KINGDOM OF CAMBODIA

Nation Religion King

Ministry of Mines and Energy (MME)

Electricité du Cambodge (EDC)

Cambodia Sustainable Energy Transition Project (P510217)

Environmental and Social Management Framework

(ESMF)

(Draft Version)

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ABBREVIATIONS AND ACRONYMS

ABC	Association of Banks of Cambodia
ADB	Asian Development Bank
AFD	Agence Française de Développement
AMI	Advanced Metering Infrastructure
AMR	Advanced Meter Reader
AP	Affected Person
ARAP	Abbreviated Resettlement Action Plan
ARK	Arey Ksat Substation
ASEAN	Association of Southeast Asian Nations
AoA	Area of Analysis
AZE	Alliance for Zero Extinction
AT&C	Aggregate Technical & Commercial
BESS	Battery Energy Storage System
BMP	Biodiversity Management Plan
BMS	Battery Management System
BRP	Basic Resettlement Plan
CAPA	Corrective and Preventive Action Plan
CBAM	Carbon Border Adjustment Mechanism
C-ESMP	Contractor Environmental and Social Management Plans
CHA	Critical Habitat Assessment
CHS	Community Health and Safety
CHSP	Community Health and Safety Plan
CITES	Convention on International Trade in Endangered Species of Fauna and Flora
CLP	China Light and Power
CPOs	Charge Point Operators
CR	Critically Endangered (IUCN Red List category)
CSET	Cambodia Sustainable Energy Transition
DEIA	Department of Environmental Impact Assessment
DPWT	Department of Public Works and Transport
DRP	Detailed Resettlement Plan
E&S	Environmental and Social
EAC	Electricity Authority of Cambodia
EDC	Electricité du Cambodge
EE	Energy Efficiency
EHS	Environmental, Health, and Safety
EHSG	Environmental, Health, and Safety Guidelines
EIA	Environmental Impact Assessment
ELCs	Economic Land Concessions
EMF	Electromagnetic Field
EMP	Environmental Management Plan
EN	Endangered (IUCN Red List category)
EPC	Environmental Protection Contract
ERW	Explosive Remnants of War
ESS6	Environmental and Social Standard 6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources)
ESF	Environmental and Social Framework
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
ESSs	Environmental and Social Standards
EU	European Union
EXIM	Export-Import Bank
EV	Electric Vehicle

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FIs Financial Intermediaries
FPIC Free, Prior, and Informed Consent
FTB Foreign Trade Bank of Cambodia
GBIF Global Biodiversity Information Facility
GDR General Department of Resettlement
GBV Gender-Based Violence
GHG Greenhouse Gas
GIS Geographic Information System
GRC Grievance Redress Committee
GREPTS General Requirements of Electric Power Technical Standards of the Kingdom of Cambodia
GRM Grievance Redress Mechanism
GS Grid Substation
GWh gigawatt-hour
HIV/AIDS Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome
HWMP Hazardous Waste Management Plan
IBA Important Bird Area
IBAT Integrated Biodiversity Assessment Tool
IDA International Development Association
IEIA Initial Environmental Impact Assessment
IEs Industrial Enterprises
IP Indigenous Peoples
IPP Indigenous Peoples Plan
IPPF Indigenous Peoples Planning Framework
IRC Inter-Ministerial Resettlement Committee
IUCN International Union for Conservation of Nature
JICA Japan International Cooperation Agency
KBAs Key Biodiversity Areas
KfW Kreditanstalt für Wiederaufbau
kV kilovolt
KWP Kilowatt Peak
LAR Land Acquisition and Involuntary Resettlement
LMP Labor Management Procedures
LNG Liquefied Natural Gas
LoO Likelihood of Occurrence
LV Low Voltage
LVA Lvea Am Substation
masl Meters above sea level
MEF Ministry of Economy and Finance
MME Ministry of Mines and Energy
M&R Monitoring and Reporting
MISTI Ministry of Industry, Science, Technology and Innovation
MLMUPC Ministry of Land Management, Urban Planning, and Construction
MME Ministry of Mines and Energy
MOE Ministry of Environment
MOWRAM Ministry of Water Resources and Meteorology
MPA Multi-Phase Approach
MPWT Ministry of Public Works and Transport
MSME Micro, Small, and Medium Enterprises
MV Medium Voltage
MVA Megavolt-amperes
MW Megawatt
NEEP National Energy Efficiency Program
NGO Non-Governmental Organization
NNL No Net Loss
NT Near Threatened (IUCN Red List category)
ODF Open Defecation Free
OHT Overhead Transmission Line

