translated into the appropriate language of use in the work site areas as well as for any international staff in their native language.

b. Verbally and in writing explain the Code of Conduct to all staff, including in an initial training session.

c. Ensure that:

   (i) All staff sign the 'Workers' Code of Conduct', including acknowledgment that they have read and agree with the Code of Conduct.

   (ii) Staff lists and signed copies of the Workers' Code of Conduct are provided to the OHS Manager and the PMU'S EO and SO (or ESOs).

   (iii) Participate in training and ensure that staff also participate as outlined below.

   (iv) Put in place a mechanism for staff to:

- report concerns on ESHS or OHS compliance; and,
- confidentially report SEA/SH incidents through the Grievance Redress Mechanism (GRM)

(v) Staff are encouraged to report suspected or actual ESHS, OHS, SEA/SH, VAC issues, emphasizing the staff's responsibility in compliance with applicable laws and to the best of your abilities, prevent perpetrators of sexual exploitation and abuse from being hired, re-hired or deployed.

d. Ensure that when engaging in partnership, sub-contractor, supplier or similar agreements, these agreements:

(i) Incorporate the ESHS, OHS, SEA/SH, VAC Codes of Conduct as an attachment.

(ii) Include the appropriate language requiring such contracting entities and individuals, and their employees and volunteers, to comply with the Workers' Codes of Conduct.

(iii) Expressly state that the failure of those entities or individuals, as appropriate, to ensure compliance with the ESHS and OHS standards, take preventive measures Against SEA/SH and VAC, to investigate allegations thereof, or to take corrective actions when SEA/SH or VAC has occurred, shall not only constitute grounds for sanctions and penalties in accordance with the Workers' Codes of Conduct but also termination of agreements to work on or supply the project.

e. Provide support and resources to the E&S team to create and disseminate staff training and awareness-raising strategy on SEA/SH, VAC and other issues highlighted in the ESMP.

f. Ensure that any SEA/SH or VAC complaint warranting Police action is reported to the Police, the client and the World Bank immediately.

g. Report and act in accordance with the agreed response protocol any suspected or actual acts of SEA/SH or VAC.

h. Ensure that any major ESHS or OHS incidents are reported to the client and the supervision engineer immediately, non-major issues in accordance with the agreed reporting protocol.

i. Ensure that children under the age of 18 are not present at the construction site or engaged in any hazardous activities.

Training

j. The managers are responsible to:

(i) Ensure that the OHS Management Plan is implemented, with suitable training required for all staff, including sub-contractors and suppliers; and,

(ii) Ensure that staff have a suitable understanding of the ESMP and are trained as appropriate to implement the Contractor's ESMP requirements.

k. All managers are required to attend an induction manager training course prior to commencing work on site to ensure that they are familiar with their roles and responsibilities in upholding the SEA/SH and VAC elements of these Codes of Conduct. This training will be separate from the induction training course required of all employees and will provide managers with the necessary understanding and technical support needed to begin to develop the SEA/SH Action Plan for addressing SEA/SH issues.

l. Managers are required to attend and assist with the project facilitated monthly training courses for all employees.

m. Ensure that time is provided during work hours and that staff prior to commencing work on site attend the mandatory project facilitated induction training on:

   (i) OHS and ESHS, and,

   (ii) SEA/SH and VAC.

n. During civil works, ensure that staff attend ongoing OHS and ESHS training, as well as the monthly mandatory refresher training course required of all employees on SEA/SH.

Response

o. Managers will be required to take appropriate actions to address any ESHS or OHS incidents.

p. Regarding SEA/SH:

   (i) Maintain the confidentiality of all employees who report or (allegedly) perpetrate incidences of SEA/SH (unless a breach of confidentiality is required to protect persons or property from serious harm or where required by law).

   (ii) If a manager develops concerns or suspicions regarding any form of SEA/SH by one of his/her direct reports, or by an employee working for another contractor on the same work site, s/he is required to report the case using the GRM.

   (iii) Once a sanction has been determined by the GRM, the relevant manager(s) is/are expected to be personally responsible for ensuring that the measure is effectively enforced, within a maximum timeframe of 14 days from the date on which the decision to sanction was made by the GRM.

   (iv) If a Manager has a conflict of interest due to personal or familial relationships with the survivor and/or perpetrator, he/she must notify the Company and the GRM. The Company will be required to appoint another manager without a conflict of interest to respond to complaints.

   (v) Ensure that any SEA/SH issue warranting Police action is reported to the Police, the client and the World Bank immediately.

q. Managers failing address ESHS or OHS incidents or failing to report or comply with the SEA/SH provisions may be subject to disciplinary measures, to be determined and enacted by the Company. Those measures may include:

   (i) Informal warning;

   (ii) Formal warning;

   (iii) Additional Training;

   (iv) Loss of up to one week's salary;

   (v) Suspension of employment (without payment of salary), for a minimum period of 1 month up to a maximum of 6 months;

   (vi) Termination of employment.

r. Ultimately, failure to effectively respond to ESHS, OHS, VAC and SEA/SH cases on the work site by the company's managers may provide grounds for legal actions by authorities.

I do hereby acknowledge that I have read the Code of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities to prevent and respond to ESHS, OHS, VAC and SEA/SH requirements. I understand that any action inconsistent with this Code of Conduct or failure to act mandated by this Code of Conduct may result in disciplinary action.

Signature: _____

Printed Name: _____

Title: _____

Date: _____

Annex 2.3 – Workers' Code of Conduct

Instructions: This Code of Conduct should be included in bidding documents for the civil works contractor(s) and in their contracts once hired. This Code of Conduct should also be included in bidding documents, and the contracts, of MOWRAM's Consultant. This Code of Conduct is to be signed by all contractor and Consultant staff, including managers, working under CWSIP.

I, _____, acknowledge that adhering to environmental, social, health and safety (ESHS) standards, following the project's occupational health and safety (OHS) requirements, and preventing Sexual Exploitation Abuse (SEA)/Sexual Harassment (SH) is important.

The Contractor/Consultant considers that failure to follow ESHS and OHS standards, or to partake in activities constituting SEA and SH be it on the work site, the work site surroundings, at workers' camps, or the surrounding communities—constitute acts of gross misconduct and are therefore grounds for sanctions, penalties or potential termination of employment. Prosecution by the Police of those who commit VAC, SEA/SH may be pursued if appropriate.

I agree that while working on the project I will:

- Carry out his/her duties competently and diligently;
- Comply with this Code of Conduct and all applicable laws, regulations and other requirements, including requirements to protect the health, safety and well-being of other Contractor's Personnel and any other person;
- Maintain a safe working environment including by:
- Ensure that workplaces, machinery, equipment and processes under each person's control are safe and without risk to health;
- Use appropriate measures relating to chemical, physical and biological substances and agents; and
- Follow applicable emergency operating procedures.
- Report work situations that he/she believes are not safe or healthy and remove himself/herself from a work situation which he/she reasonably believes presents an imminent and danger to his/her life or health;
- Consent to a background check in any place I have worked for more than six months.
- Attend and actively partake in training courses related to ESHS, OHS, VAC, SEA/SH as requested by my employer.
- Will wear my personal protective equipment (PPE) at all times when at the work site or engaged in project related activities.
- Take all practical steps to implement the environmental and social management plan (ESMP).
- Implement the OHS Management Plan.
- Adhere to a zero-alcohol policy during work activities, and refrain from the use of narcotics or other substances which can impair faculties at all times.
- Treat women, children (persons under the age of 18), and men with respect regardless of race, color, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.

- Not use language or behavior towards women, children or men that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.
- Not sexually exploit or abuse project beneficiaries and members of the surrounding communities.
- Not engage in sexual harassment of work personnel and staff —for instance, making unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature is prohibited: i.e. looking somebody up and down; kissing, howling or smacking sounds; hanging around somebody; whistling and catcalls; in some instances, giving personal gifts.
- Not engage in sexual favors —for instance, making promises of favorable treatment (i.e. promotion), threats of unfavorable treatment (i.e. loss of job) or payments in kind or in cash, dependent on sexual acts—or other forms of humiliating, degrading or exploitative behavior.
- Not use prostitution in any form at any time.
- Not participate in sexual contact or activity with children under the age of 18—including grooming or contact through digital media. Mistaken belief regarding the age of a child is not a defense. Consent from the child is also not a defense or excuse.
- Unless there is the full consent[19] by all parties involved, I will not have sexual interactions with members of the surrounding communities. This includes relationships involving the withholding or promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex (including prostitution). Such sexual activity is considered "non-consensual" within the scope of this Code.
- Consider reporting through the GRM or to my manager any suspected or actual SEA/SH by a fellow worker, whether employed by my company or not, or any breaches of this Code of Conduct.
- Complete relevant training courses that will be provided related to the environmental and social aspects of the Contract, including on health and safety matters, and Sexual Exploitation, and Sexual Assault (SEA);
- Report violations of this Code of Conduct; and

With respect to children under the age of 18:

- Bring to the attention of my manager the presence of any children on the construction site or engaged in hazardous activities.
- Wherever possible, ensure that another adult is present when working in the proximity of children.
- Not invite unaccompanied children unrelated to my family into my home unless they are at immediate risk of injury or in physical danger.

[19] **Consent** is defined as the informed choice underlying an individual's free and voluntary intention, acceptance or agreement to do something. No consent can be found when such acceptance or agreement is obtained using threats, force or other forms of coercion, abduction, fraud, deception, or misrepresentation. In accordance with the United Nations Convention on the Rights of the Child, the World Bank considers that consent cannot be given by children under the age of 18, even if national legislation of the country into which the Code of Conduct is introduced has a lower age. Mistaken belief regarding the age of the child and consent from the child is not a defense.

- Not use any computers, mobile phones, video and digital cameras or any other medium to exploit or harass children or to access child pornography (see also “Use of children's images for work related purposes” below).
- Refrain from physical punishment or discipline of children.
- No hiring of children for any CWSIP project activity (no persons under the age of 18).
- Comply with all relevant local legislation, including Labor laws in relation to child Labor and World Bank’s safeguard policies on child Labor and minimum age.
- Take appropriate caution when photographing or filming children (see x-bb below). Photos or films of children should generally not be taken in the CWSIP, except in instances showing the benefits or impacts of road works, such as impacts to schools or school safety trainings.

Use of children's images for work related purposes

When photographing or filming a child for work related purposes, I must:

- Before photographing or filming a child, assess and endeavor to comply with local traditions or restrictions for reproducing personal images.
- Before photographing or filming a child, obtain informed consent from the child and a parent or guardian of the child. As part of this I must explain how the photograph or film will be used.
- Ensure photographs, films, videos and DVDs present children in a dignified and respectful manner and not in a vulnerable or submissive manner. Children should be adequately clothed and not in poses that could be seen as sexually suggestive.
- Ensure images are honest representations of the context and the facts.
- Ensure file labels do not reveal identifying information about a child when sending images electronically.

Raising Concerns

If any person observes behavior that he/she believes may represent a violation of this Code of Conduct, or that otherwise concerns him/her, he/she should raise the issue promptly. This can be done in either of the following ways:

1. Contact [enter name of the Contractor’s Social Expert with relevant experience in handling gender-based violence, or if such person is not required under the Contract, another individual designated by the Contractor to handle these matters] in writing at this address [ ] or by telephone at [ ] or in person at [ ]; by instant messaging platforms, such as Telegram or Whatsapp; or
2. Call [ ] to reach the Contractor’s hotline (if any) and leave a message.

The person’s identity will be kept confidential, unless reporting of allegations is mandated by the country law. Anonymous complaints or allegations may also be submitted and will be given all due and appropriate consideration. We take seriously all reports of possible misconduct and will investigate and take appropriate action. We will provide warm referrals to service providers that may help support the person who experienced the alleged incident, as appropriate.

There will be no retaliation against any person who raises a concern in good faith about any behavior prohibited by this Code of Conduct. Such retaliation would be a violation of this Code of Conduct.

Sanctions

I understand that if I breach this Workers' Code of Conduct, my employer will take disciplinary action which could include:

- Informal warning;
- Formal warning;
- Additional Training;
- Loss of up to one week's salary;
- Suspension of employment (without payment of salary), for a minimum period of 1 month up to a maximum of 6 months;
- Termination of employment;
- Report to the Police if warranted.

I understand that it is my responsibility to ensure that the environmental, social, health and safety standards are met. That I will adhere to the occupational health and safety management plan. That I will avoid actions or behaviors that could be construed as VAC or SEA/SH. Any such actions will be a breach this Workers' Code of Conduct. I do hereby acknowledge that I have read the foregoing Workers' Code of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities to prevent and respond to ESHS, OHS, VAC and SEA/SH issues. I understand that any action inconsistent with this Workers' Code of Conduct or failure to act mandated by this Workers' Code of Conduct may result in disciplinary action and may affect my ongoing employment.

Signature: _____

Printed Name: _____

Title: _____

Date: _____

Annex 2.4 – Reportable Incidents

The following incident types are to be reported using the environmental and social incident response process.

Fatality: Death of a person(s) that occurs within one year of an accident/incident, including from occupational disease/illness (e.g., from exposure to chemicals/toxins).

Lost Time Injury: Injury or occupational disease/illness (e.g., from exposure to chemicals/toxins) that results in a worker requiring 3 or more days off work, or an injury or release of substance (e.g., chemicals/toxins) that results in a member of the community needing medical treatment.

Acts of Violence/Protest: Any intentional use of physical force, threatened or actual, againstoneself, another person, or against a group or community, that either results in or has a highlikelihood of resulting in injury, death, psychological harm, deprivation to workers or project beneficiaries, or negatively affects the safe operation of a project worksite.

Disease Outbreaks: The occurrence of a disease in excess of normal expectancy of number ofcases. Disease may be communicable or may be the result of unknown etiology.

Child Labor: An incident of child labor occurs: (i) when a child under the age of 14 (or a higher age for employment specified by national law) is employed or engaged in connection with a project, and/or (ii) when a child over the minimum age specified in (i) and under the age of 18 is employed or engaged in connection with a project in a manner that is likely to be hazardous or interfere with the child's education or be harmful to the child's health or physical, mental, spiritual, moral or social development.

Forced Labor: An incident of forced labor occurs when any work or service not voluntarily performed is exacted from an individual under threat of force or penalty in connection with a project, including any kind of involuntary or compulsory labor, such as indentured labor, bonded labor, or similar labor-contracting arrangements. This also includes incidents when trafficked persons are employed in connection with a project.

Environmental pollution incident: Exceedances of emission standards to land, water, or air (e.g., from chemicals/toxins) that have persisted for more than 24hrs or have resulted in harm to the environment.

Discrimination based on SOGI: Discrimination means creating a distinction, exclusion, or restriction which has the purpose or effect of impairing or excluding a person based on their real or perceived sexual orientation, gender identity, gender expression, or sex characteristics from being on an equal basis with others.

Sexual Exploitation: Any actual or attempted abuse of position of vulnerability, differential power or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another. In Bank financed operations/projects, sexual exploitation occurs when access to or benefit from a Bank financed Goods, Works, Non-consulting Services or Consulting Services is used to extract sexual gain.

Sexual Abuse: Actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions. In Bank financed operations/projects, sexual abuse occurs when a project related worker (contractor staff, subcontractor staff, supervising engineer) uses force or unequal power vis a vis a community member or colleague to perpetrate or threat to perpetrate an unwanted sexual act.

Sexual Harassment: Any unwelcome sexual advance, request for sexual favor, verbal or physical conduct or gesture of a sexual nature, or any other behavior of a sexual nature that might reasonably be expected or be perceived to cause offence or humiliation to another, when such conduct interferes with work, is made a condition of employment, or creates an intimidating, hostile or offensive work environment. In Bank financed operations/projects, sexual harassment occurs within the context of a subcontractor or contractor and relates to employees of the company experiencing unwelcome sexual advances or requests for sexual favor or acts of a sexual nature that are offensive and humiliating among the same company's employees.

Other: Any other incident or accident that may have a significant adverse effect on the environment, the affected communities, the public, or the workers, irrespective of whether harm had occurred on that occasion. Any repeated non-compliance or recurrent minor incidents which suggest systematic failures that NPCO deems needing the attention of the WB.

For environmental and social incidents

4.A. Form to be completed by NPCO within 48hours

B1: Incident Details			
Date of Incident:	**Time:**	**Date Reported to PIU:**	**Date Reported to WB:**
Reported to PIU by:	**Reported to WB by**:	**Notification Type**: Email/'phone call/media notice/other	
Full Name of Main Contractor:		**Full Name of Subcontractor**:	

B2: **Type of incident (please check all that apply)**[1]
Fatality ☐ Lost Time Injury ☐ Displacement Without Due Process ☐ Child Labor ☐ Acts of Violence/Protest ☐ Disease Outbreaks ☐ Forced Labor ☐ Unexpected impacts on heritage resources ☐ Unexpected impacts on biodiversity resources ☐Environmental pollution incident ☐ Dam failure ☐ Other ☐

B3: Description/Narrative of Incident

For example:

I. *What is the incident?*
II. *What were the conditions or circumstances under which the incident occurred (if known)?*
III. *Are the basic facts of the incident clear and uncontested, or are there conflicting versions? What are those versions?*
IV. *Is the incident still ongoing or is it contained?*
V. *Have any relevant authorities been informed?*

B4: Actions taken to contain the incident			
Short Description of Action	**Responsible Party**	**Expected Date**	**Status**

For incidents involving a contractor:
Have the works been suspended under Contract GCC8.9? Yes ☐; No ☐;
Name of Contractor:

B5: What support has been provided to affected people

4.B. Form to be completed by NPCO (following investigation)

C3a: Fatality/Lost time Injury information

Cause of fatality/injury for worker or member of the public (please check all that apply):

1. Caught in or between objects ☐ 2. Struck by falling objects ☐ 3. Stepping on, striking against, or struck by objects ☐
4. Drowning ☐ 5. Chemical, biochemical, material exposure ☐ 6. Falls, trips, slips ☐ 7. Fire & explosion ☐
8. Electrocution ☐ 9. Homicide ☐ 10. Medical Issue ☐ 11. Suicide ☐ 12. Others ☐
***Vehicle Traffic:* 13. Project Vehicle Work Travel ☐ 14. Non-project Vehicle Work Travel ☐ 15. Project Vehicle Commuting ☐**
16. Non-project Vehicle Commuting ☐ 17.Vehicle Traffic Accident (Members of Public Only) ☐

Name	Age/DOB	Date of Death/Injury	Gender	Nationality	Cause of Fatality/Injury	Worker (Employer)/Public

C3b: Financial Support/Compensation Types (To be fully described in Corrective Action Plan template)

1. Contractor Direct ☐ 2. Contractor Insurance ☐ 3. Workman's Compensation/National Insurance ☐

4. Court Determined Judicial Process ☐ 5. Other ☐ 6. No Compensation Required ☐

Name	Compensation Type	Amount (US$)	Responsible Party

C4: Supplementary Narrative

For SEA/SH Incident

4.C. Incident Form for SEA/SH (to be completed by NPCO within 48 hours)

B1: Incident Details		
Date of incident intake by theproject/GM:	**Date Reported to PIU:**	**Date Reported to WBG:**
Reported to project/GM by: ☐ Survivor ☐ Third party ☐ Other:	**Reported to PIU by**: ☐ GM operator ☐ Directly, by	**Reported to WBG by**: ☐ PIU ☐ Directly, by Survivor ☐

_____ **Is a record of this incident in GM?** Yes ☐ No ☐	Survivor ☐ Directly, by third party ☐ Other: _____	Directly, by third party ☐ Other: _____

B2: **Incident type (please check all that apply)** See Appendix 1 for definitions
Sexual exploitation ☐ **Sexual abuse** ☐ **Sexual harassment** ☐

B3: Provide the following details from the GM record	
Age of survivor (if recorded in GM):	Have the national legislation or mandatory reporting requirements been followed? Yes ☐ No ☐
Sex of survivor (if recorded in GM): Male ☐ Female ☐ Other ☐	Was the survivor referred to service provision?[29] Yes ☐ No ☐
Is the survivor employed by the project (as indicated bythe survivor or complainant and reported in the GM)? Yes ☐ No ☐	Is the alleged perpetrator employed by the project (asindicated by the survivor or complainant and reported in the GM)? Yes ☐ No ☐

B4: Basis for further action	
a. Has the complainant provided informed consent tolodge a formal complaint? Yes ☐ No ☐	c. Has the survivor provided informed consent to be partof an investigation into misconduct? Yes ☐ No ☐
b. Does the employer have a suitable administrative process and capacity in place to investigate misconductrelating to SEA/SH in a survivor-centered way? Yes ☐ No ☐	d. Has the complaint been filed anonymously or through athird party? Yes ☐ No ☐
If the answer to any of these questions is no, has the GM assessed the risks and benefits of carrying out an investigation into the alleged misconduct, taking into account the survivor's safety and wellbeing? Yes ☐ No ☐	
Will an investigation into misconduct be undertaken in addition to an investigation into adequacy of project systems, processes or procedures? Yes ☐ No ☐	

APPENDIX 3 – Summary of Consultations During Project Preparation

A. Consultation at subprojects levels (4-7 October 2022)

Two consultations were conducted with potentially affected households and provincial stakeholders in Mondulkiri and Kratie Provinces:

In Mondulkiri province

Consultation approach

POTENTIAL AREA OF INFLUENCE OF SELECT SUBPROJECTS

- **Step 1:** Upstream flooding impact estimated based on a) maximum flood level (existing functioning reservoirs), or b) use of Digital Elevation Modeling (DEM) to estimate (e.g. for Srea Thom Reservoir)
- **Step 2:** Potential flooding impacts for future reservoir estimated based on topographical survey (to be completed in 1.5 months) to define scope of potential inudation impact (upstream) and impact downstream
- Meanwhile, water modeling being undertaken to calculate how much water to be retained upstream (considering precipitation, water infiltration, runoff…) to estimate water quatity to be restricted to downstream
- During this time, consultation focuses on potential upstream impacts and other ES risks and impacts during construction during design, pre-construction, construction stages)
- Consultation with downstream population will be done when impacts (based on analysis from step 2) become available (operational stage).

E&S RISKS AND IMPACTS INITIALLY IDENTIFIED

- Double check with local people/ validated with respective governmental agencies at provincial level.
- Key broad issues (typical at project level) are consulted with NGO (NGO Forum, Cambodian Indigenous Peoples Organisation, IUCN, WWF…), issues such as IP customs and habits, development needs, fauna and flora…

MEETING AT PROVINCIAL LEVEL

- There should be a map that clearly indicate the boundary of impact of subproject (physical structure and water flooding impact)
- Need to raise awareness of workers on protected area management law, any prohibitions/cautions related to wildlife
- Need to inform Phnom Pricy Wildlife Sanctuary before construction activities.
- Need to conduct a meaningful consultation with IP community at all proposed sub-project areas on potential underground heritage sites and other spiritual sites.
- If land acquisition is required, land for land option is preferred
- Previous experience showed that when irrigation scheme is not built as a complete system, farmer broke dike to get water into their field.

MEETING AT VILLAGE LEVEL

- Villagers have long expected reliable irrigation to support farming, livestock, domestic water use, especially during dry season
- Most households in the village would not be directly affected since they live around 4 to 5 Km away.
- About 10 households (2ha to 4ha each) who farm in existing dike will be affected when flooded
- New pastureland for livestock need to be identified as alternative during dry season (in Oh-Chor and Srae Pok).
- It seems no collectively owned IP land and significant spiritual sites of the community are affected based on the flooded area of the existing reservoir
- Accurate flooded area due to new upgraded reservoir not yet confirmed (pending result from topographical survey to be completed in the next 2 months
- No physical heritage are located in the proposed subproject area (based on current consultation)
- No gender issues envisaged among community member (male and female have their own role and responsibility in their family).
- No significant SEA/SH cases so far due to regular awareness raising done by local authorities and police.
- Quality of underground water not good (water is hard).

In Kratie province

MEETING AT PROVINCIAL LEVEL

- Subproject should be designed as a complete irrigation system to facilitate effective O&M when handed over to local authority and Farmer Water Users Community (FWUC).
- Around 20 households living adjacent to the existing reservoir that need to be informed in advance if spillway height is raised (1-2m) to increase water retention capacity.
- No significant case of SEA/SH so far thanks to regular awareness raising done by local authorities and police.
- Expect temporary job opportunity for local women.
- Since land conflicts are common in the reservoir area, reservoir area and associated canals need clear zoning/ demarcation/ boundaries, to avoid encroachment.
- Some spiritual sites of IP could be existent, should be careful during subproject design, and ES screening.
- No physical heritages envisaged based on flooding impact of the existing reservoir (to be confirmed when flooded area of subproject become available in the next two months)
- PDAFF will prepare agriculture extension plan for the target areas.

MEETING AT PROVINCIAL LEVEL

- Might be some issues related to land in catchment areas and at reservoir boundary.
- There are a few physical cultural sites in Svay Chrum commune
- Local IP have some intangible culture practices such as guardian forest, graves and other believes.
- Risk of forest destruction due to flooding and/or forest conservation due to construction activities and illegal fishing by construction workers
- Svay Chrum reservoir is a tributary from Preak Te connected to Mekong. Project will likely help increase the habitat for critical species within the reservoir. Some short-term impacts anticipated

during construction. Currently, no impact envisaged on critical biotic species and herbal plants, etc.

- Risk of contractors discharging wastewater into agricultural land, water and/or public places that might have serious impacts on environment and community.

MEETING AT PROVINCIAL LEVEL

- Fishery habitat should be carefully considered. There are different species of fishes that lays egg in different ways while floating and in place. Fishway should be designed for reservoir, weird, barrage to avoid obstruction to migratory species
- Need to inform Community Fishery (CFi) for clear identification of CFi's management zone to avoid impact on CFi's core zone.
- Suitable job should be arranged for people with disabilities
- ESMP implementation should be enforced
- Practical training should be provided to worker on health/sanitation and natural resource protection
- Unexploded Explosive Ordnance is potential near reservoir area (about 5km from Svay Thrum Reservoir). Will share UXO map for subproject areas.
- Should involve women Labor in the project.
- Concerned about water quality control and sanitation, especially domestic water use.

MEETING AT COMMUNE LEVEL

- Participants (Bunong and Kuoy IPs) appreciated proposed subproject that supports the development of their community. The community is willing to support as needed.
- Suggests having a praying ceremony (with wine and buffalo) before construction ground-breaking take place
- Thmei village chief suggested to protect a spiritual house at Oh Chro Noal bridge
- Chro Noal village suggested to protect a spiritual house of banyan tree 150m from North of Chro Noal village
- Should provide training to or awareness raising for immigrant workers to ensure they understand the local IP culture, protect natural resource and IP's spiritual sites.
- No remarkable impact on natural habitat (fauna and flora) envisaged within the proposed subproject area.
- No impact on physical heritage anticipated in proposed subproject area.

B. <u>Consultation with NGOs at national level (11-12 October 2022)</u>

- IPs should be informed sufficiently and in advance of project's ES risks and potential impacts, particularly those related to their livelihoods – for meaningful feedback
- Important to share project's information, particularly project's ES risk and impacts with people in upstream and downstream area to solicit their feedback
- Important to check carefully IP's potential sacred sites, such as trees, rocks… that IP may worship
- Carefully check if the IP and other farmers are farming in potentially inundated area
- If farmers occupy state managed land and have used the occupied land for 5 years or more without government's actions in taking the land back, land occupied are considered farmers' land (Law on Land) 2001).
- Project should develop an action plan to timely address the concerns of affected peoples

- Due attention should be given to areas where properties of local people are located and are subject to flooding
- A warning system needed (e.g. emergency preparedness plan) to enable people to relocate/ evacuate as needed;
- Attention paid to plantation owned and operated by private companies, farming activities, and potential conflicts/dispute between them (land use planning)
- Soil properties should be studied carefully to avoid water loss due to seepage/infiltration (Stung Treng Province)
- Cropping pattern, crops varieties should be studied carefully to see if it is suitable to farmers' current cultivation practices/ needs/ future market
- At farm level, attention to potential water shortage among paddy fields within a command area (due to water distribution and/or coordination among rice farmers
- Inventory of land titles should be done to understand if the land located in the beneficiary command areas are owned by local farmers, or there are also lands owned by people who farm
- Possibility of urbanization that may happen near subproject to take advantage of the improved access to water access offered by the project
- Assessment of water needs is needed to farm level (e.g. what is farmers' need: one/two/three crops per year, and how additional crop will be used (e.g. home consumption, selling of surplus).
- Explore market for existing crop (e.g. rice variety, cash crop…)
- Home Labor, and Labor force, Labor market to cultivate additional crops
- Attention to mining activities upstream (e.g. contamination of water downstream during dry season).

Consultation with CIPO (Cambodian indigenous peoples organization)

- IPs typically want collective land (rather than individually owned land)
- Spiritual forest land/burial land is very important to them
- Some still practice slash-and-burn/ shifting agriculture ➔ land rotation every 4-5 years
- IP may grow various type of crops (under shifting agriculture) – more than 200 type of crops, still do hunting
- IP may not rely on outside market since their farming activities are mainly self-supplied and rely on forst for non-timber forest products (NTFP)
- IP may prefer highland farming rather than farming in the plain area
- Land speculation is widespread (e.g. for tourism, industrial development)
- Project should try to avoid affecting IP's collective land (CIPO is having a project that faciliate collective land titling in Mondulkiri province)
- There is a high demand for organic products (high-end market) that project may consider (as part of agri-busienss effort) to promote. This demand is still high at district level
- Focus on support for IP youth, young entepreneur
- Ensure Water Users Community/Group has IP as representatives.

APPENDIX 4 – Construction Activities

Annex 4.1 – Outline for Environmental and Social Management Plan

An Environmental and Social Management Plan (ESMP) consists of a set of mitigation, monitoring, and institutional measures to be taken during implementation and operation of a project to eliminate adverse environmental and social risks and potential impacts, offset them, or reduce them to acceptable levels. The ESMP also includes the measures and actions needed to implement these measures.

Site-specific ESMPs will be needed for all subprojects financed under the CWSIP. Some subproject locations may be covered by the same ESMP, for instance if the subproject location are adjacent and similar. The ESMPs will be prepared by MOWRAM with the assistance of E&S Supervision Consultants.

The ESMP will consist of:

a) Brief Project description
b) Overview of the Project location, including socioeconomic and environmental baseline
c) information
d) Legislative Framework (RGC laws and regulations, WB ESF and Gap Analysis)
e) Identifying all anticipated adverse environmental and social impacts, including those involving indigenous people or involuntary resettlement (and making relevant links to RPs and IPPs), and any relevant direct, indirect or cumulative impact;
f) Describing in detail each mitigation measure, including the type of impact to which it relates to, including Labor Management Procedures, Occupational Health and Safety Procedures, Community Health and Safety Plan, Child Labor Prevention Plan, Labor Influx Plan, SEA/SH and other plans that may be necessary (cultural heritage, biodiversity management, etc.)
g) Monitoring objectives and the type of monitoring, with linkages to the impacts assessed, including a description of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements and monitoring and reporting procedures;
h) Stakeholder Engagement, aligned with the project's SEP, and summary of consultations conducted on the ESMP;
i) Description of the Grievance Redress Mechanism, including a specific Labor-GRM for workers;
j) Description of institutional arrangements, identifying which party is responsible for carrying out the mitigation and monitoring measures (i.e., for operation, supervision, enforcement, monitoring, staff training, etc.), capacity assessment of the Borrower (MOWRAM) and a training plan for the MOWRAM'S ESOs;
k) Implementation Schedule and Cost Estimates, showing coordination with overall project
l) implementation plans, costs and sources of funds.

SAMPLE TABLE FOR ESMP MONITORING

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	LOCATION	ESTIMATED MITIGATION COSTS	EXECUTING AGENCY	SUPERVISING / MONITORING AGENCY
DETAILED DESIGN/ PRE-CONSTRUCTION MOBILISATION STAGE					
CONSTRUCTION STAGE					
OPERATION AND MAINTENANCE STAGE					

Annex 4.2 – Sample Monitoring Checklist

SUBPROJECT:	**LOCATION:**
DATE:	**CONTRACTOR:**
PREPARED BY:	**SUPERVISION :CONSULTANT**
ENDORSED BY:	

Inspection Participants: (insert names and positions)

ESMP Items	**Applies**		**Compliance Status**	**Issues**	**Status (R)/ (O)**	**Action Required/Taken by_____**	**Target/ Actual Date**	**Checked by:**
	Yes	**No**						**Date checked:**
Mitigation & Management Measures: Construction Phase								
Mitigation measure from ESMP								
Mitigation & Management Measures: Operation and Maintenance Phase								
Mitigation measure from ESMP								
Describe briefly incidents/ E&S issues								

Select one scale: Fully Non-Compliant – Non-Compliant – Slightly Non-Compliant – Slightly Comply – Comply – Comply Fully

Status: (R) Resolved Issues, (O) Ongoing Issues

Annex 4.3 – Environmental Codes of Practices for Construction

This Annex has two sections (Section 1 and Section 2) that set out the guidelines to prepare for the ECOP to mitigate the social and environmental impacts mainly during the construction phase.

Section 1 – Environmental Codes of Practice (ECOP) for Construction

The attachment presents a generic ECOP to be finalized during the preparation of an Environmental and Social Management Plan (ESMP) and it will be applied to all works contracts to be carried out under Component 1 (Water Services Delivery) and Component 5 (Contingency Emergency Response Component). The ECOP comprises two parts: (1) General provision and planning and (2) Construction management and monitoring including a chance find procedures and specific requirements on environmental health and safety as required by WB's ESF. The ESOs of PMU at MOWRAM will be responsible for ensuring full compliance of ECOP.

The final ECOP will be incorporated into bidding and contract documents and applied to all rehabilitation works of project investments or other works to be conducted under the CWSIP project. The ECOP was developed based on the principle that the potential negative impacts of works could create similar potential impacts (increased in air, noise, vibration, waste generation, safety risks, local traffic, etc.) and could be mitigate through good environmental management practices however the scale and level of issues and the required mitigations and its associated cost are different and require different efforts and expertise during supervision and monitoring. The application of ECOP may be new to WB support project for MEW, and further development is expected so that it could become a standard procedure to be mainstreamed into MEW operations related to works in the near future.

Application of ECOP: According to the criteria established for type of works and the screening criteria for CWSIP, all rehabilitation works will apply the generic ECOP describes in this attachment. After the ESMP is approved by WB, the PSS will incorporate the final ECOP into bidding and contract documents and ensure that the bidders/contractors are committed to this obligation and are aware that the mitigation cost is part of the construction cost. Before construction begins the PCU will assign a qualified field engineer or the construction supervision consultant (CSC) to be responsible for the day-to-day supervision and monitoring of safeguard performance of contractor and including the results in the construction supervision progress report. PCU will also mobilize an environmental monitoring consultant (EMC) to conduct periodic monitoring of the contractor performance and report the results and possible complaints from local authorities, communities, and/or other stakeholders. The PCU may assign the responsibility for mobilization of the EMC to a designated community organization e.g. the head of the Irrigation Association.

Scope of ECOP: ECOP requirements are divided into two parts: (1) General Provision and Planning and (2) Construction Management and Monitoring. Part (1) describes roles and responsibility of the project investment owner, contractor, and supervisor including the basic principles for contractor to consider during the construction planning or development of the contractor's standard operation procedures (SOP) while Part (2) describes standard requirements during execution of works to reduce potential impacts on air, noise, vibration, water, etc. including monitoring indicators and monitoring requirements (if needed).Modifications the generic ECOP can be made to suit specific issues/conditions observed/agreed during the transect walk or the preparation of the ESMP. For the sake of clarity, "construction" in this document includes all site preparation, demolition, spoil disposal, materials and waste removal and all related engineering and construction activities.

The following guidelines will be incorporated into the bidding and contract documents of the project investments to be conducted by Contractor.

Part (1): General Provision and Planning
Section (1.1) Contractor responsibility

The Contractor is responsible for making best effort to reduce and mitigate the potential negative impacts on local environment and local resident including making payment for all damages that may occur. Performance of the Contractor will be closely supervised and monitored by the CSC and/or qualified field engineer as well as periodic monitored by a qualified consultant to be assigned by the project investment owner. Results of the ECOP compliance monitoring will be included as part of the construction progress report. Compliance with ECOP will be part of the Contractor's construction compliance.

The Contractor will also be responsible for ensuring that any subcontractors will comply with ECOP.

Specifically, the Contractor will be responsible to comply with, but not limited to, the followings:

- The contractor shall be responsible for ensuring that he or she has all relevant legal approvals and permits required to commence works.
- The contractor shall be responsible for maintaining security over the construction site including the protection of stored materials and equipment. In the event of severe weather, the contractor shall secure the construction site and associated equipment in such a manner as to protect the site and adjacent areas from consequential damages. This includes the management of onsite, construction materials, construction and sanitary wastes, additional strengthening of erosion control and soil stabilization systems and other conditions resulting from contractor activities which may increase the potential for damages.
- The Contractor will install the Work Camp on areas far enough from water points, houses and sensitive areas in consultation with the community and the project investment owner. Good quality sanitary equipment should be selected and installed in the Work Camp.
- The Contractor will manage all activities in compliance with laws, rules and other permits related to site construction regulations (what is allowed and not allowed on work sites), and will protect public properties. Degradation and demolition of private properties will be avoided. Paying compensation to damage to the public facilities and/or private property will be required. The Contractor will inform the project investment owner on issue and/or damages that may unexpectedly occur.
- The contractor shall control noise emissions generated as a result of contracting activities to the extent possible. In the case of site locations where noise disturbance will be a concern, the contractor shall ensure that the equipment is in good working order with manufacturer supplied noise suppression (mufflers etc.) systems functioning and in good repair. Where noise management is a concern, the contractor shall make reasonable efforts to schedule activities during normal working hours (between 7 am and 5 pm). Where noise is likely to pose a risk to the surrounding community either by normal works or working outside of normal working hours or on weekends, the contractor shall inform the contracting officer and shall develop a public notification and noise management plan for approval by the contracting officer.
- The Contractor has the responsibility for maintaining good hygiene, safety, and security on work sites, including protection of and health and safety of staff and workers. The Contractor has to prevent standing water in open construction pits, quarries or fill areas to avoid potential contamination of the water table and the development of a habitat for disease-carrying vectors and insects.

- The Contractor should use a quarry of materials according to the mining code requirements and compensate planting in case of deforestation or tree felling. When possible, the Contractor should develop maintenance and reclamation plans, protect soil surfaces during construction and re-vegetate or physically stabilize eligible surfaces, preserve existing fauna and flora and preserve natural habitats along streams, steep slopes, and ecologically sensitive areas.
- The Contractor should select sustainable construction materials and construction method, during construction, control dust by using water or through other means and control and clean the construction site daily.
- The Contractor will work with local authority and management local traffic effectively and ensure traffic access of road safety of local residents and road users during the works. Speed limit at work sites and community area will be applied to all vehicles and cars. All vehicles and their drivers must be identified and registered and the drivers are properly trained.
- The Contractor should install signaling of works, ensure no blockage of access to households during construction and/or provide alternative access, provide footbridges and access of neighbors and endure construction of proper drainage on the site.
- The Contractor should respect the cultural sites, ensure security and privacy of women and households in close proximity to the camps and safely dispose asbestos.

Section (1.2) Non-compliance reporting procedures

The Contractor (and its subcontractors if any) must comply with the final ECOP. To ensure that necessary action has been undertaken and that steps to avoid adverse impacts and/or reoccurrence have been implemented, the EMCs and/or Contractors must advise the project investment owner within 48 hours of any serious incidents of non-compliance with the final ECOP that may have serious consequence. In the event of working practices being deemed dangerous either by the project investment owners, the local authorities, or the other concerned agencies, immediate remedial action must be taken by the Contractors**.** The Contractors must keep records of any incidents and any ameliorative action taken. The records on non-compliance that could be practically addressed (not cause serious impacts) should be reported to the project investment owner on a monthly basis.

The Contractor will be responsible for dealing with any reports/grievance forwarded by the project investment owner, Police or other agencies (by following instruction from the project investment owner representative as appropriate) as soon as practicable, preferably within one hour but always within 48 hours of receipt by the Contractor. The CSC/EMC will monitor and ensure that the Contractor has taken appropriate action. Where appropriate, approval remedial actions may require an agreement from the local authorities and/or other Government agencies. Procedures should be put in place to ensure, as far as is reasonably practical, that necessary actions can be undertaken to avoid recurrence and/or serious damage.

Section (1.3) Liaising with local authorities and the public

Prior to the commencement of project investment activities and throughout the construction duration, the Contractor will work closely with the local authorities and other agencies to ensure full compliance with Government regulations and will also provide adequate information on the Project to the general public, especially those that may cause public safety, nuisance, and sensitive areas and the locations of storage and special handling areas. The Contractor will provide information and reporting telephone “Hot Line” staffed at all times during working hours. Information on this facility shall be prominently displayed on site hoardings.

Section (1.4) Community relations

The Contractor will assign one community-relation personnel, who will be focused on engaging with the community to provide appropriate information and to be the first line of response to resolve issues of concern. Contractors will take reasonable steps to engage with residents of ethnic minority backgrounds and residents with disabilities (or other priority groups as appropriate), who may be differentially affected by construction impacts.

The Contractor will ensure that local residents nearby the construction sites will be informed in advance of works taking place, including the estimated duration. In the case of work required in response to an emergency, local residents shall be advised as soon as reasonably practicable that emergency work is taking place. Potentially affected residents will also be notified of the 'Hotline' number, which will operate during working hours. The "Hotline" will be maintained to handle enquiries regarding construction activities from the general public as well as to act as a first point of contact and information in the case of any emergency. All calls will be logged, together with the responses given and the callers' concerns, and response will be provided promptly. The helpline will be widely advertised and displayed on site signboards.

The Contractor respond quickly to emergencies, complaints or other contacts made via the 'Hotline' or any other recognized means and liaise closely with the emergency services, local authority officers and other agencies (based on established contacts) who may be involved in incidents or emergency situations. The Contractor will manage the work sites, work camps, and workers in a way that is acceptable to local residents and will not create any social impacts due to workers. Any construction workers, office staff, Contractor's employees, or any other person related to the Project found violating the *"prohibitions*" activities listed in Section (1.7) below may be subject to disciplinary actions that can range from a simple reprimand to termination of his/her employment depending on the seriousness of the violation.

Section (1.5) Implementation of the Environmental Health and Safety (EHS) guideline

In line with WB's ESF, the Contractor is required to comply with the Environmental Health and Safety Guidelines (EHSG) established for the project investment with financial support from the WB group (WBG). The EHSG provides general guidance on the pollution prevention and abatement measures and workplace and community health and safety guidelines that are normally acceptable in Bank-supported projects, particularly in cases where the borrowing country does not have standards, or when its standards fall significantly short of international or industry-wide norms. The EHSG are divided in two parts: general guidelines on health and safety and pollution prevention and abatement, including general standards for air and water quality, and a set of sector-specific guidelines for various types of development projects. The Contractor will prepare an EHS Plan with an aim to identify the potential impacts and to develop a mechanism for a better management of the environmental health and safety of project activities during construction. The EHS Plan will be incorporated in to the Contractor's own Standard Operating Procedures (SOPs). At a minimum the following EHS rules will be strictly followed:

***Site EHS Rules*:**

- EHS orientation sessions before starting work;
- Wearing of personal protective equipment (gloves, helmets, safety shoes, dungarees, goggles etc);
- Follow the messages and instructions displayed on EHS notice boards installed on site;
- Promptly reporting all accidents to the concerned authority;
- Maintain appropriate barricades as required;

- Vehicles must be driven at a safe speed, observing speed limits of 30 Km/h and designated routes as mentioned in Contractor's Mobility Map;
- Drivers must have a valid driving license for the class of vehicle they are operating;
- Vehicles shall only be parked in designated parking areas; and
- Mine clearance of the project investment area.

***Health and Hygiene*:** The measures should include:

- Provision of adequate medical facilities to the staff;
- Provision of hygienic food to the employees;
- Provision of cooling and heating facilities to the staff; and
- Provision of drainage, sewerage and septic tanks in camp area.

Security: Security measures should include:

- Regular attendance and a controlled time keeping of all employees;
- Restriction of un-authorized persons to the residential and work areas;
- Restriction of carrying weapons and control hunting by employees; and
- Provision of boundary walls/ fences with proper exits to the camp.

Section (1.6) Implementation of *"Chance Find"* Procedures

If the Contractor discovers archaeological sites, historical sites, remains and objects, including graveyards and/or individual graves, or UXOs during excavation or construction, the Contractor will carry out the following steps:

- 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 National Culture Administration take over;
- Notify the supervisory Project Environmental Officer and Project Engineer who in turn will notify the responsible local authorities and the provincial Department of Culture & Fine Arts immediately (within 48 hours or less);
- Responsible local authorities and the provincial Department of Culture & Fine Arts 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 by the archeologists of Ministry of Culture and Fine Arts. 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 and Culture Department of Province. This could include changes in the layout (such as when finding an irremovable remain of cultural or archeological importance) conservation, preservation, restoration and salvage;
- Implementation for the authority decision concerning the management of the finding shall be communicated in writing by relevant local authorities; and
- Construction work could resume only after permission is given from the responsible local authorities or Culture Department of Province concerning safeguard of the heritage.

Section (1.7) Prohibitions

The following activities are prohibited on or near the project sites:

- Cutting of trees for any reason outside the approved construction area; Hunting, fishing, wildlife capture, or plant collection; Buying of wild animals for food; Having caged wild animals (especially birds) in camps; Poaching of any description; Explosive and chemical fishing; Disturbance to anything with architectural or historical value;
- Building of fires; Use of unapproved toxic materials, including lead-based paints, asbestos, etc.; Use of firearms (except authorized security guards); Use of alcohol by workers in office hours; Driving in an unsafe manner in local roads;
- Washing cars or machinery in streams or creeks; Maintenance (change of oils and filters) of cars and equipment outside authorized areas: Creating nuisances and disturbances in or near communities; Disposing garbage in unauthorized places; Indiscriminate disposal of rubbish or construction wastes; Littering the site; Spillage of potential pollutants, such as petroleum products; Collection of firewood; Urinating or defecating outside the designated facilities; and Burning of wastes and/or cleared vegetation.

Part (2) Construction Management and Monitoring

Section (2.1) Mitigation measures

Table below defines guidelines for the mitigation measures to be carried out by Contractor during implementation of construction works including key monitoring indicators for supervision by CSC/EMC. These requirements should be consistent with the final ESMP.

No.	Activities causing impacts	Mitigation measures	Monitoring indicators
1	**Establishment, operation of Labor camps, material and equipment yards and access roads**	▪ Ensure that the sites for campsite approved by PMU (PO); Construction of camp at location shown in the Contractor's Mobility Map ▪ Ensue that washing areas, demarcated and water from washing areas and kitchen is released in sumps. ▪ Ensure septic tanks of appropriate design have been used for sewage treatment and outlets are released into sumps ▪ Ensure that the outlets released into sumps must not make a pond of stagnant water. ▪ Ensure that latrines, septic tanks, and sumps are built at a safe distance from water body, stream, or dry streambed, and the sump bottom is above the groundwater level.	Selected sites through tripartite consultation including community, Contractor and PMU representative
2	**Provision of camp facilities & Site security**	▪ Provision of security, septic tanks, latrines, lined wash area, safe water supply, paths, fire prevention equipment etc. ▪ The contractor shall be responsible for maintaining security over the construction site including the protection of stored materials and equipment. In the event of severe weather, the contractor shall secure the construction site and associated equipment in such a manner as to protect the site and adjacent areas from consequential damages. This includes the management of onsite, construction materials, construction and sanitary wastes, additional strengthening of erosion control and soil stabilization systems and other	Comfortable living of staff

No.	Activities causing impacts	Mitigation measures	Monitoring indicators
		conditions resulting from contractor activities which may increase the potential for damages.	
3	**Disposal of waste generated from the camp & construction debris**	▪ Recycle metallic, glass waste; burry organic waste in impervious pit covered with soil. ▪ Ensure that waste material is properly disposed of in a manner that does not affect the natural drainage. ▪ The contractor shall provide a solid waste management plan that conforms to the national solid waste management policies and regulations and the Project ESMP for approval by MOWRAM. ▪ The site waste management plan shall include a description of waste handling procedures including collection, storage and disposal through the national waste management system. There will be no open burning of waste material and the contractor shall endeavor to recycle wastes as appropriate. Under no circumstances shall the contractor allow construction wastes to accumulate so as to cause a nuisance or health risk due to the propagation of pests and disease vectors.	No health issue occurred
4	**Access tracks/haulage routs**	▪ The moving machinery should remain within the project boundary. ▪ Ensure that the access tracks, which are prone to dust emissions and marked on the map, should be maintained by water spraying daily. ▪ After completion of construction work all the damaged roads / tracks will be restored by the Contractor, as it is Contractor's obligations. Ensure that surface run-off controls are installed and maintained to minimize erosion. ▪ Restriction on movement of Contractor's vehicles on designation routes; deploy traffic man at the village to control the traffic.	Usage of the selected tracks
5	**Hiring skilled workers from outside of the locality**	▪ Hiring of Labor from the local communities	Signed Agreement between PMU and community for hiring of Labor
6	**Worker's safety and hygienic conditions**	▪ Provision of protective clothing and equipment for Laborers handling hazardous materials, (helmets, adequate footwear) for concrete works (long boots, gloves), for welders (protective screen, gloves dungaree), etc.	Safe working conditions
7	**Water for Labors consumption and construction**	▪ Contractor has to make his own arrangements for water.	Water tanker and pump by the Contractor
8	**Interruption of canal water supply**	▪ Divert water through pipes at construction places.	Farmers' complaint

No.	Activities causing impacts	Mitigation measures	Monitoring indicators
9	**Social issues**	▪ Ensure that conflicts with local power holders and local communities are avoided. ▪ Ensure that focus group meetings are conducted with both men and women to identify any water related and other issues related to project implementation.	Conflict, suspension of the project investment work
10	**Storage of hazardous material (including waste)**	▪ Provide hard compacted, impervious and bounded flooring to hazardous material storage areas; Label each container indicating what is stored within; Train staff in safe handling techniques.	No health hazard and water contamination occurred.
11	**Construction activities; handling of fuels, oil spell and lubricants**	▪ Ensure that no contaminated effluent is released in to the environment. ▪ Ensure that fuels, oils, and other hazardous substances handled and stored according to standard safety practices such as secondary containment. ▪ Fuel tanks should be labeled and stored in impervious lining and dykes etc. ▪ Ensure that vehicle refueling to be planned on need basis to minimize travel and chance spills. ▪ Ensure that operating vehicles are checked regularly for any fuel, oil, or battery fluid leakage.	No oil spill observed
12	**Cutting of trees in the right of way where required**	▪ To get agreement of the PMU members	Signed Agreement between PMU and community
13	**Excavation of channels**	▪ Proper compaction and water sprinkling	Erosion and dust emission minimized
14	**Disposal of excavated material**	▪ Stockpile the excavated material to non-agriculture and in a minimum area and away from storm water	Minimum loss of habitat
15	**Downstream water availability during project work.**	▪ Provision of diversion pipes for continuous water supply during rehabilitation works	Agreement between water users signed.
16	**Loss of fertile soil and vegetation; impacts on natural vegetation and embankment erosion along the watercourse.**	▪ Remove surface soil of the location, stocked in a proper place and once the construction is finished, put the soil back on that place. The left-over spoil soil should be collected and kept aside for rehabilitation of the site at later stage of the work; re-vegetate the embankments with indigenous plant species	Banks stabilized and re-vegetated
17	**Dust and smoke emissions**	▪ All truckloads of loose materials shall be covered during transportation. Water spraying or any other methods shall be used by the Contractor to maintain the works areas, adjacent areas, and roads, in a dustless condition, as well the vehicle speed not to be exceeded from 30Km/h. Vehicles will be tuned regularly to minimize the smoke emissions.	Dust and smoke controlled

No.	Activities causing impacts	Mitigation measures	Monitoring indicators
18	**Noise pollution**	▪ Vehicles and equipment used to be fitted, as applicable, and with properly maintained silencers. Restriction on loudly playing radio/tape recorders etc.	Excessive noise generation controlled
19	**Excavation of borrow areas**	▪ Excavate borrow soil up to maximum depth of 0.5m; with slope boundaries	Borrow area rehabilitated as per specification
20	**Rehabilitation of borrow pits**	▪ Proper rehabilitation of borrow pits; Removal and storage of top 15 cm topsoil having organic materials and spreading it back during restoration of borrow area	Borrow areas rehabilitated
21	**Encountering archaeological sites during earth works**	▪ PMU field supervisor will halt the work at the site and inform to the regional team leader and Archaeological Department immediately.	The report from the project investment field supervisor, community and contractor
22	**Aesthetic/ scenic quality**	▪ Carry out complete restoration of the construction sites. ▪ Remove all waste, debris, unused construction material, and spoil from the worksites.	Risk to the Labor and visitor
23	**Traffic Management**	▪ Alternative routes will be identified in the instance of extended road works or road blockages; ▪ Public notification of all disturbance to their normal routes; ▪ Signage, barriers and traffic diversions must be clearly visible, and the public warned of all potential hazards; ▪ Provision for safe passages and crossings for all pedestrians where construction traffic interferes with their normal route; ▪ Active traffic management by trained and visible staff at the site or along roadways as required to ensure safe and convenient passage for the vehicular and pedestrian public; and ▪ Adjustment of working hours to local traffic patterns, e.g. avoiding major transport activities during rush hours or times of livestock movement.	
24	**Water Quality**	▪ The Contractor shall comply with ECOP requirements for water quality. Under no circumstances shall the contractor permit the collection of standing water as a consequence of contractor activities to ensure that it does not create breeding grounds for any pests such as mosquitoes.	
25	**Site Stabilization and Erosion Control**	▪ The Contractor shall implement measures at the site of operations to manage soil erosion through minimization of excavated area and time of exposure of excavated areas, preservation of existing ground cover to the extent possible, provision of approved ground cover and the use of traps and filtration systems. Where excavations are made, contractor shall implement appropriate stabilizing techniques to prevent cave-in or landslide. Measures shall be approved by the contracting officer.	

No.	Activities causing impacts	Mitigation measures	Monitoring indicators
		▪ The contractor must ensure that appropriate erosion control measures such as silt fences are installed. Proper site drainage must be implemented. Any drain clogged by construction material or sediment must be unclogged as soon as possible to prevent overflow and flooding. The use of retaining structures and planting with deep rooted grasses to retain soil during and after works must be considered. The use of bio-engineering methods must be considered as a measure to reduce erosion and land slippage. All slopes and excavated areas must be monitored for movement. ▪ The contractor will establish appropriate erosion and sediment control measures such as hay bales, sedimentation basins, and / or silt fences and traps to prevent sediment from moving off site and causing excessive turbidity in nearby streams, rivers and wetlands. Construction vehicles and machinery will be washed only in designated areas where runoff will not pollute natural surface water bodies.	

Section (2.2) Environmental quality monitoring

In the case that an environmental quality monitoring is required during construction (as agreed during the transect walk and consultation with local community and/or preparation of the ESMP), the following monitoring program may be considered while specific locations, parameters, and frequency will be included in the Contractor's SOP:

IMPACT	PARAMETERS	EXAMPLE LOCATIONS	FREQUENCY
Air emissions	Dust level	Vicinity of clearing works, materials stockpile, and/or community areas	In windy conditions or when traffic is heavy
Noise and vibration generation	Noise levels to meet Government requirements	In the vicinity of sensitive receivers	In response to complaints
Erosion and Sedimentation	Turbidity or total suspended solid (TSS)	Receiving water body upstream of other water use that are sensitive to turbidity and/or sedimentation	After heavy rain events
Contamination of hazardous soils	Pesticides and heavy metals in sediments	In areas of known contamination	Prior to disposal; Prior to reuse
Surface water quality deterioration	TSS, pH, BOD, salinity, coliforms to meet government requirements	Downstream of Works in waterways or water body receiving wastewater from work offices and/or work camp.	Regularly during construction works

Attachment 2 (b) Simplified ECOP

This attachment presents a generic good environmental and housekeeping practices aiming to minimize the potential negative impacts during construction for very small civil works given attention to address

the issue related to human and environmental safety and minimize disturbance of local residents. The project owner will ensure that the following practices are strictly implemented as relevant to the activities and locations of works. These requirements should be incorporated into the bidding and contract documents and contractor performance should be supervised, monitored, and reported as part of the project progress report.

The following "Do" and "Do Not" should be strictly observed:

Do:

- Limited working hour during the day time, especially in residential areas, and control driving speed;
- Minimize earth excavation and appropriate disposal of spoil;
- Minimize opening of new borrow pits and ensure proper closure;
- Minimize traffic congestion, dust and noise generation;
- Proper maintenance of construction equipment and vehicles;
- Provide appropriate safety sign (day and night) and closely inform local residents;
- Avoid spill of used oil and other toxic materials, including safe transportation and storage;
- Apply good housekeeping in the construction and/or storage sites to ensure safety of workers and peoples (collect and remove debris to keep the work site orderly and safe); Plan and implement adequate disposal of scrap, waste and surplus materials; Keep the work area and all equipment tidy; Designate areas for waste materials and provide containers; Keep stairways, passageways and ladders free of material, supplies and obstructions; Secure loose or light material that is stores on roofs or open floors; Keep materials at least 2m (5ft) from openings, roof edges, excavations or trenches; Remove or bend over nails protruding from lumber; Keep hoses, power cords, welding leads, etc. from laying in heavily travelled walkways or areas; Ensure structural openings are covered/protected adequately; Provide the appropriate fire extinguishers for the materials found on-site. Keep fire extinguisher stations clear and accessible; etc.)
- Ensure access to clean water and latrines by workers and provide mosquito net.
- Avoid social/cultural conflict between workers and local population.

Do Not:

- Do not permit rubbish to fall freely from any locations of the project and/or access by animals (dogs, cats, pigs, etc.). Use appropriate containers.
- Do not throw tools or other materials.
- Do not raise or lower any tool or equipment by its own cable or supply hose.
- Use grounding straps equipped with clamps on containers to prevent static electricity buildup.
- Do not allow hunting of animals by workers in protected areas.

SPECIAL NOTE ON FLAMMABLE/EXPLOSIVE MATERIALS:

- Store flammable or explosive materials such as gasoline, oil and cleaning agents apart from other materials.
- Keep flammable and explosive materials in proper containers with contents clearly marked.
- Dispose of greasy, oily rags and other flammable materials in approved containers.
- Store full barrels in an upright position.
- Store empty barrels separately.
- Post signs prohibiting smoking, open flames and other ignition sources in areas where flammable and explosive materials are stored or used.
- Store and chain all compressed gas cylinders in an upright position.
- Mark empty cylinders and store them separately from full or partially full cylinders.

- Ventilate all storage areas properly.
- Ensure that all electric fixtures and switches are explosion proof where flammable materials are stored.

Annex 4.4 – Guidelines for Worker's Camps

To ensure the compliance to the OHS and ESF requirement, these guidelines will help the contractor when setting up worker's camps.

GENERAL

The Workers Camp Management Plan will be compliant with the specific prescriptions of the ESMP.

WORKER RECRUITMENT

The Contractor is required to minimise the number of skilled workers that are recruited from overseas. No unskilled Labor will be sourced from overseas. Local communities should be prioritized for unskilled Labor, including a target of 15% female unskilled workers. The Contractor will maximise the number of skilled and unskilled workers that are recruited from the communities along the project site.

The Contractor will be required to provide justification for any skilled workers recruited from overseas and explain why this position cannot be filled locally/ in Cambodia.

WORKERS CAMP FACILITIES

All facilities in the Workers Camp must be complaint with the stipulations of the ESMP. The camp shall be provided with the following minimum facilities:

- Eating space and dormitories as required shall be constructed of suitable materials to provide a safe healthy environment for the workforce and which facilitate regular cleaning and the provision of ventilation and illumination.
- At least one water closet toilet, one urinal and one shower per 10 personnel engaged either permanently or temporarily on the project. Separate toilet and wash facilities shall be provided for male and female employees, including ensuring that toilets are available close to working sites/road sections where women are working.
- A sick bay and first aid station.
- Sewage collection facilities to allow for the treatment of black and grey wastewater discharge from toilets, washrooms, showers, kitchens, laundry and the like. The management of all camp wastewater water shall be as prescribed in the ESMP.
- All camp facilities shall be maintained in a safe clean and or appropriate condition throughout the construction period.
- Throughout the period of the contract the employer, the engineer, or their representatives shall have uninterrupted access to and from the camp for the purpose of carrying out routine inspections of all buildings, facilities or installations of whatever nature to ensure compliance with this specification.

WORKERS CAMP OPERATIONS

- The Contractor will be required to provide adequate provisions for the workers for the duration of the project so as not to be a burden on the food or water security of the surrounding communities. The Contractor will strive to hire local Labor to provide cleaning and food services.
- All wastewater, solid waste, freshwater usage, noise levels, handling and storage of hazardous materials shall be as prescribed in the ESMP.

MANAGEMENT OF OFF DUTY WORKERS

- The Contractor will prepare ensure all staff sign and adhere to the Workers' Code of Conduct to describe the expected behaviours of their project worker in relation to the local communities and their social sensitivities.
- The Contractor is to ensure that all overseas project staff, not already living in Cambodia, undergo a cultural familiarisation session as part of their induction training. The purpose of this induction will be to introduce the project staff to the cultural sensitivities of the local communities and the expected behaviours of the staff in their interactions with these communities.
- The Contractor is to stipulate the conditions under which visitors may attend the workers camp. Strict visiting hours should be enforced, and all visitors will be required to sign in and out of the worker's camp. No overnight visitors will be allowed.
- The Contractor shall ensure that basic social/collective rest spaces are provided equipped with seating within the Workers Camp to help minimise the impact that the workers would have on the leisure and recreational facilities of the nearby communities. Provisions should also be made to provide the workers with an active recreation space within the camp.

WORKERS CAMP MANAGEMENT PLAN

A Worker Camp Management Plan shall be submitted by the Contractor to MOWRAM. The Workers' Camp Management Plan shall describe how this document and the ESMP shall be implemented in the following:

- Recruitment strategy
- Accommodation
- Canteen and dining areas
- Ablutions
- Water supply
- Wastewater management system
- Proposed power supply
- Code of Conduct for Workers
- Recreational/leisure facilities for workers
- Visitors to the Workers Camp
- Interactions with the local communities

Annex 4.5 – Contractors' General Guideline on COVID-19 Considerations in Construction Works

The objective of the Contractors' General Guideline on COVID-19 Considerations in Construction Works is to provide guidance on Prevention Measures and Response to possible Cases of COVID-19 following to the Communicable Disease Control Department of the Ministry of Health of Cambodia (www.cdcmoh.gov).

Prevention Measures:

- Dissemination of COVID-19 prevention measures to staff and workers through orientation or distributing leaflet/poster at information/safety board at each construction and camp site
- Daily checking temperature of staff and workers prior to start working
- Staff and workers are wearing masks all the time
- Do not share personal items or supplies such as phones, pens, notebooks, tools, etc
- Avoid common physical greetings, such as handshakes
- Maintain a minimum physical distance of one metre from others if possible
- Wash hands often with soap and water for at least 20 seconds after using the washroom, before handling food, after blowing nose, coughing, or sneezing, and before smoking. If hands are not visibly soiled, and soap and water are unavailable, alcohol-based hand sanitizer can be used
- All offices and jobsites implement additional cleaning measures of common areas. All door handles, railings, ladders, switches, controls, eating surfaces, shared tools and equipment, taps, toilets, and personal workstation areas are wiped down at least twice a day with a disinfectant, such as disinfectant wipes. Individuals are responsible for cleaning and disinfecting their workstations
- Commonly touched surfaces on vehicles and equipment are thoroughly cleaned and disinfected at the end of shifts and between users
- Coughing or sneezing into a tissue or the bend of your arm, not your hand; dispose of used tissues you have as soon as possible in a lined waste basket and wash your hands afterwards
- Complying with any instructions announced by the Ministry of Health

Response to Possible Cases of COVID-19

- Individuals who have been potentially exposed to the virus, or who are exhibiting flu-like symptoms such as fever, tiredness, coughing, or congestion are instructed to:
    - Do rapid test?
    - Not come to work;
    - Contact their supervisor and/or human resources department;
    - Stay at home, self-isolate, and self- monitor health condition ; and
    - Contact local health authorities for further direction.
- Such individuals are required to follow the directions of the local health authority and may not return to work until given approval by the proper health authorities;
- Individuals who begin to display flu-like symptoms on site are instructed to avoid touching anything, take extra care to contain coughs and sneezes, and return home immediately to undergo self-isolation as directed by the local health authority;

All areas on site potentially infected by a confirmed or probable case are barricaded to keep individuals two meters away until the area is properly cleaned and disinfected.

This Annex has two sections (Section 1 and Section 2) that set out the guidelines to prepare for the ECOP to mitigate the social and environmental impacts mainly during the construction phase.

APPENDIX 5 – Environmental and Social Assessment (Term of References)

Annex 5.1 – ToR for Site-Specific Environmental and Social Assessment

This (draft) Terms of Reference (TOR) specify key tasks that need to be implemented to complete the Environmental and Social Assessment (ESA) which would be carried out by an independent consulting firm to assess the social and environmental impacts of the proposed subproject that are related to rehabilitation/upgrading of an existing reservoirs under the CWSIP Project. The preparation of this ESA is to support the preparation of the Environmental and Social Management Plan (ESMP) for the site-specific subprojects in Cambodia.

A. PROJECT INTRODUCTION

The Project aims to support the RGC in implementing an integrated approach to water security focusing on improving water availability for irrigation, bulk water services as well as agricultural productivity. This project will support the RGC to operationalize the integrated approach to water security at the river basin and water system levels and address the primary threats to water security due to hydrological environments worsened by climate change, weak institutions, under-investment in water infrastructure, low water use efficiency in agriculture, and degrading ecosystems. The project also aims to improve governance, implement related policies and regulations, strengthen institutional capacity, and modernize selected water resources management infrastructure and services in targeted river basins.

Given the above purposes, the project development objective (PDO) is to improve aspects of water security and increase agricultural water productivity in selected river basins of Cambodia. More specifically, the project aims to a) improve overall water security for all stakeholders in the targeted basins, b) exploit the potential of the unused water resources and increase water productivity of agriculture in the targeted basin, and c) enhance the overall capacity of the water resources management (WRM) of the central government, the concerned local governments, and the concerned communities.