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OHS	Occupational Health and Safety
OHSP	Occupational Health and Safety Plan
OHL	Overhead Line
OPGW	Optical Ground Wire
PAs	Protected Areas
PAPs	Project Affected Persons
PCB	Polychlorinated Biphenyls
PCS	Power Conversion System
PDR	People's Democratic Republic
PFI	Participating Financial Institution
PIC	Project Implementation Consultant's
PM	Particulate Matter
PMO	Project Management Office
PMU	Project Management Unit
PPE	Personal Protective Equipment
PSC	Project Steering Committee
PSH	Pumped Storage Hydro
PV	Photovoltaic
RAP	Resettlement Action Plan
REF	Rural Electrification Fund
REE	Rural Electrification Enterprises
RGC	Royal Government of Cambodia
ROW	Right of Way
RPF	Resettlement Policy Framework
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SC	Sub-component
SCADA	Supervisory Control and Data Acquisition
SDG	Sustainable Development Goals
SEA	Sexual Exploitation and Abuse
SEP	Stakeholder Engagement Plan
SEPRO	Social, Environmental, and Public Relations Office
SH	Sexual Harassment
SME	Small and Medium Enterprise Bank of Cambodia
SO_2	Sulphur dioxides
SOP	Standard Operating Procedures
SOP-LAR	Standard Operating Procedures for Land Acquisition and Resettlement
SREPTS	Specific Requirements of Electric Power Technical Standards of the Kingdom of Cambodia
TBD	To Be Determined
TL	Transmission Line
U/G	Underground
UK	United Kingdom
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCC	United Nations Framework Convention on Climate Change
USD	United States Dollar
UXO	Unexploded Ordnance
VAC	Violence Against Children
VU	Vulnerable (IUCN Red List category)
WB	World Bank
WPE	Waterbird Population Estimates (Wetlands International database)

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EXECUTIVE SUMMARY

A. Project Background

The Royal Government of Cambodia (RGC), through the Ministry of Mines and Energy (MME) and Electricité du Cambodge (EDC), is implementing the Cambodia Sustainable Energy Transition (CSET) Project with financial support from the World Bank under an International Development Association (IDA) credit of approximately US$ 110 million for Phase 1 of a Multi-Phase Approach (MPA) program. The MPA supports Cambodia's transition to a reliable, low-carbon, and climate-resilient power system by strengthening grid infrastructure, integrating renewable energy and storage, and promoting industrial energy efficiency through concessional financing.

The Project Development Objective (PDO) is to strengthen the reliability and capacity of the national power-grid infrastructure and improve demand-side energy efficiency. The project contributes directly to Cambodia's Power Development Plan (2024) and National Energy Efficiency Policy (NEEP 2023) and supports the Government's goal of achieving 70 percent renewable-energy share by 2030.

B. Phases of the CEST Project

The CSET Project will be implemented in two sequential phases, aligned with technical readiness, financing availability, and institutional capacity:

- **Phase 1 (2026–2030)** focuses on core investments in grid strengthening and enabling infrastructure, including:
    - Construction of 230 kV overhead transmission line and substations in Phnom Penh and Kandal.
    - Installation of a 100–150 MWh Battery Energy Storage System (BESS) at GS TKM.
    - Distribution-network expansion and modernization, including AMI systems; and
    - Establishment of the Industrial Energy Efficiency Credit Line through SME Bank and FTB.

  This phase also covers initial institutional strengthening and capacity-building under Component 3.
- **Phase 2 (post-2030**) will build on Phase 1 achievements, expanding grid capacity and interconnection, scaling up industrial energy-efficiency financing, and supporting additional renewable-energy and e-mobility investments.

This ESMF covers only the activities under the Phase 1. It will be revisited and updated prior to Phase 2 appraisal to reflect any new activities, technologies, or geographical areas and to ensure ongoing compliance with World Bank and national requirements.