The project will be implemented through various activities organized through four components, including:

- **Component 1: Water Services Delivery.** This component mainly aims at enhancing the capacity of managing drought and flood through rehabilitation/modernization of existing water resource infrastructure assets and associated off-farm water conveyance infrastructure. It will improve water security for irrigated agriculture, domestic water supply and help manage the critical natural habitats. Key activities include:
    - Modernizing existing irrigation schemes with innovations
    - Addressing domestic water needs
    - Managing extreme events (focusing on floods)
- **Component 3: Increased Agricultural Productivity at Farm Level.** This component will support increased productivity of the agriculture sector in the targeted basins. In particular, the component supports the capacity of on-farm water management, promotion of climate smart agriculture involving the private sector. This component would also support the development of agro-met networks to enhance the capacity for the early warning (drought).
    - Integrated crop water management

- Climate-smart agriculture
- Agribusiness and trade

- **Component 2: Water Resources Management.** This component would support the establishment of river-basin based WRM initiated under the Mekong IWRM. It would support strengthening the institutional framework and capacity for water resources management, the establishment of river basin management committees in selected river basins, install necessary hydromet structure and data management, and enhance technical capacity for the government, and strengthen licensing systems and related requirements.
  - Formation of RBM committee and capacity development
  - Development and improvement of policies/strategies/regulations to foster integrated approachå
  - Developing water resources plans for the basins to fully utilize the potential and strengthen water security (focusing on scaling up investments)
  - Strengthening data management systems and capacities
- **Component 4: Project Implementation Support.**
- **Component 5: Contingency Emergency Response Component (CERC).**

B. OBJECTIVE OF THE TOR

This TOR sets forth key tasks under the scope of the subproject of the above type to ensure the tasks are carried out in a manner that are in conformity to the requirements and standards set for under the Project's ESMF and in line the World Bank's Environmental and Social Framework and current laws, regulations, etc. of the Royal Government of Cambodia. It also ensures that the ESA is prepared in accordance with the international good practices. This ESA is expected to be reviewed and approved by the MOWRAM and the World Bank.

Key deliverables under this TOR include: (a) specific site ESA report which includes an Environmental and Social Management Plan (ESMP) prepared to propose activities and actions that need to be carried out by involved Contractor(s) and provincial PMU to ensure E&S risks and impacts identified in the site-specific EIA are managed effectively – in a manner that is acceptable to the WB and MOWRAM.

C. SCOPE OF THE ASSIGNMENT

This assignment has two parts. Part 1: Scope of the ESA, and Part 2: Scope of the ESMP.

The Consultant will be required to provide services in accordance with internationally recognized practices in E&S assessment, and in conformity to the WB's Environmental and Social Standards and relevant laws and regulations of the Royal Government of Cambodia. The period of service may be extended, where necessary, for a period agreed upon by both parties (MOWRAM and the Consultant). MOWRAM will oversee the assignment process to ensure effective, timely and quality delivery of the above two reports. International consultants will be mobilized to assist MOWRAM in the review and supervision of this assignment.

The scope of the ESA, and the associated ESMP, are generic in nature and as such is subject to update based on the suggestions of the WB once the feasibility study for this subproject is completed/finalized that inform better the scope of this ESA and the breadth and depth of this ESA and its ESMP thereof. have its to which this assignment.

To conduct this subproject ESA which paves the way for the site-specific ESCP preparation, the Consultant conducting this study are required to collect both qualitative and quantitative information on the areas

provided below. Quantitative information is expected to be collected through consultation with project affected people with a focus on those who are potentially adversely affected as a result of the subproject while qualitative information are collected through both people negatively affected by the subproject, and with those who are interested in the subproject purpose, such as representative from local government at commune, district, and provincial. The scope and depth of the ESA need to be proportionate to the nature and scale of the subproject, particularly environmental and social risks and impacts that are likely to occur as a result of subproject construction and operation. This ESA is expected to be conducted in a manner that the result of the ESA can be used to inform the cumulative impact assessment (CIA) which may be carried out based on the suggestion of the WB, particularly for cases where proposed subprojects are implemented at the time and/or the location that may contribute to incremental environmental and social impacts, including giving rise of E&S risks that interact with subprojects that had been built in the past, being built, or plan to be in a near future where cumulative impacts is reasonably foreseeable, anticipated qualitatively, of estimated quantitatively.

As the ESA is planned, the Consultant is expected to explore alternatives that emerge as financially and sustainably feasible options: for both avoiding, and/or minimize the E&S risks and impacts. The focus of this ESA should be carried out in the broad context of the whole basin, or catchment, or sub-catchment within which the E&S risks and impacts would arise from the subproject implementation. The spatial scope of work (e.g. sub catchment/catchment, basin) will be determined by the World Bank based on the WB's review of the final feasibility of the subproject and the WB's experience, and in consultation with stakeholders who are concerned of, and/or affected by the subproject with which this assignment is associated.

The Consultant will also conduct assessment to determine the effectiveness of the proposed Catchment Area Treatment (CAT) proposed for the subject subproject, and describe dam safety measures to be undertaken for the reservoir in line with the requirement on dam safety set forth in the project's ESMF.

Given the above, the ESA aim to:

- Identify and evaluate all possible environmental and social risks and impacts that are likely to occur from the subproject in light of:
  - Potential construction method proposed for the subprojects;
  - Socioeconomic and cultural context in which the people, flora and fauna are likely affected because of subproject construction and operation;
  - Locations of the subproject, considering all sensitive receptors;
  - Feedback from affected and interested parties based on the consultation that the Consultant carry out as part of this ESA and consultation outcomes that may be available from previous meetings, consultation that any relevant parties have consolidated for the purpose of the subproject evaluation.
- Identify feasible and cost-effective mitigation measures for all impacts identified;
- Conduct meaningful and participatory consultations with all project stakeholders, particularly potentially affected persons to ensure their views, concerns and suggestions are carefully documented, considered thoroughly and incorporated into ESA report and ESMP.

A. Scope of ESA

Taken the generic scope mentioned above into account, the Consultant will carry out, but not limited to, the following specific tasks:

Task 1: Literature Review

The Consultant shall perform a comprehensive literature review of key documents related to environmental, social, cultural, and relevant legislation, policies, guidelines, procedures, local practices, and international best practices related to the subproject. Special focus will be on the World Bank's Environmental and Social Standards that are applied under the project.

The Consultant will review feasibility study of the subprojects, and relevant studies, reports, to enable them to maintain a broad spectrum of E&S risks and impacts potentially occurring with the subproject's area of influences, and the broader space (e.g., whole basin, or catchment, or sub-catchment). If the subproject involves acquisition of land and/or result in restricted access to land and water resources – due to subproject construction and operation, issues related to land and restricted access to land and water resources will be addressed in a separate TOR dedicated to this issue (Please see a TOR for a Resettlement Plan in the Project's Resettlement Policy Framework).

Task 2: Analysis of Alternatives

The ESA will include a description of the need for the rehabilitation/upgrading of the reservoir, including an evaluation of the alternatives, and the null or the "do nothing alternative", based on the feasibility of the study dedicated to this subproject, and based on consultation with stakeholder potentially affected by the subproject. The Consultant will also review the analysis and results provided in FS for the subproject and provides opinion and/or additional options taking into account the environment and social risks and impacts associated with the best alternative proposed in the FS.

The ESA report may propose alternatives to the scope, nature, and scale for construction of the proposed reservoir to ensure the E&S risks and impacts are equal to or lower than "Substantial" risk categorisation for the parent Project. The comparative analysis should attempt to evaluate the magnitude of the identified environmental and social risks and impacts, the feasibility of the proposed mitigation measures, including associated recurrent costs and the suitability and feasibility of the proposed solution considering local context as well as E&S requirements and standards of the WB and the RGC.

To manage the risk related to institutional implementation and arrangement, the Consultant is required to assess the capacity of involved stakeholders – with focus on provincial, district and commune level to ensure the mitigation measures proposed by the Consultant are implemented effectively considering the current E&S capacity of stakeholders which, in turn, affect the extent to which mitigation measures live up to its intended impact to address effectively risks inherently associated with the subproject and minimize the residual risks as a result of satisfactory performance of mitigation measures that the Consultant proposes in the subproject ESMP.

The Consultant will have to indicate in the pros and cons, as well as potential costs and benefits associated with each of the Consultant's proposed alternatives to E&S risk and impact mitigation measure. The consultant is also required to explore alternatives that can enhance the positive impact of the subprojects, such as the additional benefits that local people may receive in association with the proposed measures.

Task 3: Description of the baseline information

The Consultant will assemble, evaluate and present baseline data related to relevant environmental and social characteristics of the proposed subproject based on the FS and relevant documents or studies. The scope of baseline data need to take into account both for subproject's area of influence (as direct effect of the subproject), and E&S risks and impacts (as indirect effect) and cumulative impacts that typically go beyond

subproject's area of influence which may cause transboundary impacts (as direct impacts) but not cover induced impacts in area outside the subproject's area of influence.
The following information are required as baseline and assessment in the subproject ESA:

- **Physical environment:** geology, topography, soils, water (surface and underground), air, climate, hydrology and meteorology;
- **Biological environment:** flora and fauna within the subproject's area of influence, and neighboring area outside the area of influence. Focus is required for flora and fauna that are of high value and are threatened or endangered, or of commercial or economic importance. It should include seasonal baseline data and critical habitat assessment (as applicable)i
- **Socioeconomic and cultural environment:** include both present and projected, where appropriate, the population potentially affected, livelihood patterns, standards of living and productive capacity, employment, gender, migration, land use, etc. as well as their poverty that are potentially affected, such as houses, crops, trees, plants, businesses, etc.); planned development activities; public health; cultural characteristics, including cultural property and heritage, etc.
- **Land tenure.** In addition to information on productive activities, source of income, property rights, and the socioeconomic analysis in the downstream areas. The study will also focus on land tenure, transfer systems, usage and rights over communal property; the patterns of social interaction in the affected communities, public infrastructures and social services that will be affected; and social and cultural characteristics of displaced communities. The study will also include a map of community structure, with core-periphery structure and formal and informal social and political organization and relationships.

Task 4: Legislative and Regulatory Framework

The Consultant will identify and describe the pertinent regulations and standards that governing the environmental quality, health and safety, protection of sensitive areas, land use control at the national and local levels and ecological and socio-economic issues. The Consultant will review the following themes (among others):

- RGC's laws and policies regarding resettlement, land acquisition and E&S management;
- Identification of the requirements for staging temporary facilities for accommodation, fabrication, and materials handling;
- Requirements for establishment of materials sourcing sites including borrow pits and stone quarries;
- RGC's laws and standards regarding waste management with reference to the waste classification and disposal;
- Requirements for construction camps especially issues of public health as the area will have to sustain a large workforce during construction;
- Health of employees including provision of first aid/emergency treatment and provision of Personal Protective Equipment (PPE) for personnel;
- Protection of physical cultural resources and guidelines for activities on water bodies including rivers;
- Minimum HSE requirements for workforce on site;

Task 5: Identification and Assessment of ES risks and potential impacts of subprojects
Scope of ESA should be commensurate to the nature, scale, scope of proposed construction activities and their potential impacts and risks.

The main objective in assessing the potential effects of the proposed activities will be essentially to permit planning of activities to avoid or reduce undesirable effects and/or to enhance secondary benefits of the project among others. The Consultant will determine, evaluate, analyze and describe all the potential

significant changes to be brought about by constructing proposed dams at each of the selected sites as shall be recommended by each of the Feasibility Studies. The Consultant will ensure a special focus on identifying potential downstream impacts of activities at each of the proposed sites. The impacts can be direct, indirect or induced, and cumulative and will encompass environmental, ecological and social impacts, both positive and negative, as a result of each activity intervention that are likely to bring about changes in the baseline environmental and social conditions. There are several issues associated with the construction phase that could potentially affect the biophysical, cultural and socio-economic environment, which the Consultant will have to assess. Examples of some of these issues are the mining of aggregate material required for the project, potential siltation of the river, the management of noise, dust and traffic issues associated with construction activities, a review of seismic vulnerability of the project, and an assessment of Labor and health issues such as those resulting from an influx of people associated with construction camps. The Consultant will investigate issues relating to ecology, biodiversity, heritage, traffic, noise, property impacts, land use and recreational facilities during and after construction. In the case of socioeconomic impacts, some examples can be; land/asset acquisition, livelihood of the affected communities, business and loss of social services.

The Consultant will analyze the potential effects to physical, land, livelihood, biological, and cultural resources that may result from building each of the proposed dams. The Consultant will review each of technical feasibility studies and designs and will assess whether there would be no risk or negligible risk of significant adverse impacts due to potential failure of the dam's structures to local communities and assets. Therefore, the description of the potential impact of each of the selected sites needs to consider the whole range of reservoir and river basin management issues including but not limited to:

- Potential impact from short-term or long-term migration to the project area in search for jobs;
- Impacts of construction camps and excavations;
- impact on fisheries, agriculture and other sources of income;
- Impact on downstream irrigation-based agricultural systems and drinking water supply both during reservoir filling phase and routine operation
- Permanent and temporary land/assets acquisition impacts. Resettlement
- Key social and environmental performance indices, e.g. persons requiring resettlement or loss of private and community land vs. additional hectares irrigated, area of critical natural habitats or physical cultural resources affected (ha);
- Effect on the hydrology and on the water quality of the river;
- Impact on river flow regime, including changes in volume, pattern and quality of water downstream of the dam;
- Possible loss of cultural property (including archaeological and historical sites) and provision for chance finds;
- Potential impact from short-term or long-term migration to the project area in search for jobs;
- Impact on downstream fisheries, agriculture and other sources of income;
- Impact on public infrastructure, e.g. road and social services, e.g. cemeteries, grazing areas, mosques, and shrines.

The issues above will be assessed in detail by the Consultant so that the full scope of the proposed activities are understood and appropriate mitigation measures can be developed and built into a site specific ESMP/RP. Implementation of a project may exert a suite of effects during construction that largely end when the project comes into operation. It is therefore recommended that the Consultant discusses the effects of the project construction (including preparatory phase if any) separately from those of project operation. Furthermore, the assessment of effects will need to be categorized into short-term vs. long-term effects, irreversible versus mitigated effects, and project-specific versus potentially cumulative effects. The classification will also include:

- Desirability of the impacts: positive and negative;
- Probability of the impacts: Very unlikely; Unlikely; May occur: Likely; Very likely
- Magnitude of the risks and impacts: low, moderate, significant, high;
- Duration of the impacts: temporary/short-term, temporary long-term, permanent;
- Impact by subproject phase: during construction, during operation;
- Impacts identified as direct impact, indirect impact, cumulative impact;
- Numbers of entities: individual, local (subproject's area of influence), regional, national, trans-boundary;
- E&S risks shall be classified as inherent risks and residual risks (after considering the expected outcomes of proposed mitigation measures)

Each risk and impact identified with subproject's activities, construction and operation, will be classified according to the above criteria. According to the results of the classification, a final evaluation of the importance of the impact will be assigned (high, medium and low).

Task 6. Assessment of Cumulative Impacts

The Consultant will assess each of the selected sites in terms of its irrigation/generation potential under existing and historic conditions, and in terms of the potential of each dam to alleviate or exacerbate any issues in the downstream and upstream environments. For the purpose of these assessments, the Consultant will assess both the effects on the baseline situation and the cumulative effects in combination with feasible future developments at each location.

- **Identification of Valued Environmental and Social Components (VECs)**

Based on the baseline information collected, including initial conversations with stakeholders, the Consultant shall propose a list of Valued Environmental and Social Components (VECs) for the impacted basin. VECs shall be selected based on their value to stakeholders, their significance from a biodiversity, physical (such as for soil stability or flow regulation), economic, and/or social/cultural significance, as well as their potential to be significantly impacted or influenced by water allocation and water-use decisions at a basin level. For biodiversity related VECs, these may include specific species or populations of species based on their commercial value, rarity, endangerment, their role as flagship or umbrella species (e.g., provide benefit to others through their conservation), their importance for ecosystem function (keystone species), their value as indicator species, etc.

The identification shall compile key environmental and social issues in each river basin that will be affected by the implementation of river basin and hydropower plans.

- **Prioritization of VECs**

With the identification of VECs, the Consultant shall carry out initial stakeholder consultations to prioritize the VECs, so as to produce a manageable number that will be the focus of the ESMP. The prioritization shall be carried out with the participatory approach using various tools and techniques.

Task 7: Risk Assessment

According to international practices, all dam projects (regardless of his size) will have inherent risks and uncertainties associated with construction and potential safety impacts downstream. All significant risks and uncertainties at each of the selected sites will need to be assessed.

Task 8: Occupational health and safety concerns

The Consultant will analyze, describe and draw up recommendations to address all occupational health and safety concerns that will be triggered by the different phases of dam construction at each of the selected sites

Task 9: Climate Change Issues

The impacts of dam construction for irrigation and power generation should be seen within the context of global climate change, which might significantly affect the physical environment of the project area. The Consultant should describe and where possible quantify processes and factors such as:

- Changes in amount, type and seasonal/annual distribution of precipitation in the project area and the upstream/downstream watershed of each proposed project site;
- Changes of upstream/downstream hydrological parameters notably flow rates and sedimentary load and their seasonal/annual distribution. They might be controlled by underlying phenomena such as glacial melting and subsequent release of water/sediment trapped in ice, glacial retreat and exposition of additional areas to erosion, changes in vegetation and resulting impact on erosion/sediment generation and microclimate;
- Changes in seasonal/annual demand patterns for water and electricity: shifts in peak demands for energy (heating/cooling) and water (agriculture, irrigation) in the annual cycle, and interaction of these changes with operational requirements and hydrological parameters, such as seasonal flow rates;
- Review the data on the past climate change in Cambodia and all available future climate change forecasts and assess their impact (a) on the water demand in Cambodia and (b) on the design and operation of dams at each of the selected sites.

Task 10: Public and Stakeholder Consultations

Project-affected groups and stakeholders must be consulted about the project's potential environmental and social impacts during the ESA process at each of the selected sites. This purpose is to consider local views when designing the environmental and social assessments and management plans as well as to provide input into the project design. The consultation process will therefore give stakeholders an opportunity to learn about the project, raise concerns, understand the potential effects, and comment on the project design as well as on the draft ESA report.

Once a draft ESA report is available, and before it is finalized, the Consultant will obtain stakeholders' inputs on the report's findings and conclusions and particularly on the mitigations and management plans. Therefore, the Consultant will prepare the materials and information to be disclosed in a form and language that are understandable and accessible to the groups being consulted which will have to cover the following aspects of the project: (i) project design and layout, emphasizing areas to be directly impacted by permanent or temporary works and structures, access and service roads required if any, and areas indirectly impacted by construction or operation (noise, dust, borrow pits, landscape aesthetics etc.), areas impacted by reservoir heightening and downstream hydrological changes; (ii) summary of all major direct and indirect environmental and socio-economic impacts associated with the project, (iii) the approaches and instruments for mitigation of the identified environmental and social impacts.

It is important to note the largely **unsatisfactory consultation processes** which formed part of social and environmental studies conducted as part of the earlier feasibility studies at all selected sites. The Consultant is strongly advised to review these reports to get acquainted with issues raised. The Consultant is also strongly recommended to liaise closely with the MOWRAM's ESOs with regard to consultations with local stakeholders.

Task 11: Cumulative impacts and Potential Impacts on International Waterways

The Consultant will examine any cumulative impacts and transboundary issues and discuss scope and extent of the potential impact including recommendation on mitigation measures, if any (See Task 6).

B. Scope of the ESMP

The main objective of the ESMP is to describe proposed measures to mitigate the potential negative impacts, including any transboundary issues, and the preparation of a monitoring plan, capacity building, and estimated implementation cost. As mentioned above the ESMP must be acceptable to WB with respect to consultation with local authorities and key stakeholders and it should provide adequate details on activities, responsible agencies/entities, and cost including needs for capacity building and training of key agencies and stakeholders to ensure effective implementation of the proposed ESMP. Specifically, the following tasks will be conducted by the ESA Consultant.

Specific ESMP tasks

Task 1: Development of environment and social management plans (ESMPs) to mitigate negative impacts

Depending on the relevance of each impact identified, specific corrective measures have to be identified in order to mitigate the potential negative impacts and eventually to strengthen the positive ones. Mitigation measures could consist of the integration of proposed actions into the designs of the respective components. Besides, appropriate measures can be taken to compensate negative impacts that can occur and cannot be avoided, design appropriate measures to reduce/eliminate the negative identified impacts, to tackle needs and problems pointed out by consultation with stakeholders, to improve local living conditions and to promote local development. The Consultant will identify appropriate measures that can be taken to maximize and/or enhance the positive impacts and avoid, reduce or minimize the negative impacts. S/he shall prescribe and present detailed tangible, practical relevant management/mitigation measures bearing in mind capacity restraints for those who have to implement and monitor their implementation, also bearing in mind the need to first avoid these impacts altogether, or to reverse them and then when these are not possible to manage them in an sustainable way. The ESMP will include measures to avoid, prevent, reduce, mitigate, remedy or compensate any adverse effects on the environment and social in relation to the construction and operation of each of the selected dams. The Consultant will also review adequacy and effectiveness of the Catchment Area Treatment measure recommended as part of the feasibility study of the proposed dam sites.

Task 2: Development of Environmental and Social Monitoring Plan

The Consultant will prepare a specific description, and details, of monitoring measures for the Environmental and Social Monitoring Plan including the parameters to be measured, methods to be used, sampling locations, frequency of measurements, and definition of thresholds that will signal the need for corrective actions as well as deliver a monitoring and reporting procedure. The Consultant should provide a time frame and implementation mechanism, staffing requirements, training and cost outlays.

Task 3: Capacity and Training Needs

The Consultant will identify the institutional needs to implement the environmental and social assessment recommendations by reviewing the institutional mandates and capability of institutions at local, provincial/regional, and national levels and recommend steps to strengthen or expand them so that the management and monitoring plans in the ESA can be effectively implemented. The recommendations may extend to management procedures and training, staffing, and financial support.

ESA Reporting and Deliverables

- **Inception Report**

The Consultant will submit an Inception Report confirming the key findings from the FS/EA/SA study and the methodology to be adopted for the ESA studies, the deployment schedule of personnel, a schedule of site visits to be carried out and a reporting schedule, within a fixed time from the date of commencement of the assignment. The Consultant may need to carry out a reconnaissance visit to the study area and discuss with local authorities and communities before submitting the Inception Report.

- **ESA Report**

The Consultant will prepare and present to PMU each ESA including all necessary additional documentation which may be required to satisfy specific RGC's laws and regulations, and the World Bank's ESSs which may be applied by the planned subproject activities. The report will describe and analyze the significant environmental and social issues. All supporting documentations of the data collected and quotations for any references used in interpreting those data which are not appropriate in main text should be presented in appendices or as a separate part. The report will detail the scientific approach (models, methods and criteria) adopted to carry out the studies and will also include maps and drawings at the appropriate scale and refer to all consulted documents. The proposed structure for the ESA is outlined below:

1. Executive Summary - concise and written in a non-technical language;
2. Introduction;
3. Detailed Description of activities and design of proposed dam at each location;
4. Discussion of feasible Alternatives;
5. Description of the area of influence, project footprint and environmental and social baseline condition (including maps and social structure and community relationship and network);
6. Discussion of RGC's national legal, policy, regulatory and administrative framework related to EA, SA, dam safety, and natural disaster related to preparation and implementation of emergency preparedness plan;
7. Discussion of cumulative and possible transboundary issues that may be related to the proposed dam in light of international conventions and WB's ESS3 which is applied due to dam construction and operation;
8. Discussion of the environmental and social impacts of the proposed project for the different phases of its lifecycle;
9. Discussion of the proposed mitigation measures taken the results from consultation with local agencies and communities into account including cost estimate and the agencies/entities responsible for implementation;
10. Presentation of consultations with relevant stakeholders and affected persons;
11. Environmental and Social Management Plan (ESMP) (detailed ESMPs i.e. traffic, waste, emergency, catchment etc. to be submitted separately);
12. Environmental and Social Monitoring Plan;
13. Specific Conclusions and Recommendations;
14. References;
15. Annexes (Maps, records of consultations etc.).

- **Reporting and Feedback Requirements**

The reports will be written in English and translated into Khmer language. A draft report will be issued for review and comment by PMU and World Bank and the Environmental and Dam Safety Panel after which a final report incorporating their comments will be issued by the Consultant.

During the final submission of the report, if changes requested during the draft report stage are not satisfactorily addressed, the Consultant will be required to work further on the document until it is considered satisfactory or acceptable.

All submissions related to the assignment should be submitted to the Project Director of CWSIP. Electronic versions of all the reports (draft and final) should be in MS Word document as well as Acrobat and/or other practical forms.

Timing, Duration, Estimated Input, and Deliverable

It is expected that the study will be carried out soon after the CWSIP becomes effective. Duration of the services will be about 18 months assuming that securing in the project area is acceptable.

Deliverables	Time
Inception Report	To be completed based on the scope, nature and scale of subproject
First draft ESA	
Second draft ESA, including draft ESMP	
Third draft ESA, incl. ESMP	
Final ESA, incl. ESMP	

ESA Consulting Team

The ESA Team should reflect substantial environmental and social assessment experience with complementary skills and backgrounds and substantial experience in World Bank-funded projects and international standards. The ESA Team will comprise the following minimum members and their respective minimum qualifications as below:

(a) ESA Team Leader/ESA Expert

Key qualifications:

The ESA Team Leader will have proven experience in the environmental impact assessment of water resources projects including irrigation and/hydropower dams. He will have a minimum Masters Degree qualification in environmental science, engineering, natural resources management or a closely related field with a minimum of fifteen (20) years overall experience and ten years (10) years relevant experience in environmental and social impact assessment. The candidate should also have the following:

- Experience in leading an expert team is essential;
- Registered ESA Practitioner in his/her home country;
- Excellent knowledge of the English language (both spoken and written) and excellent communication skills;
- Knowledge and/or familiarity with the World Bank Safeguard Policies relating to water resources development projects;
- Knowledge and experience on dam safety, risk assessment, and/or preparation and implementation of emergency preparedness plan will be highly advantage;
- Experience in conducting similar assignments with national agencies and World Bank and its affiliates in complex political and security contexts;
- High repute and recognition by peers.

- **Tasks:**

The particular role will be to lead and guide the ESA Team in all aspects of the assessment and will be the contact person between MEW and the ESA Team. He/she will perform the following roles:

- Provide overall coordination and leadership to the ESA Team;
- Take a leadership role in steering stakeholder consultations;
- Play an inter-phase role between MEW and other stakeholders on all matters of the ESAs;
- Identify impacts of project activities;
- Participate in the eLaboration of technical, legal and regulatory norms to comply with environmental requirements in all the phases of project activities;
- Identify and assess environmental and social mitigation measures for the project; and
- Take a lead in the production and be responsible for the quality and acceptability of each of the ESA Reports.

(b) Sociologist/Social Development Consultant
Key qualifications:

- Graduate degree in Social Sciences, Sociology, or Anthropology or a related field;
- 15 years of relevant work experience;
- Experience with large-scale infrastructure projects including consultation and engagement with local communities;
- Excellent communication/interpersonal skills and ability to work in teams;
- Experience with World Bank projects, Safeguard Policies and Procedures including a track record in complex World Bank safeguard policies work, entailing legacy, corporate risk, and highly complex projects;
- Proficiency with the Land Laws and policies of Cambodia;
- Excellent knowledge of the English language (both spoken and written) and excellent communication skills;

- **Tasks:**

  - Identify all social, economic and cultural impacts of the project;
  - Take a lead in organizing/facilitating stakeholder consultations;
  - Provide socio-economic input/expertise throughout the assignment;
  - Lead in the formulation of social impact assessment instruments and tools;
  - Provide overall social input in the ESA Reports.

(c) Environmental Engineer
Key qualifications:

- A Master's Degree (minimum) in Environmental Engineering;
- Knowledge and experience in waste management and disposal including high carbon steel and scrap, electronic and other hazardous waste;
- Knowledge in air quality and noise impact assessment including modelling;
- Have at least 10 years experience in environmental management, ESA and in developing waste management plans;
- Excellent knowledge of the English language (both spoken and written) and excellent communication skills.

Tasks:

- Participate in identification of impacts of project activities on
- Take a lead in provision of input on waste management throughout the assignment including management of waste for construction camps;
- Conduct modelling if required for dust and noise emissions;
- Participate in the development of the ESA report;
- Participate in the stakeholder consultations.

(d) Aquatic Ecologist
Key qualifications:

- Must have a postgraduate degree or training in natural sciences (fisheries, aquatic ecology or zoology);
- Must have undertaken a ESA training;
- Conducted at least ESA studies in water resources development projects.

Tasks:

- Take a lead in all aquatic ecological assessments of the project;
- Review various literature sources on ecological matters of the project;
- Consult with stakeholder institutions on ecological aspects of the project;
- Participate in write up of Environmental Impact Report.

(e) Terrestrial Ecologist/Vegetation Specialist
Key qualifications

- Must have a postgraduate degree or training in Botany or Plants Ecology;
- Experience in re-vegetation or site rehabilitation especially of borrow pits, quarries and degraded lands, etc.;
- Conducted at least ESAs studies in development projects.

Tasks

- Compile lists of vegetation species and conservation status within the project area;
- Assess potential impacts of material sourcing such as borrow pits and stone quarries and their management including rehabilitation;
- Take a lead in assessment of potential re-vegetation options of the degraded catchment area of the dam and identify suitable drought resistant plant species for local conditions;
- Provide professional guidance on avoidance of the proliferation of invasive species as a result of project activities.

(f) Occupational Health and Safety (OHS) Specialist
Key qualifications:

- At least postgraduate training in Occupational Health and Safety;
- Minimum of 15 years in safety planning and management;
- Highly knowledgeable in emergency preparedness and disaster management;
- Should have conducted at least 5 OHS assessments relating to large-scale civil works projects in the last 5 years;

Tasks:

- Provide OHS input throughout the assignment;
- Assess and elaborate requirements to meet OHS standards required for the different project activities especially removal of sediment and unexploded ordinances from the reservoir;

- Review the different dam safety improvement designs prepared by the Dam Safety Consultant and assess their suitability and flag up any safety concerns and recommend feasible mitigations or alternative designs or modifications;
- Participate in stakeholder consultations to discuss safety aspects;
- Take a lead in the preparation of the Decommissioning, Traffic Management and Emergency Management Plans;
- Assess requirements to meet OHS standards required for the different project activities and eLaborate a feasible OHS Plan;
- Participate in stakeholder consultations to discuss safety aspects.

(g) Hydrologist

Key qualifications:

- The Hydrologist will possess proven experience in river management in developing countries. He/she will have a minimum of BSc Degree qualification in a relevant field as well as post graduate qualifications in river management with a minimum of fifteen (15) years overall experience and seven years (10) years relevant experience.

Tasks:

- Review the sediment removal alternatives and their potential impact on the river's hydrology;
- Assess the potential impacts of river diversions or other activities;
- Assess hydrological issues associated with increasing the dam's crest;
- Overall evaluate the different dam safety enhancement designs on the hydrology of the river downstream flows.

(h) Community Participation/Gender Specialist

Key Qualifications:

- The Community Participation and Gender Specialist should possess a graduate degree in International Development, Gender, Human Rights, or a related field with more than 10 years of relevant work experience. She should possess excellent communication/interpersonal skills and experience in consulting conservative and post-conflict societies. Experience and a track record in working directly with local communities in complex political and security contexts is essential. Experience of World Bank safeguard policies work; entailing legacy, corporate risk, and highly complex project is highly desirable. She should be very familiar with the Land Laws and policies of the RGC and should be very fluent in Khmer in addition to ability to write reports in English.

Tasks:

- Provide overall gender expertise and input into the ESA;
- To guide and lead the consultation process;
- To ensure that all direct and indirect stakeholders are consulted;

To ensure that vulnerable groups are not excluded from consultation processes and to eLaborate the necessary requirements for their consultation

TERMS OF REFERENCE

for Site-specific Biodiversity Assessment (as part of SS-ESIA)

1. INTRODUCTION

The Project Development Objective of Cambodia Water Security Improvement Project (CWSIP) is to improve aspects of water security and increase agricultural water productivity in selected river basins. More specifically, the proposed project will support improvements to water availability and reliability of bulk and irrigation water services as well as to flood and drought resilience in the selected areas. However, it will not purposely target water quality improvement. This objective will be achieved through the implementation of: Integrated water resources management (Component 1), Sustainable irrigation service development (Component 2), and Institutional support for integrated river basin management and project implementation (Component 3).

Component 1 of the Project will support rehabilitation or improvement of storage dams would be of small to medium scale, which is lower than 15 meters in height, and mainly for irrigation. This component would also support a number of small to medium irrigation schemes. The works also include strengthening dam embankment/slope, replacement/repair of damaged gates, rehabilitation of irrigation and drainage, and will include improvement of watershed management through nature-based solutions.

Component 2 will support existing irrigation systems modernization and agriculture water management for more reliable and efficient irrigation water supply, irrigation management reform and capacity building for sustainable service delivery as well as private sector engagement to support climate-smart agriculture activities for increasing agricultural water productivity. The Project will not include new constructions in the greenfield. For the purpose of maximizing finance for development, this proposed project will also engage private sector to pilot two main areas: (i) outsourcing the irrigation services of larger irrigation schemes; and (ii) supporting farmer households and/or cooperatives in implementing CSA activities and crop diversifications.

Cambodia has a variety of landscapes, including popular coastal towns, ancient temple sites, flat agricultural areas, remote forests and mountainous areas. Project will cover the Upper Mekong basin (Sesan-Srepok-Sekong basin, the Prek Preah, Prek Krieng, Prek Kampi and Prek Te which are known as the 3S and 4P basins) and a sub-basin of Tonle Sap basin in the northern and eastern provinces of Cambodia, covering all major watersheds east and west of the Mekong River and the Tonle Sap basins, in the provinces of Kampong Thom, Preah Vihear, Siem Reap, Stung Treng, Kratie, Ratanakiri, and Mondulkiri. These river basins are prioritized for the Project considering the local populations' high dependency on water and natural resources, vulnerability to disaster risks such as flood and droughts, populations' poverty status, and high potential for agriculture and fishery development. The geographic area in the north- eastern provinces have lush forests and abundant biodiversity encompassing rolling hills, plateaus, mountains, lowland watersheds, and crater lakes.

2. OBJECTIVE

The objectives of the consultancy are to: (i) develop a comprehensive biological diversity or biodiversity baseline that will describe biodiversity values present on the Project sites (e.g. Ou Chbar Basin and Sre Thom Reservoir, Mondulkiri) or other potential sites in protected areas of the target provinces (Kampong Thom, Kratie, Stung Treng, Ratanakiri, Mondulkiri); (ii) assess potential impacts on biodiversity due to the project activities; and *where significant risks and adverse impacts on biodiversity have been identified*, (ii) develop biodiversity management plan to protect/conserve biodiversity in the likely impacted areas.

3. SCOPE OF WORK

3.1. LOCATIONS

The project locations within the basins including a list of the spots that the Biodiversity Specialist will be responsible for determining overlay with protected areas, which will then be sites of focus for the report.

3.2. KEY ACTIVITY #1: BIODIVERSITY BASELINE

- Identification of any rare, endangered, threatened, and endemic species of flora and fauna present in the Project locations. If such species are present, the assessment shall also include geographical features and other associations for survival of these species and their role in community ecology.
- Identification of species distribution in terms of seasonal issues related to breeding and feeding ecology and geographical issues related with the movement of wild species.
- Habitat mapping (of the locality) including identification of legally protected and internationally recognized areas, critical habitats, sensitive habitats, and ecologically critical area based on government declaration, IUCN Red list or any other national or international recognized data sources
- Identification of habitats in the study area that could be affected by the Project activities. This will focus on the habitats of identified species, their importance features in the ecosystem (e.g., habitat of endangered species or only breeding and nesting area for a particular species), as well as habitat that facilitate connectivity and serve movement corridors for the species (i.e., habitat connectivity).
- Estimate how much habitat would be affected (eliminated or degraded) including short-term use areas vital to seasonal or migratory cycles

3.3. KEY ACTIVITY #2: IMPACTS ON BIODIVERSITY

- Review and establish the Project impact area (PIA) based on biodiversity profile on the project sites, indicator species and possible impacts from the project activities
- Assess likely impacts on flora & fauna including their role in community ecology due to project activities. The assessment shall include impact on socio-economic aspect and also impact on ancillary activities such as provision of access roads to site, on other resources on biodiversity value in the affected area.
- Work with social consultant to assess potential livelihood impacts that may result from the project activities (e.g. biodiversity loss that affects ecosystem services) in both locations, to inform preparation of IPPF/IPP, through following assessment.
    - Identify communities in the study locations (weir and reservoir) who rely on the ecosystems services for their livelihoods that are likely to be affected (both positive and negative); e.g., communities where livelihoods are based on the harvest of natural resources
    - Identify type of ecosystem services that potentially will be affected
    - Propose recommendations for managing potential impacts on communities' livelihood

3.4. KEY ACTIVITY #3: BIODIVERSITY MANAGEMENT PLAN

Based on the assessment, develop biodiversity management plan (BMP) describing adequate compensation, mitigation and management measures with respect to identified impacts, if any, associated with various Project activities, suggest conservation and management actions, develop habitat enhancement and protection plan for the key species and develop adequate monitoring protocol for sensitive habitats and/or management measures for indirect or induced impacts, institutional arrangements including co-ordination mechanisms that need strengthening, description of roles and responsibilities, and budgetary resources required. Template for BMP can be found in Annex 1 of this TOR.

4. METHODOLOGY OF THE ASSESSMENT

Baseline data will be conducted through the following methodology:
1. Desktop review on previous local studies, database searches, data from secondary sources like important data base (IBAT), using Satellite imaginary like GIS and GPS technique, IUCN Red data lists, other literatures/publications, various notifications/ gazette, forest/wildlife management plans and other studies, if available. The results of this review will inform field study effort.

2. Field study and collection of primary data within the Project locations identified in this TOR (Section 3.1) on key parameters like (i) details of flora and fauna with special reference to endemic/threatened species population reported from the assessment location, (ii) description of habitat for such endemic/threatened species, (iii) socio-economic values of the affected area *vis-a-vis* biodiversity values, (iv) consultations with forest/wildlife officials, local communities.

5. DELIVERABLE

The Specialist will submit one (1) Rapid Environmental Assessment Report, within 30 days after signing of contract.

The Report will cover the following aspects:

(a) Biodiversity baseline

(b) Assessment on ecological and environmental impacts, and

(c) Biodiversity management plan or Template (*Only to be prepared when significant risks and adverse impacts on biodiversity have been identified)*

The output of the assessment will be integrated into the Project design and planning, as part of the overall Feasibility Study. It will also feed into the baseline data (biological baseline) of the project's E&S instruments (ESMF and the subsequent ESMPs of the related Project activities).

6. WORKING ARRANGEMENT

The Specialist will work together as part of the Feasibility Study (FS) team. The Specialist will closely collaborate, maintain regular communication and share information with the FS team in order to integrate habitat and species conservation issues in the Project design.

7. RESOURCE REQUIREMENTS

- Master's degree with at least five (5) years of professional experience, or a Ph.D, in the field of landscape management, natural resource management, environmental science or other relevant discipline.
- Demonstrate an excellent knowledge of biodiversity conservation, land use planning, and forest landscape restoration.
- Working knowledge of Cambodia's natural resources, biodiversity and protected areas
- Proven ability to collect, verity and analyze information, and to finish and present work with a high degree of accuracy and technical quality

ToR for Targeted Social Assessment (as part of ESIA).

When Ips are present the project area, a target social assessment should be conducted as part of ESA. Below are Key Elements that need to be considered when conducting a Targeted Social Assessment.

The breadth, depth, and type of analysis of the social assessment is proportionate to the potential risks and impacts of the proposed project on the IPs. This targeted Social Assessment should be conducted as part of the ESA to be prepared for the subproject and in line line with ESS1.

The social assessment includes the following elements, as needed:

- A review of the legal and institutional framework applicable to IP/SSAHUTLC.
- Gathering of baseline data on the demographic, social, cultural, and political characteristics of the IP; the land and territories that they have traditionally owned or customarily used or occupied; and the natural resources on which they depend.
- Taking the review and baseline data into account, the identification of project-affected parties and the eLaboration of a culturally appropriate process for involving and consulting with the IP at each stage of project preparation and implementation.
- An assessment, based on meaningful consultation tailored to IP, of the potential adverse and positive effects of the project. Critical to the determination of potential adverse impacts is an analysis of the relative vulnerability of, and risks to, the affected IP, given their distinct circumstances and close ties to land and natural resources, as well as their potential lack of access to opportunities relative to other social groups in the communities, regions, or national societies in which they live. The assessment should consider differentiated gender impacts of project activities and impacts on potentially disadvantaged or vulnerable groups within the community of IP.
- The identification and evaluation of measures necessary to avoid adverse impacts, or if such measures are not feasible, the identification of measures to minimize, mitigate, or compensate for such impacts, and to ensure that the IP receive culturally appropriate benefits under the project. This is based on meaningful consultation tailored to IP and, where relevant, on Free, Prior and Informed Consent.

Annex 5.2 – ToR for Rapid Cumulative Impact Assessment (Basin/Sub-basin level)

1. Objectives the RCIA

The objective of the RCIA is to:

- Evaluate the contribution of the the select subproject towards cumulative impacts on Valuable Environmental and Social Components (VEC)
- Assess the status and condition of each VEC
- Assess cumulative impacts of the select subproject in conjunction with other projects (past, present or future) on the select VEC;
- Identify appropriate actions for the select subproject to address its contribution to cumulative impacts.
- Identify additional management actions beyond the select subproject to manage cumulative impacts for each VEC.

Guidance and supporting documentation on the preparation of a rapid cumulative impact assessment is provided by the International Finance Corporation at: ifc-goodpracticehandbook-cumulativeimpactassessment.pdf

2. Scope of Rapid CIA

The scope of work of the RCIA is based on the following six steps:

- Step 1: Identify and propose geographic and temporal boundaries for the RCIA based on the screening of potential impacts on key valued components. The geographic context should include administrative boundaries (municipal or city boundaries). VCs should be selected for the cumulative impact assessment.
- Step 2: Identify other projects and activities that could result in cumulative impacts on key VCs within established geographic and temporal boundaries.
- Step 3: Assess the status and condition of each VC.
- Step 4: Assess the level of cumulative effects on each VC.
- Step 5: Determine the significance of cumulative effects on each VC.
- Step 6: Provide recommendations as to how cumulative impacts on each VC can be managed.

3. Main Tasks

Step 1: Define the scope of the RCIA

Describe the Project

The first step in the RCIA is to describe the Subproject and its phases that may give rise to cumulative effects. This will include the following:

- Phases and timing of the project;
- Description of the subproject and subproject area of influence;
- Description of offsite facilities e.g. disposal sites for dredged material;
- Identify environmentally sensitive areas, including protected areas, key stakeholders and affected people;

- Define geographic and temporal boundaries for the RCIA based on screening of potential impacts on key VCs. The geographic context could include administrative boundaries (city or municipal). It is noted that there might be different contexts for each VC (see below). The definition will also need to include the scale of maps and other tools to present data that will be collected during the study.

Define VCs

- Valued environmental and social components, or VCs, are environmental and social attributes that are subject to cumulative effects. VCs may be: physical features, habitats, wildlife populations (e.g., biodiversity), ecosystem services, natural processes (e.g., water and nutrient cycles, microclimate), social conditions (e.g., health, economics), or cultural aspects (e.g., traditional spiritual ceremonies) (IFC, 2013).
- The VCs should be defined based on the assessment of impacts on the above impacts and through consultations with stakeholders. For all VCs selected, rationale for the selection of the VC should be provided.

Note: Beyond those VCs identified above, the Consultant may choose to include other VCs.

Step 2: Identify other projects and activities within geographic and temporal boundaries of the RCIA]

Past, present, and probable future projects and activities should be identified within the defined temporal and spatial framework. The Consultant should evaluate what other projects could impact VCs within their spatial boundaries. Within the immediate area of the Subproject, this could include wastewater treatment facilities, light industrial facilities, solid waste management facilities, urban settlements etc.

The use of Google Maps/Earth may be useful in this regard.

Step 3: Assess the status and condition of each valued environmental component (VC)

The existing condition and status of each VC should be assessed, including trends in its condition over time. The determination of the trend in the status of the VC may be indicative of the level of concern for cumulative impacts. A negative decline in status of a given VC may indicate that a threshold may be approached whereby the contribution of each individual project to cumulative impacts could be considered significant (IFC, 2013).

The collection and analysis of the status of each VC and its trend in condition can be difficult. Multiple data sources should be used. The object is to develop a picture of the change in condition of VC over time to assess its sensitivity to cumulative impacts.

Step 4: Assess the Level of Cumulative Impacts on each VC

The next step in the RCIA process is to assess the level of cumulative impacts on each VC. This can use similar methodology to that is employed in the ESIA, but the difference is that the RCIA is focused on assessing the cumulative impact on each valued environmental component from the Subproject and other projects within a defined spatial and temporal framework. For each VC, the cumulative effects should consider typical components of an EIA assessment – extent, frequency, duration, magnitude, uncertainty, and probability etc. Techniques will need to relay on qualitative data and already available quantitative data; no significant field work for quantitative data collection is envisaged.

Step 5: Determine the Significance of Cumulative Impacts.

Once cumulative impacts are determined, their significance must be considered relative to an established threshold limit, an established legal guideline or policy, or a qualitative assessment based on professional

opinion and consultation. The local Bangladesh thresholds/standards on air, water, toxic and hazardous compounds, noise, may be used, if applicable. In any case, the significance of the cumulative impacts must be defensible. The significance of the cumulative impacts and the contribution of the project must be subsequently evaluated by project decision makers. The consultant will need to define the level of "significance" or scale (aligning with legal requirements in Bangladesh if applicable) and apply it consistently. The significance should be assessed across past, present, and future projects on the trends of each VC. The significance of the contribution of the Subproject to cumulative impacts on each VC should be defined in one of the following ways:

- The project has a measurable effect on the VC;
- The project acts in conjunction with the effects of past present or future projects and activities; and the project in conjunction with other projects and activities shifts the resource to an unacceptable level or exceeds a threshold such that the impact is considered significant, in that the project's contribution to cumulative effects is responsible for exceeding the threshold and therefore is significant or,
- The project is contributing with the effects of other projects and activities and the project contribution may or may not be significant, depending on the level of the contribution.

Step 6: Formulate Management Recommendations For Cumulative Impacts On Each VC

The RCIA should reach a conclusion on whether the contribution, if any, to the cumulative impacts on each VC by the Subproject is significant or not. An action plan (with time, institutional responsibilities, budget) should be developed based on this conclusion, and clearly define what mitigation measures need to be incorporated into the project Environmental and Social Management Plan, and what mitigation/environmental management measures should be carried out above the project level.

The management plan will be in three parts: (i) management plan for additional measures needed for the Subproject; (ii) recommended measures for managing contributions to cumulative impacts of other projects in the area; and (iii) measures addressing needs for institutional and legal frameworks and acquisition of knowledge to address data gaps. The recommendations will need to also include proposed adaptive management approaches for impacts that still will have high level of uncertainty or lack sufficient information for an adequate assessment.

Mitigation/environmental management measures that are needed but beyond the scope of the project, will be presented to the Chittagong Port Authority and other relevant (government) agencies/entities in the form of a workshop, and finalized based on the views by the agencies. Their endorsement/acknowledgement on the recommendations from the RCIA should be sought.

4. Consultation

As this is a Rapid Cumulative Impact Assessment, extensive consultation with stakeholders is not expected or possible during the time available. The Consultant should meet with key stakeholders in the region such as PDWRAM, PDAFF, DOE. The results of consultation should be documented in terms of VC selection, impact assessment and mitigation.

5. Output

Reports for this assignment will be phased along the main 6 steps of the RCIA. Each of the reports will be presented for discussion with the client and for comments (including from the World Bank safeguards team) to be able to make updates and changes to each report.

- Scoping Report including identification of VCs proposed geographic and temporal boundaries for the RCIA and other projects to be considered (within 1 month from signing).
- Draft RCIA report including Bay Terminal Project-related contributions to cumulative effects on selected VCs (such as biodiversity, community health, community safety, employment, aesthetics, quality of life, and water quality etc.), assessment of cumulative impacts and their significance and preparation of a management plan for project level and regional cumulative impacts (within 2 months from signing).
- Final report including all segments ready for public presentation (within 2.5 months from signing).

A suggested table of contents of the RCIA report is presented below.

Section	**Content**
Executive Summary	Summary of key points of the RCIA
Introduction	Introduces the project, objectives of the RCIA.
RCIA Methods	Describes the methods used in the RCIA including selection of VECs, consultation, spatial and temporal boundaries, identification of projects, assessment and management of cumulative impacts.
Subproject Description	A brief description of the subproject and its activities that could give rise to cumulative impacts. Also discussion of area surrounding the project.
Valued Components and Spatial/Temporal Boundaries	A description of valued components selected for the RCIA and their spatial and temporal boundaries.
Baseline Condition of Valued Components	E
Identification of Projects and Activities	E
External Stressors	A description of external stressors that might affect each VC in addition to the cumulative impacts of the project and other projects and activities.
Assessment of Cumulative Impacts	
Management of Cumulative Impacts	A description of management measures for cumulative impacts on each VEC, first at the project level and then the larger regional level to manage cumulative impacts of other projects and activities.
Conclusion	Key conclusions of the RCIA.

6. Resources Required

It is anticipated that the assignment will require a experts in the following key area: cumulative impact assessment, biodiversity, livelihoods, crop production experts, soil and water quality, socio-economic effects etc.

APPENDIX 6 – Dam/Reservoirs Safety

Annex 6.1 – Dam Safety Assessment Framework

Dam Safety Requirements for Remedial Works of Existing Dams /Reservoirs

Objective and scope: This section will be applied during the preparation of the minor safety works for the proposed existing dams to be identified and implemented under Component 1 of CWSIP. To ensure full compliance with the WB's ESS4 regading Safety of Dams, this Section outlines key requirements of ESS4: Community Health and Safety, ESS4-Annex 1: Safety of Dams for **the existing dams** and the activities to be carried out during the implementation of CWSIP.

The Program Management Office (PMO) of the Ministry of Water Resources and Meteorology (MOWRAM) is responsible for ensuring that appropriate measures are prepared and implemented according to these requirements including having necessary human and financial resources and providing training.

(Part 1) WB's Safeguard Policy on Safety of Dam Applicable to Existing Dams

Main objectives of the WB's Dam Safety Policy are to protect downstream populations, ecosystems and investments from consequences of dam failure and to ensure that dams are properly designed, constructed, and monitored. Assessment and mitigation requirements distinguish between large or small dams as defined in the policy, reservoir size, and potential hazard to downstream community and ecosystems. The ESS4: Annex 1 distinguishes between small and large dams as follows:

- Large dams are defined as those with height 15m or higher from the lowest foundation to the crest or between 5 and 15m in height but with storage larger than 3 Million cubic meters.
- All other dams are regardless of size or capacity referred to as "small".

For existing dams, the policy is as follows:

- Mobilize one or more independent dam specialists to (a) inspect and evaluate the safety status of the existing dam, its appurtenances, and its performance history; (b) review and evaluate the owner's operation and maintenance procedures; and (c) provide a written report of findings and recommendations for any remedial work or safety-related measures necessary to upgrade the existing dam to an acceptable standard of safety.
- The Bank may accept previous assessments of dam safety or recommendations of improvements needed in the existing dam if the borrower provides evidence that (a) an effective dam safety program is already in operation, and (b) full-level inspections and dam safety assessments of the existing dam, which are satisfactory to the Bank, have already been conducted and documented.
- Necessary additional dam safety measures or remedial work may be financed under the proposed project. When substantial remedial work is needed, the Bank requires that (a) the work be designed and

supervised by competent professionals, and (b) the same reports and plans as for a new Bank-financed dam be prepared and implemented. For high-hazard cases involving significant and complex remedial work, the Bank also requires that a panel of independent experts be employed on the same basis as for a new Bank-financed dam.

(Part 2) Action to be Carried-Out under CWSIP

(a) Mobilization of dam specialist

Review of documents suggested that most of the existing water storage dams in Cambodia is considered as large dams per ESS4: Annex 1. In this context, to comply with it, MOWRAM will mobilize at least one independent dam specialist to (a) inspect and evaluate the safety status of the existing dam, its appurtenances, and its performance history; (b) review and evaluate MOWRAMration and maintenance procedures; and (c) provide a written report of findings and recommendations for any remedial work or safety-related measures necessary to upgrade the existing dam to an acceptable standard of safety. In order to accelerate the process, it will be best to utilize one or more (depending on the size and complexity of the dam) experts from the established Dam safety panel (DSP). The report, namely a Dam Safety Report (DSR), will be submitted to WB for clearance and will be reflected in the final design of remedial works before tendering. Below provides basic principles to be considered during the inspection and preparation of the DSR.

To confirm that the selected dams are large dams the following checklist will be applied for all dams to be implemented under CWSIP:

Checklist to determine if the dam is considered as large dam or not

Screening Criteria	Applicable (Yes or No)		Remarks*
1. The height of dam is higher than 15m?	Yes □	No □	
2. The height of dam between 10-15m with storage capacity of the dam is larger than 3 million cubic meter?	Yes □	No □	
3. The height of dam is between 10-15m with many complex design features (e.g. require high flood frequency, located in areas affected by serious earthquakes, complex foundation and difficult to build, or keep the toxic materials) and/or pose high risks to human population downstream?	Yes □	No □	

*If the answer to any questions above is "yes", dam is classified as large dam and need to follow specific requirements for large dam; If the first three questions do not have any answer "yes", the dam is considered as a small dam; Specific data should be provided under Remark.

(b)

Objective and Scope of DSR Preparation

Main objective of the 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.

For rehabilitation and/or upgrading of existing dams considered to be large and/or high hazard, the following principles will be applied:

(i) Prior to the site inspection, the dam safety team/consultants will collect, review and briefly summarize available documentation in respect of the existing dam, including design reports, design drawings, as-built drawings, reports on repairs of dam and outlet structures as applicable, inundation maps due to large discharges, flood warning system for the population downstream, etc.

(ii) *Carry out the site inspection of all dam components:* read and note the reservoir level, check monitoring equipment including piezometers, check operation & action instructions for the operator that are visibly posted on the outlet structure, make pictures of deficiencies, identify locations with erosion, corrosion, differential settlements, damages, slumping of embankments, all locations where seepage occurs (make pictures) and check whether seepage is turbid or clear, estimate discharges of seepage or leakage, check debris removal facilities, ask field operators about current or recent problems.

(iii) After the site inspection the dam safety team/consultant will report as follows on the dam and outlet works:

- Report relevant characteristics and structural dimensions of each of the dam(s) and ancillary structures: length / height / width and elevation of the crest, chainage markers, height of parapet, wave height, freeboard, camber of the crest, gradient of upstream and downstream slopes, elevation and width of berms, dimensions of key trenches (if any), grout screens, impervious blankets, type and thickness of upstream and downstream slope protection, chimney drains, finger drains, drainage blankets, pressure relieve wells, dam safety instrumentation like piezometers, settlement beacons, staff gauges or automatic water level recorder(s), and other structural components as applicable.
- Review and comment on deficiencies or accidents in respect of the dam(s) as applicable (including settlements, cracks, erosion / beaching, sink holes, other damage, slope stability problems, cattle damage, damage due to human activity, public access, security measures, seepage, leakage, traffic damage of dam crest, previous problems, major previous repairs, vegetation on slopes and berms and possible other adverse conditions).
- Provide relevant data in respect of dimensions and condition of all steel and concrete structures on / in / through / across or underneath the dam sections, including the foundation condition of these structures, height, width, u/s means of flow control (stoplogs, type and number of control gates, type and number of guard gates, valves), d/s flow control equipment, dimensions of stilling basin(s), deterioration or erosion damage etc.
- Review and comment on the condition of structural and electrical components as applicable (including the present condition of each of the concrete structures, control gates, guard gates, gate frames, condition of rubber seals, problems in operation of structures (if any), cracks, leakage, trash racks, corrosion of reinforcement / structural components / lifting equipment, other damage or lack of structural components, e.g. if guard gates in the outlet works are lacking or in case of absence of chainage markers on the dam crest.
- Review the organisation of the dam owner that is in charge of dam (safety) management and assess adequacy and training needs of the managing and operational staff involved. Archiving system and data base of dam (safety) monitoring data as well as communication system used

between the dam / spillway / outlet and the head office of the dam owner should be included.

- Review the guidelines for dam safety management which have been established or have been adopted by the dam owner. Check whether and when these guidelines have been followed and specify where this has been reported by the dam owner to the regulator.
- Collect and review the Operation, Surveillance and Maintenance (OS&M) manuals of the dam and the ancillary structures. Present a summary of the findings, comment on the OS&M manuals and propose improvements as applicable.
- Collect and review all existing dam safety reports and summarize relevant findings and recommendations of these reports in a systematic way, including emergency detection / evaluation and classification, allocation of responsibilities, inundation maps, Emergency Preparedness Plans (EPPs), Emergency Action Plans, Emergency Notification Flowcharts, etc.
- Collect and review all documents required for planning and implementation of emergency preparedness measures.
- Specify additional investigations, analysis and other data that are (possibly) required for the dam safety assessment and for formulating further recommendations.

(iv) The team/consultant will prepare a summary list with their recommendations for structural and non-structural measures to be implemented to improve the dam safety conditions including prioritise the proposed measures and preparation of budget needed both for the capital investments and the recurrent cost. In case (part of) the relevant information required for the dam safety analysis is not (yet) available, the team/consultant will specify in the report which additional data have to be collected (if existing) before final conclusions and recommendations are given. If certain relevant information is not (yet) available the team/consultants will prepare recommendations in respect of additional surveys and/or studies to provide lacking parameters or, alternatively, shall select the characteristics that should be adopted in a dam safety analysis.

(c) Scope of the DSR

For large and/or high hazard dam, scope of the DSR should include, but not limited to, the following aspects:

- *Background on the existing dams and/or reservoirs.* This should include information on the type and performance of existing dams and the number of local population at risks, including existing instrument, inspection procedure and capacity.
- *Dam safety review result.* The report should summarize observed dam safety issues as well as recommendations on remedial works and indicative cost estimate.
- *Review and guidance for finalizing the four Dam Safety Plans.* In case that Emergency Preparedness Plan (EPP) and Operation and Maintenance (O&M) Plan do not exist – which may be the case for some of the existing dams in Cambodia – or the Consultant finds the existing ones in need of complete re-doing, there will be a need to engage additional expert/s from the DSP, since the tasks may prove too large for one specialist. Alternative may be that the Consultant engaged for the DSR prepares a TOR for Dam safety plans, which then would be prepared within the dam rehabilitation design consultancy.

(d) Scope of Dam Safety Plans

Dam Safety Plan should be prepared as follows:

1. *Plan for construction supervision and quality assurance*. It covers the organization, staffing levels, procedures, equipment, and qualifications for supervision of the construction of a new dam or of

remedial work on an existing dam. The TORs for construction supervision and quality control for rehabilitation works of selected existing dams should be prepared before appraisal and submitted for bank review.

2. *Instrumentation plan*. This is a detailed plan for the installation of instruments to monitor and record dam behavior and the related hydro-meteorological, structural, and seismic factors. It is provided to an independent panel of experts (DSP) and the Bank during the design stage, before bid tendering, during project implementation.

3. *Operation and maintenance (O&M) plan*. This plan covers organizational structure, staffing, technical expertise, and training required; equipment and facilities needed to operate and maintain the dam; O&M procedures; and arrangements for funding O&M, including long-term maintenance and safety inspections. A preliminary plan is provided to the Bank for use at appraisal. The plan is refined and completed during project implementation; the final plan is due not less than six months prior to the initial filling of the reservoir. The Plan should be prepared as soon as possible during project implementation given that those dams are under operation. Elements required to finalize the plan and initiate operations are to be financed under the project. A preliminary O&M Plan is attached as Attachment 1, as example – the client should prepare final one and submit to the bank for review.

4. *Emergency preparedness plan*. This plan specifies the roles of responsible parties when dam failure is considered imminent, or when expected operational flow release threatens downstream life, property, or economic operations that depend on river flow levels. It includes the following items: clear statements on the responsibility for dam operations decision making and for the related emergency communications; maps outlining inundation levels for various emergency conditions; flood warning system characteristics; and procedures for evacuating threatened areas and mobilizing emergency forces and equipment. The broad framework plan and an estimate of funds needed to prepare the plan in detail are provided to the Bank prior to appraisal. The plan itself is prepared during implementation and is provided to the Panel and Bank for review not later than one year before the projected date of initial filling of the reservoir. The Plan should be prepared as soon as possible during project implementation given that those dams are under operation. Elements required to finalize the plan and initiate operations are to be financed under the project. A framework EPP is attached as Attachment 2, as example – the client should prepare final one and submit to the bank for review.

Mobilization of a Dam Safety Panel

MOWRAM will mobilize a Dam Safety Panel (DSP or the Panel) comprising at least 3 dam safety experts: typically international dam safety expert, geotechnical specialist, and hydrologist. Although the procurement process can begin immediately, the finalization and contract award will be possible after the effectiveness of the CWSIP project. The DSP will provide the services throughout the implementation of the CWSIP. Draft TOR for the DSP has been prepared (see Attachment). MOWRAM provide administrative support, facilitate meetings and field visits, and will keep WB closely informed.

Preparation of Detailed Designs (Component B (b))

Under Component B, an ESA study, detailed designs and Dam Safety Documents of the selected existing dams will all be conducted and completed. A draft TOR for the ESA study has been prepared including a section related to dam safety compliance (see Attachment 8(a) of the ESMF). A draft TOR for detailed designs for each dam will be prepared and implemented in accordance with ESS4: Annex 1 requirements. MOWRAM will ensure that the ESA study, the detailed designs and Dam Safety Documents of the selected existing dams will be conducted by experienced and competent professionals/consultants and that the TOR for detailed designs

will explicitly incorporate the recommendations from the ESA study and those from the dam safety panel (DSP). DSP as independent panel will review Dam Safety aspects of the ESA report.

Preparation of the Detailed Dam Safety Plans

MOWRAM will ensure that for each proposed existing dam, the 4 Detailed Dam Safety Plans comprising (i) the CSQA Plan, (ii) the Instrumentation Plan, (iii) the O&M Plan, and (iv) the EPP are prepared as required by ESS4: Annex 1. These plans are separate from the ESA, due to the confidential / security considerations. Draft generic TORs of these 4 Plans will be prepared and submitted for WB clearance before finalizing the detailed design of selected dams during project implementation, as the consultation of the selected new dams will not be covered by this project. Other plans will also be prepared during project implementation as below considering that the construction of the new dams are not covered by this project.

A. Construction Supervision and Quality Assurance Plan

This plan covers the organization, staffing levels, qualification, key tasks, procedures, etc. for supervising the rehabilitation and dam safety improvement works of existing dams. The TORs for CSQA Consultancy will be submitted during project implementation before finalizing the detailed design of selected new dams.

B. Instrumentation Plan

This is a detailed plan for the installation of instruments to monitor and record dam behavior as well as hydro-meteorological, structural, geological, seismic and other relevant factors. This plan is to be prepared as part of detailed design/bidding package during project implementation. It is provided to an independent DSP and the WB for review at detailed design stage.

C. O&M Plan

This plan covers organizational structure, staffing, technical expertise, and training required; equipment and facilities needed to operate and maintain the dam; O&M procedures; and arrangements for funding O&M, including long-term maintenance and safety inspections. The preliminary plan is to be submitted to the WB for review during project implementation. The final plan is to be submitted to the DSP and WB not later than six months prior to the completion of rehabilitation works (not under this project).

D. Emergency Preparedness Plan

This plan specifies the roles of responsible parties when dam failure is considered imminent, or when expected operational flow release threatens downstream life, property, or economic operations that depend on river flow levels. It includes the following items: clear statements on the responsibility for dam operations decision making and for the related emergency communications; maps outlining inundation levels for various emergency conditions; flood warning system characteristics; and procedures for evacuating threatened areas and mobilizing emergency forces and equipment. The broad framework plan and an estimate of funds needed to prepare the plan in detail are provided to the WB for review during project implementation. The full-fledged plan is prepared during implementation and is provided to the DSP and WB for review no later than one year before the projected date of initial filling of the rehabilitated dam/reservoir (not under this project).

Annex 6.2 – Emergency Preparedness Plans (Dam Safety)

All dams and barrages constructed across streams or impounding water (off stream storages) present a hazard to the downstream area (and resident population) if the dam or barrage fails. Failure of the dam or barrage will also mean that the dam infrastructure can no longer perform its intended design function (storage, regulation, diversion of water for power generation, irrigation or general water supply).

In the event of a dam failing, uncontrolled releases of water from the dam, or the dam is experiencing and releasing flows from major flooding, the dam owner has a responsibility to downstream communities to provide adequate warning of the situation and to coordinate any actions to safeguard the communities from flooding and prepare downstream communities and infrastructure to withstand rising water levels.

Each referable dam or major water diversion barrage need to have an "Emergency Preparedness Plan" (EPP) in place that provides guidance to the dam owner and responsible authorities on the roles, responsibilities and actions to be taken when a dam or barrage is deemed to be experiencing an emergency situation (dam failure, uncontrolled release of water, major flooding).

The development, updating, accuracy and distribution of the Emergency Action Plan for a dam is the responsibility of the Dam Owner as part of its Dam Safety Management Program. The dam owner is to:

- Provide an Emergency Preparedness Plan for each referable dam or barrage under its ownership or for dams as directed Ministry of Water Resources and Meteorology (MOWRAM);
- Undertake the consultancies, studies and investigations required to prepare an Emergency Preparedness Plan. This will include but is not necessarily limited to community consultation, hydrological and bathymetric studies and flood modelling, flood inundation mapping, identification of downstream communities and stakeholders;
- Liaise with National Disaster Management Authority about their possible roles and responsibilities in a dam safety event or emergency;
- Review the Emergency Preparedness Plan in accordance with the requirements of the Dam Safety Guidelines;
- Submit a copy of the Emergency Preparedness Plan to MOWRAM for approval or amendment.
- Organise and undertake reviews and plan exercises in accordance with the requirements of the Dam Safety Guidelines.