C. Purpose and Scope of the ESMF

The Environmental and Social Management Framework (ESMF) ensures that CSET Project activities are planned and implemented in line with the World Bank's Environmental and Social Standards (ESSs) and relevant Cambodian laws. It provides guidance for screening,

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assessing, and managing environmental and social risks and impacts throughout the project lifecycle.

Given the project's substantial risk rating—linked to infrastructure development, land acquisition, biodiversity sensitivity, and Indigenous Peoples in target areas—the ESMF outlines procedures for subproject screening, preparation of safeguard instruments, institutional responsibilities, and budgeting for mitigation and capacity building.

As specific subproject sites and detailed designs are not yet finalized at the time of appraisal, this ESMF provides a structured framework to guide the identification, assessment, and management of environmental and social risks and impacts as project details become available. To facilitate consistent and effective implementation of risks and impacts management, the ESMF includes annexes with standardized templates, procedures, and methodological guidance.

D. Project Components with Geographic Coverage

Phase 1 of the CEST project will prioritize strategic investments that enhance the reliability, efficiency, and resilience of Cambodia's power system and support the transition toward cleaner energy. It comprises three main components implemented by the EDC and the MME.

Table 1 Sub-components with geographical coverage

Project Component/Sub-component	Brief Description	Geographic Coverage
Component 1: Grid strengthening for energy transition (Implemented by EDC)		
SC 1.1: Grid Strengthening for facilitation	Construction of 230 kV double-circuit overhead transmission line (OHT)(approximately 15 km in total) and associated new substations at Arey Ksat, and Chroy Changvar III, with line bay extensions at Lvea Am substation, to support demand growth and cross-border power imports from Laos.	Phnom Penh and Kandal
SC 1.2: Battery Energy Storage Systems (BESS) investment	Installation of a 100–150 MWh BESS at GS Tboung Khmum (TKM) substation to enhance grid stability, enable load shifting, and improve operational efficiency.	Tboung Khmum Province
SC 1.3: Distribution Network Expansion and Strengthening	Expansion and rehabilitation of medium- and low-voltage (MV/LV) networks, poles, and transformers to improve service reliability, reduce technical losses, and connect remaining unelectrified villages through EDC and REE license areas. Installation of AMI meters and systems.	Tentatively up to 15 provinces across Cambodia (rural and peri-urban areas)
Component 2: Industrial Energy Efficiency and Institutional Strengthening (Implemented by MME)		
SC 2.1: Credit Line for Energy Efficiency Technologies	Provision of concessional loans to industrial enterprises via the SME Bank of Cambodia (policy bank) and Foreign Trade Bank (FTB) (participating financial	Nationwide

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Project Component/Sub-component	Brief Description	Geographic Coverage
	institution) to support adoption of energy-efficient technologies and processes.	
Component 3: Implementation Support and Technical Assistance		
SC 3.1: Implementation Support to MME	Support to MME's PMU for managing the industrial energy efficiency credit line, including training, monitoring systems, and ESF compliance.	National Level
SC 3.2: Implementation Support to EDC	Support to EDC's PMU for procurement, engineering supervision, environmental and social management, and project reporting.	National Level

E. Applicable Legal and Policy Framework

The ESMF is designed to comply with relevant Cambodian laws and regulations as well as the World Bank's ESF. Key national legal instruments include but not limited to:

- **Code on Environment and Natural Resources (2023)** – the overarching environmental legislation that consolidates and replaces the 1996 Law on Environmental Protection and Natural Resource Management. It establishes updated principles for environmental impact assessment (EIA), pollution control, biodiversity conservation, and climate change integration.
- **Prakas No. 021 on Classification of Environmental Impact Assessment for Development Projects (2000)** and subsequent sub-decrees and ministerial guidelines issued by the Ministry of Environment (MoE), which set out EIA screening, review, and approval processes.
- **Electricity Law (2001)**, which regulates electricity generation, transmission, and distribution.
- **Land Law (2001)** and **Expropriation Law (2010)**, which govern land tenure, compensation, and resettlement.
- **Labor Law (1997)**, **Occupational Safety and Health provisions**, and **construction safety regulations**.
- **Law on the Protection and Promotion of the Rights of Indigenous Peoples (2009)**, which ensures rights to consultation, cultural protection, and land use for Indigenous communities.