The dam owner shall undertake a review of each of their EPPs every 12 months and issue updated plans or sections of the plan as required. It is recommended that an updated EPP for each dam be issued every 5 years (review previous EPP and issue a completely new revision).

An emergency preparedness plan shall be developed for proposed exiting dams commencing at the Preliminary Design phase with a final version being issued to coincide with the completion of construction. It may also be necessary to issue an interim EPP that includes any temporary diversion dams to be provided during the construction phase of the main dam.

For existing referable dams, the dam owner is to prepare an EPP at the earliest opportunity, irrespective of whether MEW has issued dam safety conditions for the dam.

The development of an EPP will require dam owners to undertake a number of preparatory tasks including:-

- Investigation
    - Understanding the potential dam failure modes and dam safety issues
    - Collation of information
    - Identification of the downstream population(s) that may be impacted by a dam failure or flood event
- Data Collection and Mapping
    - Rainfall and runoff for the dam catchment, river gauging
    - Topographic and feature mapping (digital)
- Dam Data Identification
    - Key water and dam levels

    - Spillway gate operating rules
    - Basic information about the dam (height, length, construction etc)
- Dam Failure Mechanisms
    - Identify the potential failure mechanisms for the dam type
- Flood Modelling
    - Flood modelling for different flood events including dam failure
    - Sunny Day dam failure
    - Identify the communities, property and infrastructure at risk from flooding
- Dam Breach Modelling
    - Breach models that pertain to the dam type
    - Breach parameters (width, depth, time to develop)
- Identify the Different Levels of Dam Safety Emergency
    - How the emergency event may unfold (develop)
- Discussions with Agencies and Develop Contact Lists
    - Identify all stakeholders and their capability and capacity to assist in an emergency situation
    - How the Emergency Preparedness Plan is activated the lead response agency
- Identify Roles and Responsibilities
    - Assign roles, responsibilities and actions according to stakeholder capacity to undertake assigned actions
- Identify the Dam Emergency Situations
    - Dam Safety Issues
    - Normal Loading
    - Flood Loadings
    - Sunny Day Failure
    - Seismic Event
    - Cascade Failure
    - Dam Safety Event

Each emergency preparedness plan shall contain as a minimum the following sections

- Distribution Sheet
- Title Page
- Table of Contents
- Notification & Contact Lists
- Roles & Responsibilities
- Dam Information
- Emergency Events & Action List
- Annexures

In order to make the Emergency Preparedness Plan as accurate as possible (without experiencing a real emergency) it is required that simulation exercises and training in the use of the EPP are held. The dam owner is responsible for organising and arranging for emergency preparedness plan exercises and training.

Exercises may be undertaken in the following forms:

- External review of the plan by an experienced person
- A Desk Top Dam Safety Exercise

- An External / Field Dam Safety Exercise

It is recommended that a desk top review is undertaken at least once every 2 years and that an external or field dam safety exercise is undertaken every 5 years.

Following any review or exercise, the dam owner shall update the EPP and where necessary re-issue the EPP to all persons and groups on the distribution list.

Dam Owners are to ensure that all key personnel involved in the operation of the dam are properly and adequately briefed and trained in respect to the Emergency Preparedness Plan and that they receive training where required on the actions they are expected to undertake or for their roles and responsibilities if the plan is activated.

Annex 6.3 – Template for Emergency Preparedness and Response Plan (Dam Safety)

1. Introduction

1.1 Background

[Description of the project]

1.2 Purpose of the EPP Framework

[Indicate the purpose of EPP framework]

This EPP framework is prepared to guide the development of the full-fledged EPP including responsible organizations, communication procedures, downstream topographic survey, dam failure modes analysis, inundation simulation, etc.

2. General Information

Preparation of section on general information will be done in close colLaboration of the various agencies involved in the EPP. These agencies would also be responsible for the review of the EPP.

2.1 Main Features of the Dams

[Description of key features of Dams, i.e. dam structure (earth embankment dam, concrete dam or mixed material dams etc.), height of dam, reservoir storage capacity et…] **.**

2.2 Roles and Responsibilities

The EPP shall specify the roles and responsibilities of key Government organizations, local authorities and stakeholders which are responsible for execution of the EPP which is proposed under this framework.

2.3.Organization of Communication

Indicate the procedures of communication in case of emergency.

3. Description of Dam Potential Failure Modes

This section of the EPP shall present the results of analysis of the likely failure modes of the dam.

4. Inundation Map

This section of the EPP shall present the results of dam break analysis / downstream flooding simulation and delineate the areas which would be affected in case of the dam failure. The inundation maps therefore clearly show the areas which would be affected in the event of dam failure.

5. Monitoring Systems and Early Warning System

The EPP shall define the dam surveillance system to be put in place. The plan shall include identifying equipment/facilities requiring physical/visual inspection, remote monitoring, testing etc. The surveillance frequency identifying what requires daily, weekly, monthly, annual inspection etc. shall also be defined. The persons responsible for the various levels of surveillance shall also be clearly defined.

* Early warning and identification of emergency conditions

Through the monitoring instruments, the dam operation staffs will be able to identify the abnormal signs and/or emergency conditions. Description of signs of potential emergency cases.

* Communication system

Prepare the contact list of responsible organizations and officials in case of emergencies and the way of communication .

6. Warning Levels and Response Matrix

The EPP shall provide a well-defined warning levels and response action in the in the event of an emergency. The warning levels and response matrix suggested in the EPP Framework is indicative and subject to further review and finalization in the full-fledged EPP.

7. Evacuation Plan

The EPP shall define practical evacuation procedures which shall include evacuation routes to be used in case of emergencies and also locate safe havens where persons at risk shall relocate to in order to be safe from risk of floods in the event of a dam failure. Various agencies would be involved in the event of evacuation and the EPP would define the roles of the various agencies.

8. Power Supply and Safety Measures

The EPP prepared shall clearly analyze the implications of a dam failure or an emergency situation on power supply to the dam operations, emergency activities, rescue activities etc. as well as back-up power supply options (such as generator, etc.).

9. Maintenance Testing and Training

The EPP shall be reviewed and revised annually, and changes made to reflect changes, e.g. personnel, contacts, updating of equipment, facilities, technical skills etc.

Testing is an integral part of the EPP, and provision should be made for this.

The EPP shall also provide for training of project O&M and Surveillance staff, which is an essential component of having effective response to dam safety emergencies**.**

Annex 6.4 – ToR for Dam Safety Panel (DSP)

DAM SAFETY PANEL (DSP)

A. Introduction

The CWSIP Project: The Ministry of Water Resources and Meteorology (MOWRAM) of the Royal Government of Cambodia has received a loan from the International Development Association (IDA or the World Bank or WB) for implementation of the Cambodia Water Security Improvement Project (CWSIP) to be implemented during 2023-2029. The CWSSIP activities will include rehabilitation of existing irrigation schemes, building capacity on hydromet, undertaking remedial works of existing dams, preparation of detailed designs and environmental and social impact assessment (ESA) of the priority existing dams, development of dam safety guideline, and other technical assistance related to water resources management and enhancing MOWRAM capacity to effectively plan and manage water resources. These activities will be implemented through the following five components: (1) Building foundations for improved water resource services; (2) Sustainable Water Service Delivery; (3) Increased Agricultural Productivity at Farm Level; (4) Project Management, Coordination, and M&E; and (5) Contingency Emergency Response Component. The Program Management Office (PMO) of MOWRAM will be responsible for implementation of CWSIP.

The WB ESF Requirements: The CWSIP is classified by WB as "Subtantial" Risks for Environment and Social. To ensure compliance with these policies an Environmental and Social Management Framework (ESMF) was prepared outlining the principles, the processes, and specific requirements for the environmental and social management of each of the five components including compliance with the Environmental Impacts Assessment (EIA) regulation of Cambodia. The ESMF also includes specific requirements on dam safety according to ESS4: Annex 1 which will be applied to Component B and a revised Resettlement Policy Framework (RPF), which will be applied when land acquisition, resettlement and/or loss of livelihoods occurs in the CWSIP project. Main objective of WB's ESS3 is to protect downstream populations, ecosystems and investments from consequences of dam failure and ensure that dams are properly designed, constructed, and monitored and also requires that an advisory panel on safety of dam will be engaged during the preparation and construction of existing large dams. The ESS3 also requires that the project owner of either subprojects with "Substantial" E&S risk that are highly risky or contentious or that involve serious and multidimensional environmental and social concerns will engage an advisory panel of independent, internationally recognized environmental specialists to advise on all aspects of safeguard activities to be carried out under the project.

DSP*:* To comply with these requirements, MOWRAM is establishing an Environmental and Social Advisory Panel (ESAP) and a Dam Safety Panel (DSP) for the CWSIP. ***This TOR is for the establishment of the DSP line with ESS4: Annex 1.***

B. Objectives of the Services

The main purpose of the DSP is to review and advise PMO/MOWRAM on matters relative to dam safety and other critical aspects of dams (including its appurtenant structures, the catchment area, the area surrounding the reservoir, and downstream areas) to be carried out under CWSIP including review of TOR and detailed

design of the proposed new dams to be undertaken with due consideration to ensure full compliance with Policy applicable to a new large dam. (The DSP will also review the dam safety and rehabilitation design of selected existing dams.) However, PMO/MOWRAM to also assign the Panel's responsibility to cover the technical issues related to project formulation, technical design, construction procedures, and other associated works such as power facilities[20].

Specific objectives will be, but not limited to, the followings:

- Under Component B (a) and in coordination with ESAP, the DSP will review and comment on the scope and quality of the detailed designs of the proposed upgraded dams including review and comment on the TOR and the various outputs/reports at phases. The DSP will provide independent recommendations on quality, safety, improvement (if any), and next steps to ensure compliance with Policy of the proposed dams.
- Under Component 1 and in coordination with ESAP, the DSP will review the Dam Safety Report (DSR) to be prepared for each proposed dam to ensure adequacy of the report in line with ESS4: Annex 1 requirements and relevant laws of Cambodia. During the implementation of remedial works, the DSP will advise on the effectiveness of the DSR implementation and ways to improve it (if any), therefore the client will not have to recruit another individual dam specialist for this task.
- Under Component 1 and in coordination with ESAP, the DSP will review the TOR and documents related to the development of dam safety guideline from engineering and other technical aspects taken into account the need to comply with WB' Dam Safety Policy, and other related WB's safeguard policies as well as the relevant laws and regulations of Cambodia.

C. Scope of the Services

The DSP experts will:

1. Share information with and advise the PMO/MOWRAM project team on the best international practices on detailed design of existing large dams taken recommendations and findings from ESA study into account and provide independent advice on all aspects related to dam safety.
2. Provide independent confidential advice (due to security concerns) to the PMO/MOWRAM, guidance, and quality assurance services on all dam safety aspects of the ESAs and related ESMPs and unanticipated possible environmental and social impacts (if any) which may arise during the construction and operational phases.
3. Review and provide comments to improve the quality of the TOR for the detailed design and the ESA's for the existingdams to be identified and the draft and final detailed design and ESAs reports related to dam safety for the upgraded existing dams.
4. Review the decisions of MOWRAM regarding detailed design and other issues which may arise during the implementation of CWSIP related to dam safety.
5. Prepare an independent panel reports after each mission visit summarizing its findings and recommendations including the review result of existing dams design report (and rehabilitation

[20] When necessary an electro-mechanical expert will be included in the panel.

design of existing dams), including a final review report before the final draft of the detailed design has been cleared.

6. Urgent DSP meetings may be called in situations where PMO/MOWRAM needs immediate advice.
7. The scope (and duration of assignment) of the DSP will be extended to advise on the activities related to existing dams as requested by PMO/MOWRAM.
8. The DSP members shall not reveal any information about the project that he/she might receive from MOWRAM or from other Afghan agencies.

D. Mode of Operation

The DSP shall comprise internationally recognized (i) dam safety engineer, (ii) engineering geologist, (iii) hydrologist and (iv) national dam safety engineer (i.e. four panel members in total). The DSP will work closely with the ESAP to be established and operational during the implementation of CWSIP.

Overall, the DSP will act as an independent advisor, rather than a consultant or provider of technical assistance to PMO/MOWRAM. In terms of organization, the international dam safety expert will take the lead with support from the international engineering geologist, international hydrologist and national dam safety expert and they will work closely with PMO/MOWRAM led design team and other project staff. He/she will ensure the objectivity of the Panel and its members, and provide a balance in the Panel's reviews and recommendations and ensure timely reporting of the Panel.

The DSP will liaise with PMO/MOWRAM to collect information and exchange views on an ongoing basis throughout the CWSIP project. It is anticipated that the DSP will make field visits at key points of the detailed design and the ESA process to be determined by PMO/MoWRAM in consultation with the international expert. The DSP will establish the schedule for these reviews in coordination with PMO/MoWRAM. The MOWRAMs expected to have the ability to conduct its work with open access to all project areas that it may be interested in seven project provinces – assuming security permits. The DSP will also be provided with access to all relevant documents, drawings, and sites in the project areas to facilitate its work. The DSP shall be included on routine distribution lists of all relevant project communications about the detailed design and ESAs in order to increase their effectiveness during infrequent visits.

PMO/MOWRAM will make arrangements for any meetings between the DSP, the ESAP, and the detailed design and/or ESA Consultants. PMO/MOWRAM will also provide administrative and logistical support for field visits including sufficient security and office space to facilitate the work of the DSP. The PMO Director will serve as the regular contact point between PMO/MOWRAM and the DSP

The DSP will carry out its work and may meet with the full range of stakeholders: potentially affected populations, national and local government, community organizations, civil society organizations and nongovernmental organizations if need arises. The DSP may meet with local communities without interference from PMO/MOWRAM or any Beneficiary Party. The views and opinions of all stakeholders will continue to be actively solicited through the ESAP process. The ESAP may, at its discretion, invite PMO/MOWRAM and the World Bank to accompany it during field visits.

PMO/MOWRAM shall upon recommendation of the International Dam Safety expert appoint short-term specialists beyond the membership of the DSP, on an ad-hoc basis, for specific assignments to deal with issues that may arise for which the DSP member has insufficient expertise (i.e. hydrology). PMO/MOWRAM will also

be able to hire translators/interpreters to assist the DSP in undertaking its work and to ensure that its findings and recommendations are disseminated in Khmer.

E. Qualities of Members of the DSP

The members of the DSP will constitute a group of high-level, internationally-recognized professionals[21]. The members of the DSP should among them share cutting edge expertise and profound experience within their areas of expertise. Most importantly, the DSP members shall be of international stature with unimpeachable personal integrity, able to resist any pressure that might be brought to bear on their conclusions.

F. Panel Composition

Based on the preliminary understanding of the project issues, the DSP will have four (04) key permanent members, 01 International Dam Safety Expert (chair), 01 International Engineering Geologist, 01 International Hydrologist and 01 National Dam Safety Expert. Additional members will be invited and approved on an as-needed basis by MOWRAM upon request by the International Dam Safety Expert of the DSP.

G. Selection Criteria

To ensure the complete independence of the DSP in addition to satisfying the requirements of high integrity, substantive knowledge and broad experience its members should:

- Should have international class expertise in their respective fields and experiences of dams and large hydraulic infrastructure projects for more than 20 years.
- not have a conflict of interest with the project or perceived to have one. International Experts shall not be nationals of any of the riparian countries and
- not have been engaged in positions/consultancies with any of the consultancy firms to undertake the Feasibility Study or detailed design of the proposed projects.

H. Overall Key Competencies

The DSP members as a team should have extensive knowledge on dam safety, hydrology and geology required for detailed engineering design of a complex water resources management and infrastructure programs / projects with a broad knowledge and experience regarding environmental and social issues associated with them. Other type of expertise, such as on transboundary issues, governance issues, local communities, and Afghan or regional context, may be necessary and for that additional panel members may be required. All DSP members should be familiar with and have relevant working knowledge of and experience with World Bank Safeguards Policies related to safety of dams (ESS4: Annex 1), have relevant practical and technical expertise in reviewing project reports produced by consulting firms, and have strong analytical and reporting skills and ability to work in teams. The dam safety experts will have a demonstrated capacity to prepare reports in English. The national dam safety expert will be familiar and have relevant working knowledge of national laws and regulations related to dam design and dam safety of Cambodia.

I. Minimum Expert Qualification Requirements

[21] Efforts will be made to try to include national specialists with international class expertise and familiarity with international practices and standards.

(i) International Dam Safety Expert

The Expert should possess a post graduate degree in civil engineering or other related engineering fields. Additional training and/or experience related to dam safety aspects related to hydropower, irrigation, and/or other aspects related to water resources management will be an added advantage.

The candidate should have at least twenty (20) years of continuous practical experience with the preparation and implementation or supervision of detailed design of large dams. Preferably, he/she should be a registered or certified engineer in his/her home country and should have served as a dam safety expert or equivalent position for a minimum of 10 large-scale projects, 5 of which should be related to large-scale water resources.

The candidate should also have significant experience in (a) preparation of detailed design for large scale infrastructure projects including dams; (b) methods and model studies for analyses and prediction of environmental impacts, particularly for hydropower projects, (c) design and implementation issues during construction and operations of dams including management and monitoring plans, and (d) experience on cost estimated related to detailed design and various options of ways to minimize potential negative impacts downstream of a dam.

The candidate should be familiar with the World Bank policy related to dam safety (ESS4: Annex 1) and should have strong implementation experience and analytical and reporting skills as well as an ability to work as a member of a team. He/She should have fluency in spoken and written English.

(ii) International Engineering Geology Expert

The Expert should possess a post graduate degree in civil engineering, geotechnical engineering or other related engineering fields. Additional training and/or experience related to engineering geology aspects related to hydropower, irrigation, and/or other aspects related to water resources management will be an added advantage.

The candidate should have at least twenty (20) years of continuous practical experience with the preparation and implementation or geotechnical investigations for detailed design of large dams. Preferably, he/she should be a registered or certified engineer in his/her home country and should have served as a geotechnical expert or equivalent position for a minimum of 10 large-scale projects, 5 of which should be related to large-scale water resources.

The candidate should be familiar with the World Bank policy related to dam safety (ESS4: Annex 1) and should have strong implementation experience and analytical and reporting skills as well as an ability to work as a member of a team. He/She should have fluency in spoken and written English.

(iii) International Hydrology Expert

The Expert should possess a post graduate degree in civil engineering, water resources engineering or other related engineering fields. Additional training and/or experience related to hydrology aspects related to hydropower, irrigation, and/or other aspects related to water resources management will be an added advantage.

The candidate should have at least twenty (20) years of continuous practical experience with the preparation and implementation or hydrology analysis and modelling for detailed design of large dams. Preferably, he/she

should be a registered or certified engineer in his/her home country and should have served as a hydrology expert or equivalent position for a minimum of 10 large-scale projects, 5 of which should be related to large-scale water resources.

The candidate should be familiar with the World Bank policy related to dam safety (ESS4: Annex 1) and should have strong implementation experience and analytical and reporting skills as well as an ability to work as a member of a team. He/She should have fluency in spoken and written English.

(iv) National Dam Safety Expert

The candidate shall have a minimum of Master's degree in civil engineering or other related engineering field. Higher degree or qualification is preferred. He/she should have a minimum of 20 years of working experience related to detailed design of a complex dam; have participated in detailed design and various workshops/meetings related to dam safety issues; and have participated in at least 5 infrastructure projects financed by WB or other international financiers like ADB, JICA. The expert should be computer literate and should have a good command of English (listening, speaking, reading, and writing).

The national dam safety expert will be familiar and have relevant working knowledge of national laws and regulations related to dam design and dam safety of Cambodia.

J. Specific Reporting Requirements.

During the CWSIP implementation the DSP shall review and provide comments on all relevant key documents and reports related to dam safety (draft TOR for detailed design, draft TOR for ESA, mid-term report, draft final detailed design reports, ESMPs if required). Security permitting, the DSP members will make at least one field visits to dam sites. The DSP shall prepare a Review Reports following each visit and after the detailed design is completed. These reports will provide specific and practical recommendations on the detailed design taken the ESA process into account. The DSP shall submit the Review Reports to PMO/MOWRAM on time to ensure that PMO/MOWRAM and anyother parties adopt the recommendations as soon as possible in order to correct any noncompliance issues. The Review Reports shall be submitted by DSP or transmitted by PMO/MOWRAM to the World Bank for its review and for public disclosure.

The Review Reports signed by all DSP members, will normally cover, but not be limited to the following: (i) status of the detailed design and issues related to dam safety; (ii) actions taken on previous recommendations made earlier in the detailed design review process; (iii) issues which need to be addressed as identified by the ESA/ESAP, relevant consultants and contractors, or by affected parties and local nongovernmental organizations, etc.; (iv) DSP's recommendations of specific issues and actions to be taken.

All DSP reports following missions shall become public documents once PMO/MOWRAM and the World Bank have had a reasonable time to comment. If the DSP wants to reject such comments, that shall be its prerogative. However, they shall be added as an attachment to the final report along with the DSP's response. The public shall be given access to the reports to increase transparency, independence and public engagement.

Final draft report of DSP shall be published by PMO/MOWRAM when it is received from DSP and in most of the cases, within 20 days of completion of DSP's site visit. If preferable, the World Bank shall disseminate the DSP reports on its Website or Infoshop as it may find appropriate.

The DSP shall submit 5 copies in English language and 5 copies in Khmer[22] language of which 1 is original and 4 are duplicates together with 2 CDs (English and Khmer languages).

K. Length of Assignment

34. The assignment is expected to require the services of each panel member for up to 4 man months over the project period, which could be extended depending on the complexity and duration of the design works. In addition, the International Experts will have two weeks allowance for home-based work to finalize reports, as needed.

L. Responsibilities of MOWRAM

MOWRAM shall be responsible for:

- Providing the DSP with materials, data relating to the project including reports, figures and information relating to environmental and social activities and aspects of the project.
- Granting unrestricted, access to the entire project area, as well as surroundings or other such areas relevant, as may be requested by the DSP members and facilitate travel to and within Cambodia, security and orientation.
- During the missions to Cambodia and site visits and meetings, MOWRAM shall assign relevant staff as may be requested by the DSP.
- Interpreting as necessary and translation of reports into Khmer as required.

M. Qualification

All three DSP members should have at least a professional Degree with 20 years of work experience.

Skills: All aspects of Dam Safety, Hydrology, Geology, as specified under I. above.

Language(s) required: English

Submission Guideline:

Please send your CVs electronically to PCU mentioning the specific position below and vacancy number

1. International Dam Safety Expert
2. International Engineering Geology Expert
3. International Hydrologist
4. National Dam Safety Expert

Keyword to search this job on jobs

1. International Dam Safety Expert
2. International Engineering Geology Expert and
3. International Hydrologist

National Dam Safety Expert

[22] The PMU/MOWRAM will provide translation to Khmer as necessary.

APPENDIX 7 – Cultural Heritage

Annex 7.1 – Cultural Heritage Protection Framework

1. Introduction and Objectives

This Cultural Heritage Protection Framework (CHPF) sets out general provisions to protect cultural heritage from the adverse impacts of the CWSIP project activities once the sites are identified. The CHPF is prepared following the World Bank's Environment and Social Standard (ESS8) on Cultural Heritage.

The ESS8 recognizes that cultural heritage provides continuity in tangible and intangible forms between the past, present and future. It sets out measures designed to protect cultural heritage at all stages of the project life-cycle as part of the environmental and social assessment. The attention to cultural heritage is particularly important to be considered in the design of and during the implementation of the project. The application of CHPF shall be in line with the Indigenous People Planning Framework (IPPF) developed in accordance with the ESS7 on Indigenous Peoples and sets additional requirements for cultural heritage in the context of Indigenous Peoples (IP).

ESS8 is relevant as the activities proposed in the CWSIP project could directly or indirectly affect the tangible and intangible cultural heritage and or access to them. There is also the potential of discovering unknown cultural heritage during activities that involve rehabilitation/upgrading of existing reservoirs, barrages, weirs, embankment, irrigation canal, water distribution system, etc.

Tangible cultural heritage (sites and objects) in the seven project provinces are scattered. The density of the sites and objects become low as one moves towards forest/riparian areas where civil subprojects are anticipated to be located.

Intangible heritage, particularly the cultural heritage of the indigenous communities, is prominent in the northeast provinces where the IP communities are present and in provinces such as Mondulkiri, Kratie Ratanakiri, and Stung Treng. The CWSIP supports the IP communities in these provinces with a view to bring reliable water access to them, alongside agricultural production support for agri-business and trade, and climate change adaptation.

The objectives of the Cultural Heritage Protection Framework are to:

- Avoid known cultural heritage sites (including both archaeological sites and tradition sites of IP communities) where necessary and practicable;
- Where avoidance is not possible, manage cultural heritage sites and objects in compliance with the requirements of laws and regulations and in consultation with relevant government officials and local communities and stakeholders;
- Provide guidance compliant with the World Bank's ESSs on how cultural heritage findings will be assessed, documented and managed;
- Establish Chance Finds Procedure (CFP) to minimize impacts to not yet identified cultural resources that may be discovered during the project cycle;
- Enhance relationships with affected communities and eliminate community grievances related to impacts to cultural resources, and;
- Define the roles and responsibilities for implementing the CHPF and site-specific Plans.

2. Definition and Implementation of Legal Provisions

The Constitution of the Kingdom of Cambodia provides a strong protection of all national culture, heritage, quote "The State shall preserve and promote national culture. The State shall preserve ancient monuments and artifacts and restore historic sites (Article 69) Any offense affecting cultural artistic heritage shall carry a

severe punishment (Article 70). The perimeter of the national heritage sites as well as heritage that has been classified as world heritage, shall be considered neutral zones where there shall be no military activity. (Article 71)

The 1996 Law on the Protection of National Cultural Heritage defines provisions for the "protection of national cultural heritage and cultural property", including the "natural world", against "illegal destruction, modification, alteration, excavation, alienation, exportation or importation". It states that "when construction work or any other activity brings to light cultural property such as monuments, ruins, ancient objects, remains of inhabited sites, ancient burial sites, engravings or any property likely to be of interest to human sciences in general, the person finding the property and the owner of the site where it was discovered are obliged to stop the construction work and immediately make a declaration". Authorities may announce the temporary suspension of the work and the safeguarding measures to be taken. Permanent measures are also taken concerning chance discoveries. According to the law, reporting is done to the local police and the police transmits the information to the Provincial Government.

The Ministry of Culture and Fine Arts is in fact the agency that takes charge of national cultural heritage. Province-level Culture Departments are the operational agencies in cultural heritage protection (outside of the Angkor/Siem Reap region that is directly under the national Apsara agency). There are also a number of local museums at provincial and district level that are active in cultural heritage protection. The district-level culture office has a more limited role.

The law defines two steps of protection: inventory and classification. Cultural heritage is so far in the inventory stage. The provincial culture departments keep inventories and a comprehensive national inventory has been completed in 2006. Local museums or projects also carry out specific inventories. The provincial culture departments and museums, despite very limited or uncertain resources, carry out a policy of direct contact with local communities to (a) continue field inventory and (b) build public awareness and inform the general public about their duty to report any finds.

The cultural heritage policy carried out by the departments and museums covers both archeological heritage and indigenous cultural heritage. In the second case, some villages are inventoried as having rich cultural heritage. The activities of these agencies are limited by resource constraints. Only a small number of "priority villages" are currently covered.

These various efforts have built a fair level of awareness among communities. Some of the finds are reported. The law makes provision for a reward to the finder of the discovery but this is actually limited, for example to transportation costs from village to province. The belief that keeping a statue in a home might bring misfortune contributes locally to the reporting of findings. Commune authorities are also aware of the economic potential of cultural heritage for tourism development. Direct sales of finds to dealers however remain common practice.

In relation to the Land Policies versus Cultural Heritage, the law states that "listing in the inventory consists of keeping a record of public and private cultural property". Current land administration practice is that no land titling is allowed on inventoried sites. This means that potential heritage screening, aligning with the ESMF, for CWSIP needs to be carried out before land is allocated to individual households so that land titling after 5 years is not an issue.

Sub-Decree No. 83 on the Procedure of Communal Land Title Registration, on the Procedures of Registration of Lands of Indigenous Communities (2009) defines the procedures, types of land, and state agencies involved with communal land titling. Article 6 of this sub-decree defines the five types of land to be allowed for communal land titling such as (1) residential land, (2) spiritual forest land, (3) burial forest land, (4) actual farming land and (5) the land reserved for shifting cultivation. The same article also specifies the size of spiritual and burial land should not be larger than 7 ha each. Article 8 of the sub-decree also mentions about the right

of indigenous people over other types of land such as forest and streams, but they have to follow the rules and regulations issued by the institutions that have the mandate over those resources. The same sub-decree also provides the guidance and important documents that the indigenous communities should have when they submit their application for the communal land titling.

Article 15 of Land Law of 2001 stipulates that Archeological, cultural and historical patrimonies are state public properties. And Article 5 of the 1992 Land Law stipulates that private right shall not be given in cultural and historical patrimonies.

The 1994 Law on Land Management, Urban Planning, and Construction stipulates that archaeological and historical sites are public areas.

The 2005 Sub-decree No. 118 on the State Land Management has categorized "the Archeological, cultural and historical patrimonies" as public state assets which is strictly protected and cannot be used for any development including for the social land concession purpose. From this sub-decree, under the **Decision No. 52 on the criteria for classifying state lands, of 2006,** further states that "If such a patrimony is found in or on a private land, and its removal would not affect its value, the patrimony must be removed from the private land. However, if its removal would affect the value of the concerned patrimony, it is then necessary to keep the concerned patrimony on such land and shall issue order or regulation to limit the use right to the land to a specific extent which will not harm or damage the patrimony or shall declare the private land as a subject of lawful expropriation for public interest purpose and fair and just compensation must be paid in advance. The expropriated land shall be classified as state public land".

The 2002 Forest Law allows the RGC to designate as Protection Forest any of the Permanent Forest Reserve, which may qualify as a special ecosystem valuable, an area of scientific, cultural, or tourism value or an area for biodiversity soil and water (Article 22). The law also recognizes the traditional use and practice of the local communities as protected forest serving cultural purpose, quotes "Ministry of Agriculture, Forestry and Fishery shall recognize the religious and/or spirit forest of a community, living within or near the forest, as Protection Forest serving religious, cultural or conservation purposes" (Article 45).

The 1999 Prakas on the roles, duties and structures of provincial and municipal departments of land management, urbanization, construction and cadastre, and offices under the department provides that "The Provincial and Municipal Departments of Land Management, Urbanization, Construction and Cadastre shall have the following roles and duties to protect natural resources and cultural heritage; and repairing, maintaining, using the building structures and heritages in the provinces and municipalities".

Declaration (Sechkday Prakas) of the Council of Ministers No. 06*,* dated 27 September 1999, on Measure to eliminate anarchy in land encroachment, forbidden private rights over cultural heritage places. This is to protect the cultural heritage from being also used for any development purpose rather than preservation and protection for the cultural interest.

Policy Paper on Social Concessions in the Kingdom of Cambodia, of 2002, provides that "The preparation of regulations for the granting of social land concessions shall focus attention on a set of questions relating to state land management. Before land can be granted for social purposes, state land needs to be identified and classified and plans for its use need to be adopted. State land includes forests, waterways, roads and other transportation infrastructure, parks, protected areas, cultural heritage sites, public facilities and areas for military use, as well as unutilized areas."

3. Consistency with the World Bank Environment and Social Framework

The ESS8, Cultural Heritage, requires borrowers to prepare a Cultural Heritage Protection Framework (CHPF) as mechanism to protect and prevent lost or damage of tangible and intangible cultural resources throughout the hold project life cycle. The ESS8 defines tangible cultural heritage to include 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. The World Bank recognizes that the development projects it finances should avoid or mitigate any impact on sites or objects with historical, religious, aesthetic or other cultural significance.

The legal framework in Cambodia is broadly consistent with the Bank's ESS8, particularly the 1996 Law on the Protection of National Cultural Heritage, the Sub-Decree No. 83 on the Procedure of Communal Land Title Registration, and the Declaration of the Council of Ministers No.06. However, the national framework does not fully match the requirements of ESS8 in the following aspects:

- The legal framework deals mainly with tangible cultural heritage, and is less concerned with intangible cultural heritage;
- The legal framework does not include ESS8 requirements for stakeholder consultation.

This CHPF has been prepared to address these gaps (see additional details in section 5.2). The CHPF covers the different cultural spaces, tangible and intangible, for indigenous communities. These spaces include ancestral lands, forests, pasture, residential and agricultural lands, hunting grounds, worship areas, and lands no longer occupied exclusively by indigenous cultural communities but to which they had traditional access, particularly the home ranges of indigenous communities who are still nomadic or shifting cultivators.

The application of the ESS8 is closely linked with the ESS7 which provides detailed guidance to avoid, minimize, and/or mitigate adverse impacts of the project on indigenous communities as well as to compensate for the impacts. The ESS7 aims to recognize, respect and preserve the culture, knowledge, and practices of indigenous communities and to provide them with an opportunity to adapt to changing conditions in a manner and in a timeframe acceptable to them. In addition, the ESS7 requires to obtain the Free, Prior, and Informed Consent (FPIC) of affected indigenous peoples in certain circumstances, including when projects may have significant impacts on their cultural heritage that is material to the identity and/or cultural, ceremonial, or spiritual aspects of the affected indigenous peoples' lives.

The ESS8 requires to borrower to conduct consultation with stakeholders that are relevant for cultural heritage that may be affected by the project, including project affected parties and other interested parties including different local and indigenous tradition bearers who may have different interests in, or attach different significance to, the community's cultural heritage. The consultation will be conducted in accordance with ESS10 of the ESMF for CWSIP project. Conducting meaningful consultations to identify cultural heritage that may be affected by the project, consider its significance, assess risks and impacts and explore avoidance and mitigation options. The consultations will have to maintain confidentiality where necessary, including respecting traditionally confidential information.

Under the World Bank's ESS8, cultural heritage protection is expected to require a sequence of steps including screening, collecting baseline data, developing terms of reference, impact assessment, and formulating mitigating measures and a management plan. The CHPF provides guidance on this process for the CWSIP.

4. Cultural Heritage in the Project Areas

The ESS8 requires measures to mitigate the loss or alteration of culturally significant areas, if any. Damage or destruction of newly discovered sites by chance may result from construction related activities in infrastructure and small irrigation system. The ESS8 is applied as the activities proposed in the CWSIP project could directly or indirectly affect the physical and intangible cultural resources of the indigenous communities. Indigenous peoples often have close connection with forest areas, including spiritual connections. These may vary within the community, with different sub-groups and generations having different values and interpretations of cultural heritage; women and girls, for instance, may have different attachment to spaces

and their own cultural heritage than men and boys. There is also the potential of discovering unknown archaeological, historical or cultural sites during clearing and construction activities for infrastructure and small irrigation system.

The CWSIP project covers provinces, including Mundolkiri, Kratie, Ratanakiri, Stung Treng, Kampong Thom, and Preah Vihear. Many IP groups including Kuy, Phnong, Tumpoun, Charay, Kroeng, Steang, Prov, Kavet, Kroul, Meul, Kachak, Khornh, Lorn are living in Mundolkiri, Kratie, Ratanakiri and Stung Treng provinces. These communities exhibit rich tangible and intangible cultural heritage which will need be identified on a case by case basis early screening (see screening forms in Appendix 1 of this ESMF).

For the Project, the application of ESS8 will be in line with ESS7. Should the requirements of ESS8 differ from the provisions under ESS7 that are applicable to cultural heritage of indigenous peoples, the provisions of ESS7 will apply. The IPPF provides overall guidance for mitigation of potential risks that may affect indigenous communities including their cultural heritage and livelihood. The presence of, and potential impacts on, cultural heritage will be identified during each stage of the subproject, including design, pre-construction, construction, and operation.

The density of tangible cultural heritage of Angkorian and pre-Angkorian sites and objects in Cambodia is high along water bodies and major communication ways. It becomes low as one moves towards forest areas. Most subproject (existing reservoirs/weirs/barrage, irrigation canal, etc.) are likely located on land and streams that are in rural/forest/protected area (e.g. Zone 4 – Community Development). Existing and potential finds in the project area are accordingly expected to remain limited. In case of finds, the “the Chance Finds Procedure” would be applied (see detail at Chance Finds Procedure at the end of this Annex).

Only two Angkorian temples are recorded in Kratie province, along the Mekong River, including two in Kratie Province: in Srae Chis Commune and Khsuem Commune. Sambour District in Kratie province is also the site of a large pre-Angkorian city.

5. CWSIP Measures for Cultural Heritage Protection

Approach

The following approach for identifying and addressing potential impacts to tangible and intangible cultural heritage will be followed for CWSIP.

Cultural heritage in CWSIP

CWSIP pays attention to cultural heritage, both tangible and intangible, in all project areas. The Royal Government of Cambodia, represented by MOWRAM and MAFF of the CWSIP project, will avoid impacts on cultural heritage caused by the project activities. When avoidance of impacts is not possible, the government will identify and implement measures to minimize impacts on cultural heritage, in accordance with the mitigation hierarchy. Where necessary, a Cultural Heritage Management Plan (CHMP) will be developed for the potential sites. The CHMP will include an implementation timeline and an estimate of resource needs for each mitigation measure. The CHMP may be developed as a stand-alone plan, or as part of subproject’s ESMP, depending on the nature and the scale of the risks and impacts of the subproject.

At any stage of the CWSIP project cycle that may have impacts on cultural heritage, MWRAM/MAFF will: (a) deploy competent professionals to assist in the identification and protection of cultural heritage; and (b) ensure that internationally recognized practices for field-based study, documentation and protection

of cultural heritage are implemented, including by contractors and other third parties. For instance, a chance finds procedure, set out below, for managing chance finds of archaeological material encountered unexpectedly during project construction or operation which will be included in all contracts relating to construction of the project.

MOWRAM and MAFF will ensure that all relevant stakeholders will be consulted following the requirements of the Bank's ESF, particularly ESS10, to develop and implement appropriate measures to avoid or mitigate impacts on cultural heritage, taking into account the additional requirements set out for specific categories of cultural heritage. Relevant stakeholders will be identified during ESIAs for proposed subprojects, once confirmed, for cultural heritage that is known to exist or is likely to be encountered during the life of the project, through the application of ESS10. Stakeholders will include project-affected communities; relevant national or local authorities; and relevant non-governmental organizations and experts, including international cultural heritage organizations.

The specific interpretations of cultural heritage, that may exist in local communities and may differ from national norms or outsider perceptions, will be investigated and taken into consideration. Women and girls have different attachment to spaces and their own cultural heritage than men and boys. The investigation will also take into account the effects of the project into different generations and sub-groups in the communities. Therefore, the process of identification, understanding impacts, the development of appropriate measures for protection of cultural heritage will take these differences into account.

Specific Measures

Specific mitigation measures to avoid or reduce impacts on cultural heritage by project activities include Chance Finds Procedures; measures for strengthening capacity of national and sub-national agencies responsible for managing cultural heritage; establishment of a monitoring system to track the progress and efficacy of these activities; establishment of an implementation schedule and required budget for the identified mitigation measures; and cataloguing of finds.

Measures for Cultural Heritage in CWSIP Project

1. The provincial CWSIP project office maintains a copy of the recently completed national heritage inventory map (available from the Ministry of Culture and Fine Arts). The office communicates once a year with the provincial culture department to update this inventory.
2. Identification of stakeholders and consultation. The importance of cultural and indigenous heritage is explained and consulted during community meetings to identify cultural heritage and to understand if there any concerns about negative impacts the project could have on their cultural heritage.
3. Provisions for specific types of cultural heritages that include archaeological sites and artefacts, historical structures, natural features with cultural significance, and movable cultural heritage.
4. Local village and indigenous community representatives take part in the actual survey work to show location of any additional sites including tombs and forest or trees of spiritual significance (land identification).
5. In case of chance finds, the "Chance Finds Procedure" (in Appendix B) will be applied.
6. Prepare measures for strengthening the capacity of national (EA, IA and relevant ministries) and subnational authorities responsible for managing cultural heritage affected by the project.

- **Measure 1.** Ensure availability of updated inventory data at provincial level.
- **Measure 2.** Mainstream attention to both tangible and intangible cultural heritage in the CWSIP project at sub-national level.
- **Measure 3.** EA/IA will consult with relevant stakeholders and encourage them to participate in identifying and assigning value to cultural heritage affected by the project, assessing potential impacts, and exploring avoidance and mitigation options. The EA/IA will ensure the inclusion and cooperation of the various stakeholders through a dialogue with the appropriate authorities, including the relevant national and local authorities to establish effective means for addressing the views and concerns of the stakeholders and involving them in the protection and management of the cultural heritage. Consultations with local project affected communities will ensure that the community's perceptions of cultural heritage, which may differ from national norms or outsider perceptions, are investigated and understood, and that the different perceptions of women and girls, as contrasted with those of men and boys, are taken into consideration.
- **Measure 4.** Check whether additional screening is also needed. A screening note based on the attached format is used. The screening notes are reviewed at the end of Year 1 of project implementation. Provided all sites identified are already under protection through the provincial inventory and all commune councils are well informed about the procedure for chance finds, there will be no need for additional screening notes during subsequent years.
- **Measure 5.** EA/IA needs to ensure the inclusion and cooperation of the various stakeholders in order to preserve specific types of cultural heritages include archaeological sites and artefacts, historical structures, natural features with cultural significance, and movable cultural heritage, that require additional actions for preservation.
- **Measure 6.** Participatory mapping be conducted in the identification of any sites and objects of cultural significance. When the sites are identified with potential sites and objects of cultural

significance, a Cultural Heritage Management Plan for each specific site will be developed, including an implementation timeline and an estimate of resource needs for each mitigation measure. This may be developed as a stand-alone plan or as part of other plans developed (e.g. IPP, ESMP), depending on the nature and the scale of the risks and impacts of the sub-project.

- **Measure 8** in case of finds, the "Chance Finds Procedure" will be applied (Appendix B. Cultural Heritage Chance Finds Procedure).
- **Measure 9** describes the training and awareness requirements necessary for its effective implementation of the CHPF. EA/IA and contractor shall ensure that all CWSIP personnel responsible cultural heritage protection are competent and have received the necessary levels of training and awareness raising. The goal of the training is to develop a basic understanding of known sites in the areas of work and explain cultural heritage find identification, stop work, and reporting procedures as per the Chance Finds Procedure. Training will also raise awareness of tangible and intangible cultural heritage, local customs, and traditional norms, including how to behave within different cultural groups of IP.

Chance Finds Procedure

1 Purpose, Objectives and Scope

Construction of small infrastructure and facilities as well as livelihood supports related activities under the CWSIP project has the potential to alter tangible or intangible cultural heritages, unknown or unrecorded cultural and archaeological sites. The project will develop Chance Finds Procedure to define the steps on how Chance Finds will be managed once they have been discovered. EA and IA will ensure contractors and livelihood experts to be familiar with the possibility that they may discover unknown finds and know how to manage them.

The objectives of the Chance Finds Procedure are to:

- Define the steps which must be followed to manage the discovery of previously unknown sites, including the preservation and appropriate treatment of these finds, while minimizing any disruption to the construction schedule
- Enable compliance with all relevant national laws and regulations and other requirements.

EA and IA will make sure that the Chance Finds Procedure will be applied by all CWSIP contractors/subcontractors at subproject sites.

2 Procedure and Implementation

2.1 Planning Procedure

Consultation. EA and IA will consult with all relevant parties, including relevant ministries at national level, provincial line technical departments, and district authority, in order to agree to the Chance Finds Procedure.

Laboratory and Other Support. EA and IA, with technical support from the Ministry of Culture and Fine Art and its provincial departments, will make arrangements for suitable Laboratory test and other necessary facilities at provincial level or national level for identifying the find objects.

Training and Awareness. Where necessary, EA and IA, with support from cultural expert, will develop and implement a Cultural Heritage Training and Awareness. The training and awareness will include basic training in the identification of sites and objects relevant to the subproject sites, including the cultural significant of IP

communities. The training and awareness shall be delivered to all relevant project implementation agencies at sub-national level, contractor, and subcontractor prior to their participation in subproject activities.

2.2 Implementation

2.2.1 Monitoring

Monitoring shall require the appropriately trained personnel to determine the significance of a chance find in accordance with the definitions provided in the CWSIP project's Cultural Heritage Management Framework and follow the Chance Find Flowchart provided in Attachment 1.

Attachment 1 - Chance Find Flowchart

- Bound copy of Chance Finds Report Forms presented to EA/IA and provincial representative
- Verification of each Chance Find Report Forms to Chance Finds items completed
- Chance finds appropriately packed and labelled
- Inventory of Chance Finds Items placed inside packed boxes
- Outstanding issues relating to any or all of the above have been resolved
- EA/IA or provincial representative accepts transfer of Chance Finds items from contractor to relevant provincial department of Culture and Fine Art.

Contractor Representative	EA/IA Representative	Provincial Representative
Name	Name	Name
Signature	Signature	Signature
Date	Date	Date

2.2.2 Stop Work

a) Once cultural heritage objects sites are identified, contractor or sub-contractor shall immediately stop works within an approximate distance of the site.
b) Contractor/sub-contractor shall call EA/IA and provincial level to the location to make a rapid determination of the significance of the find.
c) Contractor/sub-contractor shall, in the event that a site of potentially high significance is discovered, demarcate and secure the area.
d) EA/IA, provincial Department of Culture and Fine Arts and contractor shall evaluate sites or objects in accordance the procedure required by the Ministry of Culture and Fine Arts.

2.2.3 Management of Chance Finds

In case the chance find site is a highly significant cultural sites, contractor and EA/IA shall work together to determine any requirements for community engagement accordance to ESS10. The team will seek out and consult with the affected stakeholders and establish the appropriate action.

Management Options. The following management options will be considered:

- **Avoidance** to minimizes the impact to the site through partial or complete project redesign or relocation, should be the preferred option for cultural resource management perspective.

- **In-situ Management** This option includes the application of site protection measures. Appropriate protection measures will be identified and agreed between EA/IA, contractor, provincial department of culture and fine arts, and the local authority on a site-specific basis.
- **Destruction** If a site is assessed as having limited cultural significance, it may be destroyed once a complete photographic record has been made and the Chance Finds Report Form has been completed.

3 Reporting

All cultural heritage sites will be reported to EA/IA and provincial level and national level as part of contractor's monthly report, and will include a summary of:

- An update of the Key Performance Indicators
- Incidents of disturbance to known cultural heritage sites
- All cultural heritage sites identified, distinguishing between known and chance finds
- All Chance Finds, etc.

Annex 7.2 – Outline of Cultural Heritage Management Plan

The outline below provides an indicative outline of the elements of the Cultural Heritage Management Plan (CHMP) referred to in ESS8. The CHMP addresses the following, as relevant to the project:

a. A review of the legal and institutional framework applicable to cultural heritage;
b. Roles and responsibilities of the different project and other interested parties, for example, the Borrower, contractors, project-affected people, and cultural heritage authorities;
c. The steps to identify and manage cultural heritage throughout the project life cycle;
d. Proposed mitigation measures to be undertaken;
e. Steps for incorporating relevant requirements relating to cultural heritage into project procurement documents, including chance find procedures;
f. Implementation schedule and budget; and
g. Monitoring and reporting requirements.

APPENDIX 8 – Simplified Pest Management Plan

1. Rationale

In Cambodia, around 90% of cultivated land is used for rice production. Rice alone accounts for about 70% of the country's total calorie supply. Rice production contributes an estimated 44% of rural household income, making the rice sector an area for strategic development in the country. Despite rice is the major crop in Cambodia, rice production is characterized by widespread misuse of pesticides. This is due to inconsistent enforcement of current regulation and a lack of information on pesticide safety and alternative pest management techniques among rice farmers. Most pesticides are imported and labelled in a foreign language incomprehensible to farmers. It is common that rice farmers mix two to five pesticides by intuition, leading to pesticide poisoning among farmers and adverse impact on environment[23]. Rice farmers tend to apply more pesticide when they see pests on their field[24]. Vegetable farmers also typically mix various types of pesticides per spray which is not good practice[25].

The CWSIP project will 1) improve overall water security for all stakeholders in the targeted basins in three provinces, 2) exploit the potential of the unused water resources and increase agricultural productivity in the targeted basin, and 3) enhance the overall capacity of the water resources management of the central government, concerned local governments, and concerned communities. Through three out of five project components, The project, will improve 1) Water Service Delivery, 2) Agricultural Productivity, and 2) Water Resources Management. The project does not involve procurement of pesticides.

Under CWSIP, the project will support target farming population in irrigated area to improve their use of good agricultural practices, including integrated crop water management, climate-smart agriculture (diversification into high-value crop plantation, public-private-partnership and commercialization), as well as agribusiness and trade development. The CWSIP does not involve procurement of chemical fertilizers, pesticides, and/or other toxic agrochemicals nor promote use of chemical agricultural inputs during project implementation. However, rehabilitation /upgrading of existing reservoirs/irrigation system, etc to be financed under the Project are expected to increase the agricultural command areas, including the number of crop per year. This increased crop may give rise to increased use of fertilizers, pesticides, and/or other toxic agrochemicals in the subproject areas which are unintended impact of the project.

2. Key pesticide management outcomes in Cambodia

Pesticide Use and IPM implementation in Project Provinces: General Directorate of Agriculture (GDA)'s survey in 2014 and nation-wide inspections in 2013 of pesticide and herbicide suppliers in provincial capitals and other main distribution hubs, indicate that the most commonly sold products include: abamectin, chlorpyrifos, cypermethrin, glyphosate, imidacloprid. In the Northern provinces, where a large part of the herbicide use is on corn and rubber plantations, the main products sold are the herbicides Glyphosate, Paraquat and Atrazine. Nowadays, on Rice and Maize cultivation farmers don't use pesticide accept some vegetables. These inspections have also shown that the most problematic highly hazardous products, such as monocrotophos, methyl parathion, methamidophos, mevinphos, endosulfan, etc., are no longer found on the market with the exception of the occasional old bottle. The only banned products that still are found regularly are paraquat and methomyl. This is because these products were banned only recently (2010) and are still permitted in the neighboring countries from where they are informally brought in by users or retailers. The banning of highly

[23] https://ipmil.cired.vt.edu/our-work/projects/rice-ipm-for-cambodia/

[24] Matsukawa, M., Ito, K., Kawakita, K. et al. Current status of pesticide use among rice farmers in Cambodia. Appl Entomol Zool 51, 571–579 (2016). https://doi.org/10.1007/s13355-016-0432-5.

[25] Sim Sokcheng, Keo Socheat and Sarom Molideth. 2021. Pesticide Use Practices in Cambodia's Vegetable Farming. CDRI Working Paper Series No. 128. Phnom Penh: CDRI.

hazardous pesticides in China does not seem to have led to dumping of old stocks in Cambodia. There are no known large stocks of obsolete pesticides.

Insecticides are used mainly on vegetables (such as Long Yard Bean, Chilly, Cabbage, Chinese Cabbage) marketable high-value crops and plantation crops, notably rubber. Field surveys by the national IPM program and GDA indicate there still is wide-spread abuse of pesticides among farmers. Lack of knowledge among farmers is a major constraint. Abuse includes mixing without justification (just to be sure), use of wrong pesticides, use of wrong dosages, etc. Adequate protective gear is hardly being used. Shops often have gloves and masks for sale, but these tend to be inadequate for protection against hazardous chemicals. Buyers of pesticides rarely also buy protective gear and shops do not provide it for free. Half used pesticide bottles or packages are often stored within the house or near homesteads, often in easy reach of children. Empty pesticide containers are often discarded at the border of fields or in drainage ditches.

3. Government regulation related to pest management

Pest management practices in Cambodia have been promoted through the expansion of the National Integrated Pest Management (IPM) Program by both the government and NGOs. These agencies have been working together to establish a Pesticide Reduction Network to develop awareness of the risks associated with pesticide use amongst farmers.

As a key function, Ministry of Agricultural and Forestry (MAFF) has been examining and implementing various international legal guidelines and instruments relating to regulating the trade, distribution and use of pesticides in Cambodia. These include adherence to the FAO Code of Conduct on the Distribution and Use of Pesticides, the Stockholm Convention on Persistent Organic Pollutants, and the WTO sanitary and phytosanitary measures.

Following the promulgation of the Law on Management of Pesticides and Fertilizers as Royal Kram Number 0112/005 on 14th January 2012, MAFF had developed five Prakas in relation to Procedures for Registration and Business Operations, as follows:

- Prakas No. 415/MAFF dated 17 August 2012, on Procedures and Standard Requirements for Fertilizer Registrations;
- Prakas No. 456/MAFF dated 19 October 2012, on Procedures and Standard Requirements for Pesticide Registrations;
- Prakas N. 484/MAFF dated 26 November 2012, on List of Pesticides in the Kingdom of Cambodia;
- Prakas No. 119/MAFF, dated 11 April 2013, on Procedures for Management of Fertilizers for Business Operations;
- Prakas No. 120/MAFF dated 11 April 2013, on Procedures for Management of Pesticides for Business Operations.

Within MAFF, the Department of Agriculture Legislation and GDA are mandated to oversee all pesticide regulations and use.

4. International Code of Conduct on the Distribution and Use of Pesticides:

The following rules are observed for IPM:

- The standards of conduct set forth in this Code: 1.7.6. are designed to promote Integrated Pest Management (IPM) (including integrated vector management for public health pests);
- Concerted efforts should be made by governments to develop and promote the use of IPM. Furthermore, lending institutions, donor agencies and governments should support the development of national IPM policies and improved IPM concepts and practices. These should be based on scientific

and other strategies that promote increased participation of farmers (including women's groups), extension agents and on-farm researchers.

- All stakeholders, including farmers and farmer associations, IPM researchers, extension agents, crop consultants, food industry, manufacturers of biological and chemical pesticides and application equipment, environmentalists and representatives of consumer groups should play a proactive role in the development and promotion of IPM.
- Governments, with the support of relevant international and regional organizations, should encourage and promote research on, and the development of, alternatives posing fewer risks: biological control agents and techniques, non- chemical pesticides and pesticides that are, as far as possible or desirable, target-specific, that degrade into innocuous constituent parts or metabolites after use and are of low risk to humans and the environment.
- Governments should provide extension and advisory services and farmers' organizations with adequate information about practical IPM strategies and methods, as well as the range of pesticide products available for use.
- Governments should ensure that any pesticide subsidies or donations do not lead to excessive or unjustified use which may divert interest from more sustainable alternative measures.

5. Current governmental implementation arrangements related to pest management

Integrated Pest Management (IPM) refers to all pest control techniques and subsequent integration of appropriate measures that discourage the development of pest populations and keep pesticides and other interventions to levels that are economically justified and reduce or minimize risks to human health and the environment. IPM emphasizes the growth of a healthy crop with the least possible disruption to agro-ecosystems and encourages natural pest control mechanisms.

Under MAFF, Plant Protection Centers and their branches in provinces as well as Agricultural Extension Centers at district level are governmental agencies that coordinate and work on Integrated Pest Management Programs. These activities are built on National IPM program that was initiated with assistance from the FAO, DANIDA and other donors since early 1990s which is largely being maintained using national budget.

IPM activities implemented by these local authorities and technical backstopping by experts from GDA include conducting field surveys, making forecast, monitoring and checking progress of on-field pest development. Using the forecast based on the timing, scale and level of damages that the key pests may cause, provincial plant protection authorities recommend policies, plans, and measures for pest management purpose.

Relevant authorities such as Plant Protection Centers and Agricultural Extension Centers also conduct IPM training for farmers. Farmers learn how to implement various integrated measures such as pest identification, pest control, pest analysis, pest surveillance, and apply measure to control pest, such as applying chemical and botanical control agent, promoting application of biological measures for pest management, reducing chemicals and practice sustainable IPM. Farmers are also trained on proper use of chemical pesticide and fertilizers to ensure efficiency in pest management, ensuring safety for human, natural enemy, and the environment. Communication campaigns on plant protections and quarantine legislations and advance IPM technics to the farmers are also carried out depending on budget availability, etc.

GDA's Plant Protection Center, including the national IPM program, has developed a 3-day curriculum for a Farmer Training on Pesticide Risk Reduction (FT-PRR) which is intended to raise awareness, develop capacity and help rural communities formulate and implement their own action plans for pesticide risk reduction. As of June 2014, some 4,900 Lao farmers (including 1,600 women) have participated in FT-PRR courses in 149 villages of 34 Districts in 9 provinces. Season-long Integrated Pest Management training through Farmers Field Schools (FFS) often includes these short-duration FT-PRR courses. These FFSs allow farmers to learn about and adopt Integrated Pest Management as to reduce overuse of pesticides in crop production. 10. The National IPM Program has implemented 806 season-long IPM Farmers Field Schools, with over 24,350 rice,

vegetable and fruit farmers trained. More, however, remains to be done. Pesticide Risk Reduction and IPM adoption at farm level remains a priority for the Government.

Operational costs of plant protection agencies are allocated form state fund. Their staff also work on projects and programs that are financed by other international funding and conduct additional annual trainings (using international budget) for farmers.

6. Objective of Simplified Pest Management Plan

This Simplified Pest Management Plan (S-PMP) aim to see out plan and measures to ensure the project does not unintentionally give rise to increased overuse of chemical agricultural inputs (such as chemical pesticide, fertilizers, and plant growth regulators, etc.). This S-PMP will be integrated into on-going pest management program and effort that provincial DAFF in project provinces have been doing and make sure pest management efforts target areas where water access are improved through project investment activities.

To mitigate this potential impacts as a 'good practice', the subproject owner will prepare and implement a S-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) practice that are appropriate for the agriculture productions in the subproject area through training and other capacity building activities.

Key Elements - The elements of the S-PMP include the followings:

- Preventing pest problems;
- Monitoring for the presence of pests and pest damage;
- Establishing the density of pest population, which may be set at zero, that can be tolerated or corrected with a damage level sufficient to warrant treatment of the problem based on health, public safety, economic or aesthetic threshold;
- Treating pest problems to reduce population below those levels established by damage thresholds using strategies that may include biological, cultural, mechanical and pesticidal control methods and that shall consider human health, ecological impact, feasibility and cost effectiveness; and
- Evaluating the effects and efficacy of pest treatments.

Decision Making

Detecting a single pest under the Project will not always mean control is needed. A decision to use pesticides will be taken only as the very last resort and will also be based on conclusions reached from an agro-ecosystem analysis and trials. The decision will also depend on the number of pest and diseases found in the respective crop and the level of damage they are doing. If it is absolutely necessary to spray crops with pesticides, use of selective rather than broad-spectrum pesticides shall be strictly observed.

Pest Monitoring and Surveillance

A process for the reporting and identification of unusual plants, animals and pests will be established to

track and document all pest cases, be it minor or major in a pest inventory register. Pest surveys will be conducted on a regular basis to detect new infestations and will include the types, abundance, location of pest plants, date when first spotted or seen, and date when reported. This information will be

gathered from surveillance or monitoring system to be put in place, periodic surveys to be conducted and feedback from farmers/farm assistants. The data will be managed in a standardized way so that trends can be established. A rapid response process for the management of new infestations will be established to treat and manage new pest infestations as soon as they are identified.

Potential Impacts	Proposed Mitigation
Contamination of ground waterresources	• Conducting trials on relatively flat land with less than 2% slope reducing the possibility of run off and at a distance ofmore than 500m away from water sources
Effect of pesticides on non-targetspecies	• Use pesticides that are systemic and narrow range andspecific to sucking insects.
Effect of pesticides on grazingareas, settlements	• Spraying in n morning hours when weather is cool and lesswindy to reduce on spray drifts. • Locating trials or plots at distance of between 500-1000maway grazing areas or human settlements
Possibility of increasing resistance of pests to the pesticide	• Training of field staff responsible on recommended usageof the pesticide
Harmful effects on staff applying pesticides	• Provision and usage of safety clothing and working gear tostaff
Harm to persons within the homestead where the chemical isstored	• Designation of a separate and secured storage room forpesticide • Warnings and notices to increase awareness

7. Mitigation measures

It is expected that there will be no procurement of pesticides under the project and that pesticide use, overall, will decline as a result with the introduction of good agricultural practices. To ensure the tendency of increased overuse of pesticide does not happen with subproject where project intervention take place, the project will prohibit procurement of large pesticides using the “negative list” and provide training to key staff and farmers on integrated pest management, safe use of pesticides, and organic farming practices. This will be integrated as part of the safeguard training. This S-PMP will be applied to the project activities that involve:

a) Any rehabilitation/upgrading of weirs/resevoirs/dams/existing irrigation schemes that are likely to prompt farmers to increase their use of pesticides:
b) Change/introduction of best agricultural practices such as integrated crop water management, Climate-smart agriculture, and
c) Promotion of agribusiness and trade related to farm products produced from target command area, and neighboring areas.

The plan is comprised of three parts:

(i) Application of government regulation on pesticide control;
(ii) Training of the integrated pesticides concept and/or other approaches for the safe use of pesticides; and
(iii) Monitoring.

APPENDIX 9 – Templates

Annex 9.1 – Grievance Logbook

Project Grievance Logbook

(Sample for Local Levels)

No.	Name of Complainant (or anonymous)	Addresses	Sex (M/F)	Age	Contact information	Date Received	Details of nature of grievance (Environmental impacts, social impacts, Labor, health, etc.)	Which of the three GRM that was used? (As described in Chapter 9 (GRM)	Actions taken to resolve grievance, by whom	How many steps that have been used in the relevant GRM	Date grievance was finally resolved/closed ?	Notes

(Sample for PMU Level – to be elaborated on Excel spreadsheet with filter function

	Date Received	**Name of Complainant** (or anonymous)	**Sex** (M/F)	**Age**	**Contact information** (phone number/email, other channel(s)	**Location of Complainants** (Province, District, commune, village…)	**Form of grievance received** (Writing or Verbal (face-to-face, telephone, online), SMS, MOWRAM and DoWRAM comment box in designated Website/Facebook/WhatsApp, etc.	**Channel of Receipt** (Direct to PMU GRM Focal Point, or Relayed from other channels (provide details)	**Key topics of Grievances** a) Labor and Working Condition b) Resettlement (incl Voluntary Land Donation) c) SEA/SH d) Environmental impacts e) Community Health and Safety f) Accidents	**Nature of complaints?** a) Resolution required b) Clarification required c) Suggestion only (for project improvement) d) General Concerns	**Step 1 of GRM Procedure**			**Step 2,3,4** (Replicated in Excel spreadsheet	**Closing of Case** (At which Steps, date of case closing)	**Notes**
											Date receipted	Date solved/ transferred	Duration spent (in days)			

Annex 9.2 – Scheduling and Reporting by PMU's Environmental and Social Officers

Activity	Year 1				Year 2				Year 3				Remarks			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
Mitigation Measures - - - - - - - - - - - - - - etc.																
Monitoring - - - - - - - - - - - - etc																
Institutional Strengthening - - - - - - - - - - - - etc																
Training - - - - - - - - - - - - etc																

Annex 9.3 – Environmental and Social Progress Report

No	Sub-Project	Key environmental and social issues	Mitigation measures taken	Implementation and monitoring of ESMP	Training & capacity-building programs implemented	Convergence	Lessons learnt	Remarks

APPENDIX 10 – Project Components & Activities

The project is implemented through various activities organized through five project components.

Component 1: Building foundations for improved water resource services (US$10 million total, IDA credit). This component will finance technical assistance and goods to strengthen the national systems for planning and allocating water resources, as well as the procedures and norms for operating and maintaining water resource infrastructure at local levels. This will include supporting the establishment of River Basin Committees (RBCs), the preparation of River Basin Management Plans (RBMPs) and Water Accounting and Water Tenure Assessments to implement water allocation and licensing in the selected basins. Results from the Bank-funded Mekong IWRM Project (P104806), such as the river basin profiles[26] basin-wide water resource assessments, and the Cambodia-Vietnam joint transboundary water resource management action plan, will serve as the foundation to develop the RBMPs. It is expected that the RBCs will be responsible for the RBMPs and oversee the implementation of the investment programs, engaging relevant national institutes and academia and enhancing the role of women and decision-makers in the process. Lastly, this component will review existing policies and regulations in support of IWRM, and provide technical support and backstopping to MOWRAM, MAFF, and relevant provincial governments.

Sub-Component 1.1: Water Data for Improved Service Delivery. This sub-component will strengthen government systems for the collection and analysis of data required for the more effective delivery of irrigation, water supply, and flood management services. Data will include Water Accounts to establish water availability and use at the basin scale, dam and barrage inventories to establish an integrated system leveraging existing data platforms for the mapping and management of water infrastructure, and hydromet data for the improved planning and management of infrastructure, including for flood management and dam safety purposes. Financing will be used for physical investments in hydromet and necessary computing systems, as well as consulting services for data collection and establishing and managing databases and models, including data sharing with provincial level. Combined, this data will allow government to understand the water it has available, plan for dry periods and floods, prioritize infrastructure for rehabilitation or repurposing, operate and maintain dams more proactively to strengthen service delivery, and establish a risk-based system for managing dam safety. The sub-component will include partnership development with local universities to establish and strengthen technical capacities for data analysis and modelling.

Sub-Component 1.2: National Policies and Institutional Strengthening. This sub-component will finance consulting services to support the needed government reforms and capacity building to strengthen water resource service delivery, including multi-stakeholder engagement modalities, water allocation mechanisms, dam safety, and water infrastructure operations and maintenance models. It will review key legislation and policy documents, including the draft water allocation and licensing regulations, dam safety regulations, undertake a water tenure assessment in selected river basins including identifying the various uses and users, and assess the extent to which current regulatory provisions for infrastructure management, operations, and maintenance are adequate. Processes and procedures to address these findings, such as for water allocation, the establishment of a government dam safety capability, and procedures for provinces to support and finance the more proactive operations and maintenance of dams, will then be developed. A coordination mechanism for water planning will also be piloted in selected river basins with the possibility of scaling this up to other basins if successful, to overcome the coordination-related challenges among the responsible ministries (the MOWRAM, MAFF, and MISTI), as well as the respective provincial authorities. Training will be provided in modelling and simulation of water allocation options.

[26] The river basin profiles included the 3S and 4P river basin profiles, and hydrological models as part of a Decision Support System on physical, geographical location of the river basins, hydrology, meteorology, socio-economy, natural resources, risks and potential development.

Sub-Component 1.3: Strengthening of basin governance and planning. The sub-component will support in establishing and strengthening of River Basin Committees (RBCs) in the basins where project investments will be supported, including the development and/or strengthening of River Basin Management Plans (RBMPs) based on framework for RBMP development (Criteria for RB selection for planning in Annex 2) to enable more effective service delivery at the basin and scheme catchment scale. The focus of this support will be on enabling RBCs to work with stakeholders to identify the key trade-offs that have to be managed at the basin scale, including for more sustainable irrigation and bulk water supply services while noting other basin needs, including for environmental flows. RBMPs will prioritize enabling a longer-term outlook (including for climate risks), establishing priorities, and guiding strategic trade-offs rather than developing comprehensive but unfunded plans. To avoid the risk that the RBCs fall inactive, both financial and technical support as well as capacity building will be provided. Female participation and other key stakeholder engagement in RBCs will also be strengthened. The sub-component will identify the key impediments to the functioning and performance of RBCs, including financing, capacity and other constraints within the PDWRAMs. Lastly, building on the decision support system (DSS) modeling in the 3S/4P basins, transboundary data sharing between Cambodia and Vietnam will be piloted.

Component 2: Sustainable Water Service Delivery (US$110 million total, IDA credit). The component will finance the physical investments and technical assistance required to improve access to reliable and sustainable water supply services, improve irrigation efficiency and service delivery, and strengthen resilience to future climate impacts, especially floods and droughts. This will include the rehabilitation of multi-purpose reservoirs, as well as rehabilitation and modernization of existing irrigation facilities (weirs, canals, dykes, and reservoirs) and strengthening management, operations and maintenance (MOM). Where needed, this component will increase the water storage capacity of reservoirs, improve dam safety, design solutions that will make reservoir operations and maintenance easier and cheaper to achieve, and improve flood control. In addition, the component will modernize irrigation facilities to provide reliable and sustainable water delivery allowing for a shift from perennial to annual farming. It will also increase the availability of water by developing and improving sustainable year-round water sources based on findings from Component 1. These activities will lead to improved small-town water source security and increased agricultural yields, in turn translating into higher food and income security. This component will be implemented in conjunction with Component 1, providing comprehensive capacity development to MOWRAM and PDWRAMs staff regarding construction supervision, asset management, and MOM. The component will complement ongoing World Bank engagements, including Water Supply and Sanitation Acceleration Project (WASAC, P178417), the Cambodia Land Allocation and Social Economic Development Project Phase III (LASEDIII, P171331) and the Cambodia Agricultural Sector Diversification Project (CASDP, P163264).

Sub-Component 2.1: Rehabilitation and upgrading of multi-purpose infrastructure for irrigation, water supply, flood control, and environmental benefits. The sub-component will include investments in technical design studies and infrastructure investments for: (i) strengthening dyke structures to manage erosion and mitigate potential reservoir failures caused by increased intensity of precipitation during monsoons; (ii) raising levels, expanding width and extending length of embankments for supplementary water availability for irrigation to increase water security and/or flood mitigation; (iii) rehabilitating and modernizing discharge gates and spillways with automatic and/or mechanical control systems for easier and cheaper operation and maintenance, as well as enhanced flood control; (iv) supporting bulk water offtake for year-round water supply services, including support to strengthen coordination between the MOWRAM and MISTI and facilitate the preparation, financing, and execution of complementary sub-projects financed by the Bank's proposed water supply and sanitation acceleration project which is supporting Private Water Operators and public waterworks in providing year-round water supply.

Sub-Component 2.2: Rehabilitation and modernization of existing irrigation facilities (weirs, canals and headworks). The sub-project will take a holistic modernization approach, from headworks to farm-level water control arrangements (including intake, check structures, main canals, tertiary and quaternary canals, and

associated control structures) that will transform the technical and managerial performance (as opposed to mere rehabilitation) of irrigation schemes combined with institutional reforms to improve resource utilization including water, land, environment, and labor and water delivery service to farmers. Key activities will include: (i) improvement of headworks, canal conveyance systems, water distribution structures, and water diversion facilities; (ii) modernization of small-scale water storage units; (iii) rehabilitation of drainage and canal systems (from main canal to tertiary and quaternary canals within an irrigation scheme connecting to the field) under Component 3; (iv) strengthening the approach I&D systems are managed, operated, and maintained, alongside the necessary policy and institutional reforms under Component 1 to ensure sustainability of the irrigation systems and service delivery.

Sub-Component 2.3: Capacity building for PDWRAMs and FWUCs. The sub-component will finance technical assistance, capacity building, and relevant operating costs for the PDWRAMs and FWUCs including the formation, professionalization, and capacity development of improved MOM of modernized systems. Key activities will include: (i) restructuring and professionalization of FWUC performance modality and their implementation structure (ii) improvement of PDWRAM functions to support FWUCs in irrigation service delivery (iii) improvement of MOM operational procedures as well as financial grant support to PDWRAMs and FWUCs to performance the MOM functions and (iv) capacity building to PDWRAMs and FWUCs. The sub-component will ensure meaningful participation of women and other underrepresented groups in the FWUCs. Farmer-centered guidelines and manuals on MOM of embankments, headworks, and other water control infrastructure will be prepared. In addition, capacity development on evolving approaches in design and management of irrigation systems for the PDWRAM professionals at all levels will be included. Given limited human resources in water resource engineering, this sub-component will also support in building capacity of university researchers and the MOWRAM officials on water balance assessment.

Component 3: Increased Agricultural Productivity at Farm Level (US$20 million total, IDA credit). This component will support MAFF, the PDAFFs, and local stakeholders building on the investments carried out under Component 2 and building on activities and other relevant World Bank projects for increased agricultural productivity. The focus will be on improving efficiency of water use and the integration of crop and water management at farm level, including climate smart agricultural practices, piloting of activities to reduce GHG emissions (AWD and SRI), and adoption of climate resilient crops.

Sub-Component 3.1: Increased water and labor productivity through integrated crop water management. This sub-component will primarily finance technical assistance for the development and implementation of climate smart agricultural methods for improving water and land productivity and integration of water and agriculture with the aim to produce more food and income, thereby improving farmers' livelihoods while at the same time reaping ecological benefits through using the same amount of water at less social and environmental cost per unit of water. This will include optimizing the use of water in the irrigation schemes improved under Component 2 to increase agricultural productivity.

Key activities will include: (i) promoting crop diversification combining the demonstration of diversification options, participatory crop/variety selection and seed availability, and testing of cultivation and agronomic approaches in farm fields and demonstration sites. High-value crops will be considered, including organic rice, maize, vegetables, mango, banana, and other crops based on evolving market demands. Crop diversification will lead to adaptation and mitigation benefits through the planting of climate resilient and high value crops and crop varieties, increasing soil carbon levels leading to carbon sequestration. Crop diversification can thereby enhance the adaptive capacity of farmers to climatic and non-climatic stressors by improving their livelihood (ii) applying key agricultural engineering techniques by improving irrigation management for water productivity and/or increased mechanization for enhanced field productivity. These techniques include: (a) introducing the concept of individual farm land reformation to increase production efficiency; (b) introducing solar-powered modern irrigation

methods[27] for supplementary irrigation during the wet season and for full irrigation during the dry season; (c) land leveling to improve water use efficiency and increase crop yield and quality; and (d) providing quality seeds and introducing seeding methods, including a reduced sowing rate, for quality paddy production and more reliable grain yield and quality (iii) promoting horticulture production through technical assistance to improve the soil condition by applying organic matter and compost, small-scale drip irrigation, and crop diversification to enhance production and improve household nutrition within the sub-project areas. The PDAFFs will provide technical trainings based on available resources to farmers and households to implement horticulture activities both for personal and commercial use (iv) piloting low-carbon farming system with the focus on mitigation and adaptation actions in rice production through supporting the construction and upgrading of farmlands to remove system constraints to adopting and scaling up GHG reduction measures including reformatting farmland techniques, piloting water saving techniques such as Alternative Wet and Dry (AWD) and System of Rice Intensification (SRI) for organic rice production.

Sub-Component 3.2: Enhanced capacity for scaling up labor, water, and crop productivity improvement techniques. This sub-component will support the MAFF, its line agencies, farmers, and private sector partners in raising awareness and building capacity at different levels to promote and scale up labor, water, and crop productivity improvement techniques and practices. Training will be linked to the interventions specified in sub-component 3.1 and attendance at training may be required to access project-funded field-levelling services. Research institutes, universities, private partners, and the MAFF will be involved in conducting demonstrations to provide the evidence base for further developing the techniques. The key activities to be financed under this sub-component will be further developed with the MAFF during project implementation and will include at least (a) identifying and prioritizing technically and commercially suitable crops and cropping systems under both irrigated and rainfed conditions for each sub-project location (b) implementing a multi-faceted plan for inducting extension service and training officers.

Sub-Component 3.3: Increased private sector engagement for agricultural services and sectoral improvement. This sub-component will seek collaborative arrangements for value chain development and construction of market facilities, such as collection centers, storage facilities, and market sheds. The interventions under this sub-component will include activities (a) capacity building for representatives from the private sector in various fields (b) facilitating access to low interest loans by linking potential finance institutions with beneficiaries with competitive interest rates (c) promoting innovative models for on-farm water provision and system management, such as laser land leveling, service providers, and modern irrigation methods. The awareness and capacity of service providers will be strengthened through sub-component 3.2 (d) facilitating the establishment of contract farming between farmers, Agricultural Cooperatives (Acs), or producer groups (PG), and the private sector, and incorporating buy-back provisions and (e) facilitating agricultural inputs and outputs market linkages. Where viable business model improvements are possible at a larger scale, linkages will be established between farmers (ACs, PGs), sellers of inputs, and product buyers.

Component 4: Project Management, Coordination, and M&E (US$5 million total, IDA credit). This component will ensure effective project management. It will finance: (i) operating costs pertaining to coordination, technical, procurement and financial management activities, as well as environmental and social risk management of the Project Coordination Team (PCT) and Project Implementation Teams (PITs), both at the central and sub-national levels, to cover incremental operating costs including office space and supplies, logistics, utilities, project implementation support staff costs, and coordination with other projects; (ii) institutional and technical capacity building for project implementation at all levels; (iii) M&E and information systems including baseline, midterm, and final project evaluations and impact assessments; and (iv) development of a communications strategy and

[27] Comprising drip irrigation, sprinklers, pivots, etc.

project results dissemination. Strong M&E systems for project implementation will be a top priority, along with capacity building for the PCT and PITs to develop and use the systems.

Component 5: Contingent Emergency Response (US$0). The contingent emergency response component, with a provisional zero allocation, would allow for the reallocation of financing to provide immediate response to an eligible crisis or emergency. An Emergency Response Manual will be prepared and included in the Project Operations Manual (POM), which will describe implementation arrangements for the component, including its activation process, the roles and responsibilities of implementing agencies, a list of activities that may be financed, environmental and social aspects, and fiduciary arrangements.

APPENDIX 11 – Legal Documents Relevant to Project

2.1 NATIONAL LEGAL FRAMEWORK RELATED TO ENVIRONMENTAL ISSUES

The Constitution of the Royal Kingdom of Cambodia (1993) is the overarching legal document that defines and ensures the equal rights of all citizens in Cambodia, regardless of race, color, language and religious belief. The Constitution includes protections for social, indigenous, gender rights and equality (articles, 36, 45). It also includes provisions for the protection of workers (article 75) and worker's rights to establish associations (article 42) and representative unions (article 36). It specifically prohibits all forms of discrimination Against women (article 45). On environment, article 59 requires the State to protect the environment and balance of abundant natural resources and establish a precise plan of management of land, water, air, wind, geology, ecological system, mines, energy, petrol and gas, rock and sand, gems, forests and forestry products, wildlife, fish and aquatic resources and it is within this constitutional context that the Ministry of Environment (MOE) was established.

Aside from the Constitution, the Government of Cambodia has established specific laws and regulations for forests, protected areas, and land law to ensure sustainable development. The national agencies that oversee environment and natural resources management are listed below:

- Ministry of Environment (MOE)
- Ministry of Agriculture, Forestry and Fisheries (MAFF)
- Ministry of Water Resources and Meteorology (MOWRAM)
- Ministry of Land Management, Urban Planning and Construction (MLMUPC)
- Ministry of Industry, Science, Technology, and Innovation (MISTI)
- Ministry of Tourism (MOT)
- Ministry of Public Works and Transport (MPWT)
- National Climate Change Committee (NCCC)
- Ministry of Mines and Energy (MOME)

The ministries are also technically and administratively represented and supported by its line departments and technical offices at provincial, municipal, and district/commune levels. The provincial departments are responsible for and accountable to extending and implementing the mandate of their parent ministries to the sub-national administrations including province, district/municipality, and commune/Sangkat level.

The MOE is the primary agency tasked to promote environmental protection and conservation of natural resources, thus contributing to improvement of environmental quality, public welfare, and the economy. The EIA Department of the MOE oversees and regulates the Environmental and Social Impact Assessment (ESA) process, quality control on ESA report and coordinates the implementation of projects in colLaboration with project executive agencies and concerned ministries. The MOE has the following responsibilities:

- Review, evaluate, and approve submitted environmental impact assessments in colLaboration with other concerned ministries; and
- Monitor to ensure a project owner (the executing agency of the project) satisfactorily implements the Environment Management Plan (EMP) throughout pre-construction, construction and operational phases of the projects.

2.1.1 Law on Environmental Protection and Natural Resources Management (1996)

The Law on Environmental Protection and Natural Resources Management in 1996 aims (i) to protect protect and promote environment quality and public health through prevention, reduction and control of pollution; (ii) To assess the environmental impacts of all proposed projects prior to the issuance of a decision by the government; (iii) To ensure the rational and sustainable conservation, development, management and use of the natural resources of the Kingdom of Cambodia; (iv) To encourage and provide possibilities for the public to participate in the protection of environment and the management of the natural resources; and (v) To suppress any acts that cause harm to the environment. This Law is the enabling legislation which allows the MOE to pass sub-decrees and regulations to protect the environment.

2.1.2 Law on Forestry Management

The Law on Forestry Management prohibits the hunting of wildlife within protected areas. Aside from maintaining check points and providing rangers, the MOE has an active community education program to promote environmental awareness especially within the rural communities.

2.1.3 Law on Fisheries (March 30, 2016)

The aims of this law, as given in Articles 1 and 2, are to: (a) ensure fisheries and fishery resource management, enhance aquaculture development and the management of production and processing, and to promote the livelihood of people in local communi ties for the social economic and environmental benefits, including the sustainability of the conservation of biodiversity and natural culture heritages in the Kingdom of Cambodia (Article 1);and (b) ensure the rights on traditional use of fishery resources for local communities. The law covers all fisheries; natural, artificial and aquaculture. Article 4 (definition of fisheries resources) and Article 62 (Community Fisheries) are of particular importance.

On August 12, 2009, RGC signed a sub-decree under the country's Law on Fisheries that identifies 58 endangered aquatic animals including 29 freshwater fish, reptile and mammal species. The sub-decree spells out which freshwater and marine ani mals are banned from being transported or traded unless they are being farmed or are in compliance with the domestic fisheries law and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) which Cambodia ratified in 1997. The endangered freshwater species comprise 19 fish and 7 turtles as well as the Siamese crocodile (Crocodylus siamensis) and the Irrawaddy dolphin (Orcaella brevirostris). CITES considers 7 of the 29 freshwater species to be threatened with extinction including both the crocodile and the dolphin as well as giant fish species like the Mekong giant catfish (Pangasianodon gigas), Giant barb (Catlocarpio siamensis) and the Isok barb (Probarbus jullieni), also known as Jullien's barb. Other endangered freshwater species threatened with extinction under CITES are two fishes —the Asian bonytongue (Scleropages formosus) and the smalltooth sawfish (Pristis microdon) — and a turtle known as the mangrove or estuarine terrapin (Batagur baska). Endangered marine species identified by the sub-decree include a dozen marine mammals and half a dozen bivalves and gastropods. Also included are five species of turtles, three fish species, two horseshoe crabs and a crocodile as well as corals and sea anemones.

2.1.4 Sub-Decree on Environmental Impact Assessment Process #72 ANRK.BK (1999)

This Sub-decree sets out the current statutory requirements for Environmental Impact Assessment (EIA) process for private or public projects, including providing avenues for public participation (in particular Prakas on Public Participation in the EIA Process 2017). It sets out the minimum requirements for the nature and size of projects

and activities (both existing and proposed) that shall be subject to EIAs. The Guidelines also list the specific content required in EIA reports, including: (i) introduction (ii) legal framework, (iii) project description, (iv) description of the baseline environment, (v) public participation/stakeholder engagement, (vi) assessment of impacts and mitigation measures, (vii) environmental management plan, (viii) economic assessment and valuation of environmental damages and losses, (ix) conclusion and recommendations.

The Project Proponents/Owner (public or private) is required to submit the necessary project document (IESA / ESA Report) to the MOE for review and approval. The IESA / ESA report shall be prepared by a registered company authorized by the MOE on behalf of the Project Proponent / Owner.

2.1.5 Prakas on the Classification of Environmental and Social Impact Assessment for Development Projects

The Prakas on Classification of Environmental and Social Impact Assessment for Development Project28 issued on 03 February 2020, classifies the irrigation system or drainage system projects requiring IESA if the size of irrigation or drainage is bigger than 5,000 hectares and requiring EPA if the size of irrigation or drainage is bigger than 1,000 hectares but smaller than 5,000 hectares (Table 1). The guidance for preparing IEIA / EIA report is provided in the Prakas on General Guideline for Preparing IEIA and Full EIA, 2009 N. 376 BRK.BST.

Table 6 – Classification of ESA for infrastructure Project

Code	Project's Name	Required for ESA	Required for IESA	Required for EPA
142	Irrigation		≥ 5,000 hectares	1,000 - <5,000 hectares
143	Drainage		≥ 5,000 hectares	1,000 - <5,000 hectares

Source: Prakas No.021 dated on 03 February, 202o on Classification of Environmental and Social Impact Assessment for Development Project

2.1.6 Guidelines on the Delegation of Power to Municipal/Provincial Departments of Environment (2005)

Guidelines stipulate that the provisional and municipal authorities shall review EIAs for all investment capital less than US$2 million as well as "follow up, monitor, and take appropriate measures to ensure that Project's Owner will follow the EMP during project construction, operation and closure as stated in the EIA report approved."

2.1.7 Protected Area Law (No. NS/RKM/0208/007)

Cambodia has a network of 23 natural Protected Areas managed through the MOE. These areas cover 2.2 million hectares, or 18% of Cambodia's land area, and include most of its important habitats. The Protected Area Law defines the framework of management, conservation and development of protected areas to ensure the conservation of biodiversity and sustainable use of natural resources in protected areas.

- **Article 11** divides the protected area into 4 zones namely, core zone, conservation zone, sustainable use zone and community zone.
- **Article 36** strictly prohibits all types of public infrastructure in the core zone and conservation zone; allows development of public infrastructures in the sustainable use zone and community zone with approval from the Royal Government at MOE's request.

[28] http://www.cambodiainvestment.gov.kh/wp-content/uploads/2020/02/WhatsApp-Image-2020-02-07-at-10.22.26-AM.jpeg

- **Article 41** provides for the protection of each protected area Against destructive/harmful practices such as destroying water quality in all forms, poisoning, using of chemical substances and disposing of solid and liquid wastes into water or on land.
- **Article 44** requires all proposals and investments within or adjacent to protected area boundary, to conduct an Environmental and Social Impact Assessment.

Each protected area shall be divided into four (4) management zoning systems:

- **Core zone**: management area(s) of high conservation values containing threatened and critically endangered species, and fragile ecosystems. Access to the zone is prohibited except the Nature Conservation and Protection Administration's officials and researchers who, with prior permission from the MOE, conduct nature and scientific studies for the purpose of preservation and protection of biological resources and natural environment with the exception of national security and defense sectors.
- **Conservation zone**: management area(s) of high conservation values containing natural resources, ecosystems, watershed areas and natural landscape located adjacent to the core zone. Access to the zone is allowed only with prior consent of the Nature Conservation and Protection Administration at the area with the exception of national security and defense sectors. Small-scale community uses of Non-Timber Forest Products to support local ethnic minorities' livelihood may be allowed under strict control, provided that they do not present serious adverse impacts on biodiversity within the zone.
- **Sustainable use zone:** management area(s) of high economic values for national economic development and management, and conservation of the protected area(s) itself thus contributing to the local community, and indigenous ethnic minorities' livelihood improvement. After consulting with relevant ministries and institutions, local authorities, and local communities in accordance with relevant laws and procedures, the Royal Government of Cambodia may permit development and investment activities in this zone in accordance with the request from the MOE.
- **Community zone:** management area(s) for socio-economic development of the local communities and indigenous ethnic minorities and may contain existing residential lands, paddy field and field garden or swidden (Chamkar).

2.1.8 Sub-Decree on the Control of Air Pollution and Noise Disturbance, #42 ANK/BK29 (2000)

This sub-decree outlines the measures for protecting environment quality and public health from air pollutants and noise disturbance through monitoring, curbing and mitigating activities. It lists air quality standards and noise emission levels. For dust control, there should no visible emissions from stockpiles of materials, crushers or batching plants. At locations with sensitive receptors, the standard of total suspended particulates should be < 0.33 milligrams/cubic meter, PM10 <0.05 and PM2.5 <0.025, at 24-hour average (see Table 1). All vehicles should be well maintained and comply with the air quality regulations. The noise regulations do not stipulate a level of noise from construction sites but refer to mixed commercial and/or industrial and residential property or type of land use in the immediate vicinity that maybe affected by noise (see Tables 2 and 3).

Table 7 – Ambient Air Quality Standard

Parameter	1-Hour Average (mg/m3)	8-Hour Average (mg/m3)	24-Hour Average (mg/m3)	1-Year Average (mg/m3)
Carbon monoxide		20.0	-	-
Nitrogen dioxide		-	0.1	-

[29] http://www.bigpond.com.kh/Council_of_Jurists/a00-Anukret/ANK00_07_42_E.htm80

Sulphur dioxide		-	0.3	0.1
Ozone	0.2	-	-	-
Lead	-	-	0.005	-
Total Suspended Particulate	-	-	0.33	0.1
PM10			0.05	
PM2.5			0.025	

Source: Prakas 120 dated on 11 April 2018 on the Implementation of the Term of Reference for Infrastructure and Tourism Development Project

Table 3 – Maximum Permitted Ambient Noise [dB(A)]

Area	Period of Time (hours)		
	6:00-18:00	18:00-22:00	22:00-06:00
Quiet areas: hospitals, libraries, school, kindergarten	45	40	45
Residential area: hotels, administration offices, houses	60	50	45
Commercial and service areas and mix	70	65	50
Small industrial factoring intermingling in residential areas	75	70	50

Source: Prakas 120 dated on 11 April 2018 on the Implementation of the Terms of Reference for Infrastructure and Tourism Development Project

2.1.9 Sub-Decree on Solid Waste Management (No. 36 ANRK.BK 2009)

Under Article 7 of the Sub-Decree on Solid Waste Management, "the disposal of waste in public sites or anywhere that is not allowed by authorities shall be strictly prohibited". While the Sub-Decree on Waste Management has no quantitative parameters, sensible practice is expected as detailed in this ESMF. Such practices would include (i) all general waste and food waste should be removed to a government approved landfill; (ii) all demolition waste must be removed to a government-approved location; (iii) all waste oil and grease should be disposed by a registered sub-contractor; (iv) the final destination of the oily wastes should be established.

2.1.10 Draft Environmental and Natural Resources Code

A new Environmental and Natural Resources Code of Cambodia is being developed in Cambodia (10th draft after rounds of internal consultations). The draft Code includes general principles, environmental impact assessment, strategic environmental assessment, and biodiversity and protection of endangered species. It establishes biodiversity conservation corridors to provide linkages and protection for high-conservation areas. It also addresses protection of cultural heritage, public participation and access to information, a colLaborative management process and dispute resolution procedures. The Code is, however, still pending the approval.

2.1.11 Additional Environmental Standards

There is no standard for vibration in Cambodia, therefore the vibration levels at any vibration sensitive property or location should be less than 1 millimeter/second (mm/s) peak particle velocity (PPV). The level of 1 mm/s PPV is a good "standard" derived from the United States Bureau of Mines publications for avoidance of damage and the United Kingdom Greater London Council standard for avoidance of nuisance.

There is also no specific regulation for hazardous waste management and substances in Cambodia. However, this aspect is in the Sub-Decree on Water Pollution Control Annex 1, and Sub-Decree on Solid Waste Management, which give details of classifications of what are defined as hazardous wastes and substances. Any hazardous wastes and substances must be stored correctly and only disposed in a manner approved by MOE.

2.1.12 International Conventions and Treaties on Environment

Cambodia has ratified the following international conventions related to environment:

- International Conventions and Agreements Kyoto Protocol ratified – 2002
- United Nations Framework Convention on Climate Change (UNFCCC) ratified – 1995; Initial National Communication – 2000; Second National Communication (2012)
- Convention on Biological Diversity (CBD) – 1995
- Cartagena Protocol on Biosafety – 2003
- UN Convention to Combat Desertification (UNCCD) ratified – 1997
- Convention on International Trade in Endangered Species of Wild Fauna and
- Flora (CITES) – 1997
- World Heritage Convention – 1991
- ASEAN Heritage Convention (National Parks: Bokor and Virakchey) (regional) – 2003
- Convention on the Prevention of Marine Pollution from Ships – 1994
- Measures on prevention of climate change, ozone depletion, on freshwater resource protection and on sustainable forest ASEAN – 1999
- Convention on Wetlands of International Importance (RAMSAR) – 1999
- Basel Convention on Control, Transport and Disposal of Trans-Boundary Hazardous Waste – 2001
- Stockholm Convention on Persistent Organic Pollutants – 2001
- Vienna Convention and Montreal Protocol on Substances that Deplete Ozone Layer – 2001

2.1.13 Law on the Management of Pesticides and Fertilizers

This Law, 14 January 2012, consisting of 12 Chapters divided in 119 articles and 1 Annex containing the Glossary, aims to define the management of all pesticides and fertilizers in the Kingdom of Cambodia and has following objectives: to support the policy promoting the effectiveness potentiality of Agricultural sector, for the development of social and National economy; to ensure the safe and effective control of pesticides and fertilizers, whether in consistent with the international standards; to enhance public awareness on the implementation of standard requirements of pesticides and fertilizers for all relevant activities related to these products; to reduce risks caused by the use of pesticides and fertilizers, for the beneficiary of farmers and people in the nationwide, by ensuring food security, food safety, public health, and the sustainability of environment. The scope of this Law shall apply to the management and the implementation of standard requirements in terms for: All types of pesticides and fertilizers, raw materials or active ingredients and other compositions of pesticides and fertilizers which are used as inputs in agricultural production. All activities of natural persons or legal entities who are traders, formulators, pests control service operators, advertisers, donors, and users of all types of pesticides and

fertilizers. The management of pesticides and fertilizers in Cambodia shall be under the general jurisdiction of the Ministry of Agriculture, Forestry and Fisheries.

2.1.14 Law on Seed Management and Plant Breeder's Rights

The Law on Seed Management and Plant Breeder's Rights (2009) was approved by the Cambodia Parliament on 08 April 2008 and subsequently by the Senate on 29 April 2008. The Law, which was prepared by MAFF, recognizing seed as an essential input for increasing agricultural productivity. By using appropriate varieties with good seed quality, farmers could earn potential benefits such as lower production costs, higher yields, better crop quality, especially uniform size grain which is easy for processing and negotiation for a higher market price. The Law also aim to raise the awareness of as well as improve the contribution of plant breeders, seed traders and farmers in raising crop production in Cambodia. The Law has 9 chapters that cover various important aspect of crop production, including a) protection of new varieties of plants, b) seed management, c) seed import, export and transit, d) national fund for seed development, e) seed inspectors, f) legal penalty, g) transitional provision, and h) final provisions.

2.2 NATIONAL LEGAL FRAMEWORK RELATED TO SOCIAL ISSUES

2.2.1 Law on Protection of Cultural and National Heritage (1996)

This is the general law in Cambodia which covers all national monuments. The law widely recognizes the value of tangible and intangible cultural heritage as an asset for development and an integral part of people's identity. This is supplemented by the "Decision on the Definition of Three Zones to Protect Temple and Surrounding Areas in all Provinces and Municipalities except Angkor Wat" (1996).

2.2.2 Labor Law (1997)

This is the overarching legal instrument that regulates and protects workers in Cambodia. The law governs relations between employers and workers. The Law considers that the rules, obligations and rights are the same for casual or permanent workers. The law prohibits discrimination in any forms, including by sex, religion, social origin, or ethnicity (art 12). Employers are required to make available a copy of the Law to workers at all business locations/ operations (art 15) and forced compulsory or the hiring of workers to pay off debts is prohibited (art 16). The Law defines the role and nature of Labor contracts be they are written or verbal, and sets out the acceptable working terms and conditions. Article 106 reaffirms equal conditions and wage for all work regardless of origin, age and sex for the same types of work. The Law establishes the limit for working hours to 8 hours per day and 48 hours per week as well as rates for working overtime and on public holidays.

The allowable minimum age for wage employment is set at 15 years (art 177). Children from 12-15 years of age can be hired to do light work (see Section 2.24) provided that (a) the work is not hazardous to their health or mental and physical development, and (b) the work will not affect their regular school attendance, their participation in guidance program or vocational training approved by a competent authority. The Law recognizes statutory maternity leave on half wages (art 183), and for the performance of light duties for a further two months. Employers are prohibited from laying off women during their maternity leave (art 182).

Chapter eight of the Labor Law covers the health and safety of workers and requires maintaining standards of hygiene and sanitation in working environments and requirements for individual protective instrument and work clothes, lighting and noise levels (art.229). Machinery, mechanisms, transmission apparatus, tools, equipment and machines must be installed and maintained in the best possible safety conditions. The Ministry of Labor and Vocational Training (MoLVT) shall monitor working conditions and enforce compliance notices. All

enterprises and establishments that are covered by this Law and employ more than fifty workers must have a permanent infirmary on the premises/workshop/ or work sites (art.242). Workplaces/ sites with more than 200 workers must have a health care station for injured or sick workers before transferring to a health facility and must be able to handle two per cent of the workers at the site. The Law requires that every manager at a workplace shall have someone in charge to take all appropriate measures to prevent work related accidents (art. 248). Workplaces must provide the primary health care to their workers and the levels of this vary according to the numbers employed (with 50 and 200 workers thresholds being specifically mentioned). The Law also mandates that a general insurance system obligatory for workers shall be set up and this system shall be managed under the insurance of the National Social Security Fund (art. 256).

2.2.3 Land Law (2001)

The Land Law sets out the legal rights of natural persons and legal entities in land ownership. The government can acquire private land for public purposes but has to pay a fair and just compensation in advance of the land acquisition. The law recognizes the right of indigenous communities in Cambodia to own immovable property – their land – with collective title.

Other provisions of the Land Law that may be relevant include:

- Article 6: Legal possession as defined by the Law is the sole basis for ownership, and all transfers or changes of rights of ownership shall be carried out in accordance with the required general rules for sale, succession, exchange and gift or by court decision;
- Article 15: State public land includes, among other categories, any property a) that has a natural origin, such as forests, courses and banks of navigable and floatable rivers or natural lakes; b) that is made available for public use such as roads, tracks, oxcart ways, pathways, gardens, public parks and reserved land, or c) that is allocated to render a public service, such as public schools, public hospitals or administrative buildings;
- Article 26: Ownership of the lands is granted by the State to indigenous communities as collective ownership, including all the rights and protections enjoyed by private owners. The exercise of collective ownership rights are the responsibility of the traditional authorities and decision-making mechanisms of the indigenous community, according to their customs and subject to laws such as the law on environmental protection;
- Article 28: No authority outside the community may acquire any rights to immovable properties belonging to an indigenous community;

2.2.4 Law on the Prevention of Domestic Violence and the Protection of Victims, (NS/RPM/1005/031), 2005

The objective of the law is to prevent domestic violence, protect victims, and strengthen the culture of non-violence.

2.2.5 Law on Road Traffic, PREAH REACH KRAM NS/RKAM/0115/001, 2015

This law is intended to ensure road traffic safety and order, and protection of human and animal health and lives, properties and environment. Its establishment a requirement for all motor vehicles, trailers, and semi-trailers moving on the road to obtain a technical inspection certificate. It also outlines road safety requirements.

2.2.6 Law on the Protection and Promotion of the Rights of Persons with Disabilities 2009 (Royal Kram NS/RKM/0709/010))

The goal of the law is to protect and promote the rights of persons with disabilities in the country, and prevent, reduce and eliminate discrimination Against persons with disabilities. The law also seeks to ensure that persons with disabilities are able to participate fully and equally in activities within society and provide equal opportunities for employment.

2.2.7 Expropriation Law (2010)

This is the main legal framework that governs land acquisition and involuntary resettlement. It lists the development of public infrastructure as one of its objectives. The expropriation of the ownership of immovable property and real right to immovable property can be exercised only if the Expropriation Committee has paid fair and just compensation in advance to the owner and/or holder of real right.

Key articles include:

- Article 2: The law has the following purposes: (i) ensure reasonable and just deprivation of a legal right to ownership of private property; (ii) ensure payment of reasonable and just prior compensation; (iii) serve the public and national interests, and (iv) development of public physical infrastructure;
- Article 7: Only the State may carry out an expropriation for use in the public and national interests;
- Article 22: An amount of compensation to be paid to the owner of and/or holder of rights in the real property shall be based on the market value of the real property or the alternative value as of the date of the issuance of the Prakas on the expropriation scheme. The market value or the alternative value shall be determined by an independent commission or agent appointed by the expropriation committee;
- Article 29: For the expropriation of a location that is operating business activities, the owner of the immovable property shall be entitled to additional fair and just compensation for the value of the property actually affected by the expropriation as of the date of the issuance of the declaration on the expropriation project. A tenant of the immovable property who is operating a business shall be entitled to compensation for the impact on their business operation and to additional assistance at fair and just compensation to the capital value actually invested for the business operation activities as of the date of the issuance of the declaration on the expropriation project.

2.2.8 Prakas on the Prohibition of Hazardous Child Labor (MoSALVY #106, April 28, 2004)

The Prakas prohibits the employment of anyone under the age of 18 in any of the 38 scheduled hazardous works / activities listed in the Prakas. Nine of the 38 are likely related to some aspects of construction including:

- Operating cranes, hoists, scaffold winches or other lifting machines;
- Lifting, carrying, handling and moving of heavy loads;
- Operating or assisting to operate transportation equipment such as bulldozers, pile driving equipment, trailers, road rollers, tractor lifting appliances, excavators, loading machines, trucks, buses, and taxis;
- Maintenance of heavy machinery;
- Work carried out at construction sites, except in designated and safe areas for a child as permitted by a Labor inspector;
- Demolition work;
- Work carried out on a ladder or scaffold at a height of over 2.5 meters;
- Work involving exposure to harmful chemical, physical, electromagnetic or ionizing agents, including tar, asphalt or bitumen;
- Operating power-driven spinning and winding machine.

2.2.9 Prakas on Light Work (2008)

Outlines 15 categories of light work that children between 12-15 years are allowed to do, limited to 12 hours per week outside of school time and 35 hours during periods of school holidays. It prohibits hazardous Labor as noted above.

2.2.10 Standard Operating Procedures for Externally Financed Projects in Cambodia on Land Acquisition and Involuntary Resettlement (2018), Sub-Decree No. 22 ANK/BK

The SOP reflects RGC's laws and regulations relating to the acquisition of land and the involuntary resettlement of affected households and the safeguard policies and procedures of Development Partners (DPs). Where appropriate, the SOP includes references to international good practices in resettlement planning, implementation, monitoring and reporting. It includes details on how land acquisition must be conducted, consultation procedures, provision of entitlements and disclosure of information, among others. The SOP applies to all externally financed projects in the Kingdom of Cambodia, such as the proposed CWSIP.

2.2.11 National Policy on the Development of Indigenous Peoples (2009)

The Policy sets out government policies related to indigenous peoples in the fields of culture, education, vocational training, health, environment, land, agriculture, water resources, infrastructure, justice, tourism, industry and mines and energy. It is an umbrella document that defines principles for formal registration of indigenous communities as legal entities with their own bylaws and enables their participation in economic development that affects their lives and cultures. The Policy calls for the conduct of impact assessments for all infrastructure projects affecting indigenous peoples.

2.2.12 Policy on Registration and Right to Use of Indigenous Communities (2009)

This policy takes as its basis the recognition in the Land Law of 2001, of the right of indigenous communities to possess and use land as their collective ownership. The policy states that the registration of indigenous communities as collective ownership is different from the registration of individual privately-owned land parcels because the land registration of the indigenous communities is the registration of all land parcels belonging to the communities as a whole, consisting of both State Public Land and State Private Land in accordance with the articles 25, 26, and 229 of the Land Law and related Sub-decrees. These land parcels are different in size and can be located within the same or different communes/sangkat. Therefore, the registration of land parcels of indigenous communities requires a separate Sub-decree supplementing existing procedure of sporadic and systematic land registration.

2.2.13 Organic Law (2008)

Recognizes indigenous peoples' vulnerability. Councils at provincial and district levels (capital, municipal and khan levels in urban areas) are given authority to formulate development plans (including physical plans and socio-economic development plans) that identify the needs of vulnerable groups including indigenous peoples. Certain functions are being delegated from national government (ministries) to sub-national level, such as in health, education, land management and urban planning aspects, and basic services to be delivered to local citizens.

2.2.14 Relevant International Agreements on Indigenous Peoples

Cambodia is a signatory to a number of international instruments that protect the rights of indigenous peoples[30], as well as the Convention on Biological Diversity (1992), which recognizes the role of indigenous people in protecting biodiversity. In 1992, the Cambodian Government ratified the International Covenant on Economic, Social and Cultural Rights. This includes the rights to practice specific culture and the rights to means of livelihoods, NGO Forum on Cambodia. Other relevant international agreements Cambodia has signed up to include:

[30] This includes the International Covenant on Economic, Social and Cultural Rights (ICESCR), the International Covenant on Civil and Political Rights (ICCPR), the United Nations Declaration on the Rights of Indigenous People and more generally the Universal Declaration of Human Rights.

- The UN Declaration on the Right of Indigenous People (2007)
- The International Convention on the Elimination of all Forms of Racial Discrimination
- The International Covenant on Economic, Social and Cultural Rights
- The UNESCO Convention on the Protection and Promotion of the Diversity of Cultural Expressions (2005)

2.3 NATIONAL REGULATIONS ON DAM SAFETY, IRRIGATION, WATER SUPPLY

2.3.1 Law on Water Resources Management (June 29 ,2007).

The general purpose of this Law is to foster the effective and sustainable management of the water resources of the Kingdom of Cambodia to attain socio-economic development and the welfare of the people. This Law determines: (a) the rights and obligations of water users, (b) the fundamental principles of water resources management, and (c) the participation of users and their associations in the sustainable development of water resources. The most important Articles for this project are Article 4, Article 8, 9 and 10 (MOWRAM as the Agency responsible for water resources monitoring and planning), Article 34 (International Rivers). This law also lays out provisions on water allocation, licensing and dispute resolution.

2.3.2 Law on Agricultural Cooperative (2013)

This Law, consisting of nine chapters, was enacted is to promote participation of every Khmer citizen whose primary occupations falls within the framework of agricultural production, agro-industry, agribusiness or services related to agricultural production systems in establishing and developing agricultural cooperatives in order to improve economic, social and cultural status of members as well as to contribute to the national economic development. This Law regulates the establishment, functioning and management of agricultural cooperatives, agricultural cooperative unions, and Cambodian agricultural cooperative alliance, as well as provides for related supportive mechanisms. This law covers only agricultural cooperatives, agricultural cooperative unions, and Cambodian agricultural cooperative alliance within the Kingdom of Cambodia. Agricultural Cooperative provided for in this law refers to private legal entity and agricultural-based economic enterprise which is voluntarily established by natural entities with their joint investment, joint ownership and joint democratic management in order to improve agricultural sector.

2.3.3 Royal Decree (Preah Reach Kret) NS/RKT/0701/234 on the establishment and functioning of agricultural cooperatives, Union of the Agricultural Cooperatives and the Pre-Agricultural Cooperatives.

This degree defines the establishment and functioning of agricultural cooperatives, including obligations and rights of cooperatives and their members, their structure and responsibilities, capital, and transformation and dispute settlement. The decree is an important legal framework that promote cooperative establishment and registration.

2.3.4 Sub-Decree No. 73 on the establishment of the department of water farmers' communities of the ministry of water resources and meteorology

This sub-decree aims to establish a department of community farmers using water under the General Department of Technical Affairs of the Ministry of Water Resources and Meteorology.

2.3.5 Royal Decree on The Establishment and Management of the Tonle Sap Biosphere Reserve (2001)

This Royal Decreee aim to establishes the Tonle Sap Biosphere Reserve (TSBR) in accordance with the statutory framework of the World Network of Biosphere Reserves. Divides the TSBR into 3 zones: (i) core areas; (ii) buffer zone and (iii) flexible transition zone. Core area: set aside for long term protection, human activity is limited to monitoring and research. Buffer zone: is area surrounding the core areas helping to protect the environment. It may accommodate education and training activities. Transition area: may contain a variety of agricultural activities and human settlements. Here all stakeholders have to cooperate to achieve sustainable development.

2.3.6 Sub-Decree on Water Pollution Control #27 ANRK.BK31 (1999)

This sub-decree regulates water pollution control measures in order to prevent and reduce the water pollution of the public water areas. As a minimum, all discharges of liquid wastes from construction camps, work sites or operations, to streams or water courses should conform to standards listed in Table 4.

Table 4 – Selected Effluent Standards for Pollution Sources Discharging Wastewater to Public Areas

Parameter	Unit	Allowable limits for pollutant substance discharging to	
		Protected public water area	Public water area and sewer
Biochemical oxygen demand	mg/l	<30	<80
Chemical oxygen demand	mg/l	<50	<100
Total suspended solids	mg/l	<50	<80
Detergent	mg/l	<5.0	<15
Total dissolved solids	mg/l	<1,000	<2,000
Temperature	°C	<45	<45
pH		6-9	5-9
Oil and grease	mg/l	<5.0	<15
Dissolved oxygen	mg/l	>2.0	>1.0

Source: Prakas 120, dated on 11 April 2018 on the Implementation of the Terms of Reference for Infrastructure and Tourism Development Project

2.3.7 Law on Water Resources Management

On 29 June 2007 the Law on the Management of Water Resources in Cambodia was issued. The Sub-Decree was issued on 12 March 2015 on the Procedures for the Establishment, Dissolution, Roles and Duties of the FWUC. It defines the FWUC as a legal autonomous entity aimed at using the irrigation system for its agriculture production, as well as for the sustainable use, maintenance and development. MOWRAM is given the tasks for the overall management of the FWUCs.

2.2.8 Sub-Decree FWUC

The FWUC Sub-Decree of March 2015 specifies under Article 5 the role of MOWRAM in the FWUC's overall management. These are specified as follows: 1. Administer the FWUC and all irrigation schemes 2. Endorse the application for registration of a FWUC 3. Refuse or dissolve a FWUC 4. Provide guidance on the FWUC's statute and its internal regulations 5. Facilitate with concerned institutions and stakeholders on the implementation and development of the FWUC management 6. Coordinate and facilitate the elections of the FWUC Committees 7. Settle disputes within the FWUC context 8. Seek other funding sources to support the FWUCs 9. Provide training to enhance the capacity of FWUCs 10. Provincial Department of Water Resources and Meteorology (PDWRAM) shall register all FWUCs in the FWUC registry, after endorsement by MOWRAM

Based on Article 7 of the FWUC Sub-Decree the criteria for FWUC establishment are as follows:

[31] http://www.cambodiainvestment.gov.kh/wp-content/uploads/2011/09/Sub-Degree-27-on-Water-Pollution-Control_990406.pdf

- The farmers that use water within the same irrigation scheme or part thereof will compose the FWUC members
- Compliance with the technical standard of MOWRAM
- Participation in the election of those who use the irrigation system under the FWUC competence, with support of two third (2/3) voters
- Based on the laws, regulation and concerned legal documents

2.3.9 Drinking Water Quality Standards

For well water used for domestic purposes, including drinking, the Ministry of Industry Mines and Energy Drinking Water Quality Standards of January 2004 is the evaluation standard. These are summarized in Table 4.

Table 8 – Drinking water quality standards

Parameter	Unit	Cambodian Standard for Drinking Water	Cambodian Standard for Raw Water	USEPA Drinking Water
pH	mg/L	6.5 – 8.5	5.5 – 9	6.5 – 8.5
Turbidity	NTU	5	-	1
Arsenic	mg/L	0.05	<50µg/L	0
Chlorine	mg/L	0.2 – 0.5		
Copper	mg/L	1	<1mg/L	<1mg/L
Sulphate	mg/L	250		
Total nitrogen	mg/L	-	15	50
Lead	mg/L	0.01		
Mercury	mg/L	0.005	<1µg/L	<1µg/L
Coliform	CFU/100ml	3	<5 x 10^3	<1

Legends. CFU = Colony Forming Units, L = Liter, mg = milligram, mg/L = milligram per liter, ml = milliliter, NTU = Nephelometric Turbidity Units, USEPA = United States Environmental Protection Agency.

Sub-decree No. 98 on river basin management.

This sub-decree aims to manage, conserve and develop river basin to be more effective and sustainable in accordance to Law on Water Resource Management in the Kingdom of Cambodia.

2.4 WORLD BANK'S ENVIRONMENT AND SOCIAL STANDARDS (ESS)

The following World Bank's Environmental and Social Standards (ESSs) are applied under this project:

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

The objectives of ESS1 are a) Identify, evaluate, and manage environment and social risks and impacts in a manner consistent with the ESSs, b) Adopt a mitigation hierarchy, b) Adopt differentiated measures so that adverse impacts do not fall disproportionately on the disadvantaged or vulnerable, and they are not disadvantaged in sharing development benefits and opportunities, c) Utilize national environmental and

social institutions, systems, laws, regulations and procedures where appropriate, b) Promote improved environmental and social performance, in ways which recognize and enhance Government capacity.

- **ESS2: Labor and Working Conditions**

ESS2 aims to a) Promote safety and health at work, b) Promote the fair treatment, non-discrimination, and equal opportunity of project workers, c) Protect project workers, with particular emphasis on vulnerable workers, d) Prevent the use of all forms of forced Labor and child Labor, e) Support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law, and e) Provide project workers with accessible means to raise workplace concerns

- **ESS3: Resource Efficiency and Pollution Prevention and Management**

The objective of ESS3 is a) Promote the sustainable use of resources, including energy, water, and raw materials, b) Avoid or minimize adverse impacts on human health and the environment caused by pollution from project activities, c) Avoid or minimize project-related emissions of short and long-lived climate pollutants, d) Avoid or minimize generation of hazardous and non-hazardous waste, and e) Minimize and manage the risks and impacts associated with pesticide use

- **ESS4: Community Health and Safety**

The ESS4 objectives include a) Anticipate or avoid adverse impacts on the health and safety of project-affected communities during project life-cycle from routine and non-routine circumstances, b) Promote quality, safety, and climate change considerations in infrastructure design and construction, including dams , c) Avoid or minimize community exposure to project-related traffic and road safety risks, diseases and hazardous materials, d) Have in place effective measures to address emergency events, e) Ensure that safeguarding of personnel and property is carried out in a manner that avoids or minimizes risks to the project-affected communities

- **ESS5: Land acquisition, Restrictions and Land Use and Involuntary Resettlement**

The objectives of ESS5 are a) Avoid or minimize involuntary resettlement by exploring project design alternatives, b) Avoid forced eviction, b) Mitigate unavoidable adverse impacts from land acquisition or restrictions on land use by providing compensation at replacement cost and assisting displaced persons in their efforts to improve, or at least restore, livelihoods and living standards to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher, c) Improve living conditions of poor or vulnerable persons who are physically displaced, through provision of adequate housing, access to services and facilities, and security of tenure, d) Conceive and execute resettlement activities as sustainable development programs, e) Ensure that resettlement activities are planned and implemented as sustainable development programs, with appropriate disclosure of information, meaningful consultation, and informed participation.

- **ESS6: Biodiversity**

ESS6 aims to a) Protect and conserve biodiversity and habitats, b) Apply the mitigation hierarchy and the precautionary approach in the design and implementation of projects that could have an impact on biodiversity, c) Promote the sustainable management of living natural resources, and d) Support livelihoods of local communities, including Indigenous Peoples, and inclusive economic development, through the adoption of practices that integrate conservation needs and development priorities

- **ESS7: Indigenous Peoples**

The objectives of ESS7 are a) Ensure that the development process fosters full respect for affected parties' human rights, dignity, aspirations, identity, culture, and natural resource-based livelihoods, b) Promote sustainable development benefits and opportunities in a manner that is accessible, culturally appropriate and inclusive, c) Improve project design and promote local support by establishing and maintaining an ongoing relationship based on meaningful consultation with affected parties, d) Obtain the Free, Prior, and Informed Consent (FPIC) of affected parties in three circumstances, e) Recognize, respect and preserve the culture, knowledge, and practices of Indigenous Peoples, and to provide them with an opportunity to adapt to changing conditions in a manner and in a timeframe acceptable to them.

- **ESS8: Cultural Heritage**

The objectives of ESS8 include a) Protect cultural heritage from the adverse impacts of project activities and support its preservation, b) Address cultural heritage as an integral aspect of sustainable development, c) Promote meaningful consultation with stakeholders regarding cultural heritage, and d) Promote the equitable sharing of benefits from the use of cultural heritage.

- **ESS9: Financial Intermediaries** (not applicable under this project)
- **ESS10: Stakeholder Engagement and Information Disclosure**

The objectives of this ESS are a) Establish a systematic approach to stakeholder engagement that will help Borrowers identify stakeholders and build and maintain a constructive relationship with them, in particular project-affected parties, b) Assess the level of stakeholder interest and support for the project and to enable stakeholders' views to be taken into account in project design and environmental and social performance, c) Promote and provide means for effective and inclusive engagement with project-affected parties throughout the project life -cycle on issues that could potentially affect them, d) Ensure that appropriate project information on environmental and social risks and impacts is disclosed to stakeholders in a timely, understandable, accessible and appropriate manner and format, and e) Provide project-affected parties with accessible and inclusive means to raise issues and grievances, and allow Borrowers to respond to and manage such grievances.

APPENDIX 12 – Policy Gap Analysis

Summary of Main Gaps between RGC's Relevant Legislation and WB's ESSs

No.	Areas of Difference	RGC 's Relevant Regulations	WB's ESS	Key Gaps	Measures/Clarifications to Address Differences
1	**Assessment of project impacts**	RGC legislation focuses on project impacts from an environmental point of view and does not consider social, gender and Labor impacts, among others, as well as cumulative and transboundary impacts. It does not consider the specific needs of vulnerable people (the poor, elderly, female-headed households, people living with a disability, etc.)	ESS1 is comprehensive and considers the full scope of project impacts from an environmental and social perspective, integrating all these aspects. In addition, the ESF has particular standards that deal with Labor, gender and community health and safety, among others, as well as ensuring disadvantaged and vulnerable people/ groups are not disproportionately affected by projects' adverse impacts or disadvantaged in sharing development benefits.	Lack of requirement to assess potential impact on people in such environment, particularly vulnerable groups.	This ESMF covers both direct, indirect and cumulative environment and social risks/impacts and proportionate mitigation measures, taking a holistic approach to the project and looking at impacts in an integrated way, including considering the needs of disadvantaged and vulnerable persons or groups. Future ESMPs will also detail how to conduct detailed impact and risk assessment and the definition of proportionate mitigation of measures
2	**Mitigation hierarchy**	There is no mitigation hierarchy in RGC legislation.	WB ESF, in particular ESS1 (and also ESS 5, 6 and 7), discusses the need to have a mitigation hierarchy when planning projects, in order to avoid, minimize or, if not possible, mitigate project impacts. Having a mitigation hierarchy allows project planners to plan their projects with potential for environment and social impacts in mind.	Lack of a framework that sets out pathway for limiting as far as possible risks and potential adverse impacts.	This ESMF discusses a mitigation hierarchy to be followed by project planners when choosing the subprojects for rehabilitation and conducting detailed engineering designs.
3	**Minimum working age**	Minimum working age in Cambodia is 15 albeit children between 12-15 years can perform light work that does not conflict with schooling no hazardous work is permitted for children under 18.	ESS 2 (para 17, 19, and footnote 13) specifies that the minimum working age is 14 unless national law specifies a higher age. However, a child over the minimum age and under 18 may be employed or engaged in connection with the project if the work is not hazardous or interfere with the child's education or be harmful to the child's health, and that appropriate risk assessment is conducted prior to engaging the Labor and that	Lack of legislative requirements to ensure screening, assessment, and monitoring are in place to ensure a child under 18 can participate in work that is not hazardous	This ESMF will propose a minimum working age of 18 years due to the potential for hazardous work related to water structure rehabilitation. The ESMF will provide monitoring guidelines and requirements of the Borrower and contractors (see LMP in Appendix 2 of this ESMF).

No.	Areas of Difference	RGC 's Relevant Regulations	WB's ESS	Key Gaps	Measures/Clarifications to Address Differences
			Borrower conducts regular monitoring of health, working conditions, hours of work and the other requirements of ESS2.	to their health and affect their schooling.	
4	**Livelihood Restoration and Assistance**	SOP-LAR details specific measures to restore livelihoods which are land-based, employment-based and business-based.	Provision of livelihood restoration and assistance to achieve WB's ESS5 objectives in cases of significant loss of livelihood to assist displaced persons in their efforts to improve, or at least restore, their livelihoods and living standards.	Lack of clear benchmark to assist monitoring and evaluation to confirm if affected households restore their livelihood to the level prevailing prior to the beginning of project implementation	Based on RGC's SOP-LAR, an Income Restoration Program would be provided in order to re-establish sources of livelihoods for those Aps who have permanently lost their sources of livelihood. If applicable in CWSIP, DRPs will include provisions to ensure livelihood restoration programs are robust and can accurately meet the livelihood restoration objectives in line with WB ESS5.
5	**Grievance Redress Mechanism**	Appendix 8 of the SOP-LAR provides the structure and details on operating guidelines and procedures for effective functioning of Grievance Redress Mechanism. It provides a 3-step process, including the registration and recording of complaints and the judicial process for complainant's use if complaints remain unresolved at the administrative level. The detailed procedures for at each step are provided in the SOP-LAR.	Annex 1 of ESS10 includes details of administrative and judicial process on Grievances Redress Mechanisms to handle grievances under all ESSs. Participation in resettlement planning and implementation, including in developing appropriate Grievances Redress Mechanisms that are useful and accessible to local people.	Lack of requirements for grievances to be resolved in a manner that is culturally appropriate.	The SOP states that there will be consultations with Aps at various stages including during Basic Resettlement Plan (BRP) and DRP preparation. Prior to the preparation of the Detailed Resettlement Plan (DRP), consultation is carried out to confirm eligibility criteria and discuss entitlement matrix, as well as to introduce GRM. In addition, the copies of the Guidelines for GRM are translated in Khmer and/or IPs' language (where written language is available) and provided and explained in detail to the Aps during public consultation process. There are clear mechanisms for grievance redress in the SOP. While the mechanisms are clearly set out, GDR will ensure it is accessible to all Aps, in particular vulnerable Aps and women.

No.	Areas of Difference	RGC 's Relevant Regulations	WB's ESS	Key Gaps	Measures/Clarifications to Address Differences
6	**Consultations and Stakeholder Engagement**	▪ The SOP-LAR details the number of steps to carry out consultations at various stages of the land acquisition and resettlement process and compensation. ▪ Para 126 mentions that the consultation is undertaken throughout the project cycle. ▪ SOP-LAR provides for stakeholder engagement in respect of land acquisition and involuntary resettlement. ▪ The SOP-LAR provides for disclosure of the RPF to the stakeholders and public before the approval of the project. Similarly, the DRPs are also disclosed to stakeholders and public after approval by the GDR. ▪ Requirements in legislation on environment impact assessment as to stakeholder engagement	▪ ESS1 requires that stakeholder engagement with affected and interested stakeholders will be throughout the project cycle in line with the project's Stakeholder Engagement Plan (SEP), including ongoing consultations and document disclosure. ▪ ESS10	Lack of requirements to ensure two-way and meaningful consultation	Meaningful consultations, inclusive of all gender-sensitive and vulnerable persons, as per WB ESS10 will be conducted with particular attention to ensuring that consultation is a two-way process that allows for feedback from Aps and they are informed how their feedback was incorporated into implementation plan.
7	**Voluntary Donations**	RGC's SOP deals with land acquisition and *involuntary* resettlement and therefore does not provide guidance on voluntary donations.	According to footnote 10 of ESS5, voluntary land donations are acceptable if: (a) the potential donor or donors have been appropriately informed and consulted about the project and the choices available to them; (b) potential land donors are aware that refusal is an option, and have confirmed in writing their willingness to proceed with the donation; (c) the amount of land being donated is minor and will not reduce the donor's remaining land area below that required to maintain the land donor's	Lack of regulations on voluntary on land donation and cases where land donation is acceptable	The RPF developed provides guidance on when voluntary donations would be appropriate and the process of carrying out the donations, including documentation which will need to be followed by MOWRAM.

No.	Areas of Difference	RGC 's Relevant Regulations	WB's ESS	Key Gaps	Measures/Clarifications to Address Differences
			livelihood at current levels; (d) no land donors are relocated; I the land donor is expected to benefit directly from the project; and (f) for community or collective land, donation can only occur with the consent of individuals using or occupying the land.		
8	**Procedures for implementing Indigenous Peoples Plan**	No detailed regulations on how to avoid impacts to Indigenous Peoples or how to include them in project benefits.	Among others, WB ESS7 seeks to ensure that projects respect the rights and culture of IPs, adopt a mitigation hierarchy to impacts, ensure benefits to IPs and conduct meaningful consultation and FPIC when necessary and/or desirable.	Lack of requirement to consult IP(s) in a manner that is culturally appropriate and special disclosure and consultation requirements as described in ESS5, ESS7 and ESS8.	An IPPF has been prepared on the basis of WB ESS7 considering relevant Cambodian policies and regulations. The IPPF details procedures for preparing IPP(s) and how to conduct meaningful and consultation that is culturally appropriate.
9	**Protecting Intangible cultural heritage**	No provisions in the legislation to protect intangible cultural heritage	WB ESS8 also covers intangible cultural heritage, which includes practices, representations, expressions, knowledge, skills—as well as the instruments, objects, artefacts and cultural spaces, that communities associate as part of their cultural heritage.	Lack of provisions/ requirements for protection of intangible cultural heritage.	This ESMF details the need to develop Heritage Management Plans and annexes a Chance Find Procedure (Annex 4.1) in case of impacts on heritage, whether tangible or intangible.
10	**Stakeholder Engagement**	While there are provisions for stakeholder engagement in various legislation (including EIA and SOP	WB ESS 10 stresses the importance of stakeholder engagement at all stages of the project cycle. Stakeholders must be meaningfully consulted and engaged, have opportunities to provide inputs to projects and be informed how this their concerns were considered, have avenues to voice their grievances and seek resolution, and receive information disclosed in an appropriate manner, place and language.	Lack of requirements to ensure stakeholder engagement process is maintained throughout project cycle to ensure appropriate information disclosure, meaningful consultations and effective grievance redress mechanism.	A Stakeholder Engagement Plan (SEP) has been developed following the guidelines of ESS10.

No.	Areas of Difference	RGC 's Relevant Regulations	WB's ESS	Key Gaps	Measures/Clarifications to Address Differences
	Accessibility to vulnerable groups & equitable access for Indigenous Peoples in a manner that is cultural appropriate	Law on Water Resources Management (June 29 ,2007	WB ESS 1 on accessibility to vulnerable groups ESS7, equitable access in a cultural appropriate manner for Ips.	Lack of provisions/requirements for accessibility to vulnerable groups and equitable access for indigenous peoples.	This ESMF includes the ESS1 on accessibility to vulnerable groups and ESS7 on the equitable access in a cultural appropriate manner for indigenous people, which is clearly highlighted in the IPPF.
	Biodiversity and protected areas	Law on Protected Area (No.NS/RKM/0208/007) aims to conserve the biodiversity and protected area by divided the protected area in to 4 zones (core zone, conservation zone, sustainable use zone, and community zone). However, the boundary of each zone is unclear demarcated. Sub decree No.07 on the establishment of biodiversity conservation corridor of natural protected areas aims to ensure the stability and safety of the ecology of the critical habitats and preserve the ecosystem services to benefit the local people. National Biodiversity Strategy and Action Plan highlight the key actions for the conservation of biodiversity; the sustainable use of biological resources; and the fair and equitable sharing of benefits	ESS6 apply the mitigation hierarchy and the precautionary approach in the design and implementation of projects that could have an impact on biodiversity.	Lack of provisions/requirements for mitigating the impacts and phases.	This ESMF has developed the Exclusion/Ineligibility List for sub projection selection to avoid the subproject that are located in the protected area where construction is not allowed as per national laws.

No.	Areas of Difference	RGC 's Relevant Regulations	WB's ESS	Key Gaps	Measures/Clarifications to Address Differences
		arising from the use of genetic resources.			
	Dam safety	No law and regulation on Dam Safety. Dam project is subjected to EPA, IESIA, or ESIA requirement.	ESS1 is comprehensive and considers the full scope of project impacts from an environmental and social perspective, integrating all these aspects.	No distinguish between the size of impacts and magnitude of large or small dams.	This ESMF has developed the Exclusion/Ineligibility List for sub projection selection to avoid the subproject that triggers risk or threat for lives of the people, sub projects that are of high risk of dam break/failure, etc. This ESMF also follow the requirements on Good Practice Note on Dam Safety of the World Bank.
	Pollution prevention	Sub-decree on the Control of Air Pollution and Noise Disturbance Sub-decree on Water Pollution Control (6 April, 1996) and the amendment of Sub-Decree of Article 4, Article 9, Article 11, Article 12, Article 17 and table of Annex 2, Annex 3, Annex 4, and Annex 5 of Sub-Decree on Water Pollution Control (29 June, 2021)	ESS3 aims to promote the sustainable use of resources and avoid or minimize the pollution from sources/project activities.	Have separate provisions/requirements for pollution prevention and management.	This ESMF has included all relevant national laws and regulation as well as the requirements for ESS3.
	Health and safety	Labor Law (1997) concerns more on individual health and safety management.	ESS4 concerns on community health and safety of the project affected communities during the project lifecycle.	Lack of provisions/requirements for health and safety management of the local communities.	This ESMF provides guidelines on how to address the identification and mitigation measures associated with these issues. Specific guidelines will be provided in terms of Labor Management Procedures and Code of Conduct (see Annexes 5.2 and 5.3).

Additional Areas for Closing of Gaps specific to WB's ESF

Items for Strengthening	RGC Legislation	WB's ESF	Clarifications
Sexual Exploitation and Abuse (SEA, Sexual Harassment	There are regulations in Cambodia that protect the rights of women, violence against women and children, and the information dissemination on HIV/AIDS. However, this is	ESS2 for workers, ESS4 for the wider community and WB's Good Practice Note on Addressing Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) in Investment Project Financing involving Major Civil	This ESMF provides guidelines on how to address the identification and mitigation measures associated with these issues. Specific guidelines will be provided in terms of Labor Management

Items for Strengthening	RGC Legislation	WB's ESF	Clarifications
(SH), Violence against Children (VAC) and HIV/AIDs	not directly or explicitly required in the CWSIP projects.	Works, protect the rights of all community members, but in particular women and children and the vulnerable, from violence and other forms of abuse, as well as the risks of sexually transmitted diseases. Due to an influx of Labor, these issues are particularly relevant in construction projects.	Procedures and Code of Conduct (see Annexes 5.2 and 5.3).
Forced Labor	Regulations Against forced Labor exist in Cambodia. However, there are claims that this is not strictly enforced, and there are particular "hotspot" areas such as brick kilns.	WB ESS2 strictly prohibits any form of forced Labor. ESS2 and ESS4 requirements are embedded in the Standard Bidding Document (SBD) of the Bank, requiring contactors to comply with.	The ESMF provides provisions to monitor compliance by contractors and of their primary suppliers in bidding documents and supervision contracts (see Appendix 2 of this ESMF).
Livelihood restoration and assistance as a result of land acquisition	The RGC SOP details specific measures to restore livelihoods which are land-based, employment-based and business-based.	Provision of livelihood restoration and assistance to achieve WB ESS5 objectives.	Based on SOP and the RPF, an Income Restoration Program will be provided in order to re-establish sources of livelihoods for those APs who have permanently lost their sources of livelihood. If applicable in CWSIP, DRPs will include provisions to ensure livelihood restoration programs are robust and can accurately meet the livelihood restoration objectives in line with WB ESS5.
Grievance Redress Mechanism	There is no GRM described in the environment legislation or as a requirement in the Labor legislation. On land acquisition, Appendix 8 of the SOP provides the structure and details on the operating guidelines and procedures of an effective functioning Grievance Redress Mechanism. It provides a 3-step process including, the registration and recording of complaints and the judicial process if, the complaints remain unresolved at the administrative level. The detailed procedures for at each step are also provided in the SOP.	ESS10 requires a Grievance Mechanism in place for all project as part of the SEP, including covering areas such as environmental impacts, worker's grievances, grievances of IPs and grievances on land acquisition.	A SEP has been developed which details a GRM for the project covering all project aspects, including concerns about environmental and social impacts. This is included in Section 6 of this ESMF. A specific GRM for land acquisition is detailed in the RF and a specific GRM for IPs is detailed in the IPPF. The LMP (Appendix 2) in this ESMF also describes a specific GRM for workers that contractors must have in place. All GRMS must be accessible to all APs, in particular vulnerable APs and women.

Items for Strengthening	RGC Legislation	WB's ESF	Clarifications
	No provisions for grievance redress are specified in terms of IPs or environmental impacts.		
Consultations and Stakeholder Engagement	There are some provisions for consultations on environmental impacts as part of the EIA regulations. On land acquisition, the SOP details steps to carry out consultations at various stages of the land acquisition process and compensation. SOP also discusses disclosure of project documents.	ESS1 requires that stakeholder engagement with affected and interested stakeholders will be throughout the project cycle in line with the project's Stakeholder Engagement Plan (SEP), including ongoing consultations and document disclosure. This applies to all aspects of the project including environment, social impacts, land acquisition and indigenous peoples, among others.	This ESMF discusses the requirements of the SEP in terms of consultations and disclosure. A SEP consistent with ESS 10 has been prepared for the CWSIP.