The project also adheres to the ten **World Bank Environmental and Social Standards (ESSs)** and the relevant **Environmental, Health, and Safety Guidelines (EHSGs)**. In cases of discrepancy between national legislation and the World Bank's requirements, the more locally relevant standards will be applied (e.g., voluntary land donation is not adopted under the CSET Project, although it is permitted under World Bank ESS5).

F. Environmental and Social Baseline Conditions

The CSET Project will support the sub-project activities in the several provinces across Cambodia, including Phnom Penh, Kandal, Tboung Khmum and other provinces, representing diverse ecological and socio-economic conditions. The physical environments in these

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provinces range from lowland floodplains and agricultural plains in the Mekong–Tonle Sap Basin to upland river systems and forested landscapes in the northeast.

From an environmental perspective, the project sites vary in sensitivity depending on their location and proximity to natural habitats. The transmission lines and substations under Sub-component 1.1 are located in the low-lying floodplain areas of Phnom Penh and Kandal, where the terrain is predominantly agricultural and already modified by human use. Screening results indicate that the proposed transmission alignment and substations are generally outside the national protected areas. However, some sections of the proposed 230 kV OHT alignment will interest the southern edge of the the Boeng Veal Samnap Key Biodiversity Area (KBA) and Important Bird Area.

The Battery Energy Storage System (BESS) under Sub-component 1.2 will be installed within the existing GS Tboung Khmum (TKM) substation located in Tboung Khmum province on EDC-owned land, and not located within or near any protected or sensitive ecological zone. Environmental sensitivities at this targeted site are therefore considered as low.

For distribution network expansion and strengthening under Sub-component 1.3, activities will be implemented across multiple provinces through EDC. Most work will occur within existing right-of-way and disturbed areas. However, certain rural locations may contain ecologically important floodplains and riverine habitats that may require site-specific screening and mitigation to avoid disturbance to sensitive ecosystems. The AMI installation will be implemented within premises of the selected areas in Phnom Penh, and Kandal.

From a social perspective, the project provinces include both densely populated urban zones and sparsely populated rural communities. In Phnom Penh and Kandal, transmission-line and substation works may temporarily affect access, utilities, or traffic near construction areas. In rural provinces, small-scale land acquisition and temporary or minor economic displacement may occur for poles, towers, or substations, to be addressed in accordance with ESS5 (Land Acquisition and Involuntary Resettlement).

Indigenous Peoples are present mainly in Tboung Khmum, Kratie, Mondul Kiri, and Kampong Chhanag Provinces, where they maintain distinct cultural and land-use traditions. Engagement with these communities will follow culturally appropriate consultation processes consistent with ESS7 (Indigenous Peoples) to ensure inclusion and respect for traditional rights.

Some sub-project activities may implement at the locations close to national cultural significance, requiring adherence to ESS8 (Cultural Heritage).

Access to electricity and basic services such as water and sanitation vary widely across the project area. Rural and remote provinces such as Kratie, Pursat, and Prey Veng still have limited electricity access and infrastructure gaps, underscoring the project's contribution to improved energy equity and service reliability.

G. Anticipated Environmental and Social Risks and Impacts

Some project activities under CSET may result in environmental and/or social risks if not properly managed. These risks vary in magnitude across components and locations, particularly where sensitive ecosystems, dense urban areas, or Indigenous communities are involved. Based on preliminary screening and assessment,

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- Component 1 (EDC): Moderate to Substantial risk. Transmission line and substations construction may cause localized vegetation clearance, soil erosion, waste generation, noise, and disturbance to nearby residents or traffic in urban and peri-urban zones. A limited number of towers intersect or border the Boeng Veal Samnab wetland KBA, requiring ESS6-compliant biodiversity mitigation. Minor to moderate land acquisition is expected for new substation plots as well as the acquisition for ROW and tower locations of OHT, invoking ESS5. Community and worker health and safety particularly for the rural areas for distribution network expansion, labor management, and hazardous-material handling (e.g., relevant to the BESS operation, transformer replacement) represent key management priorities.

- Component 2 (MME): Low to Moderate risk. The Industrial Energy Efficiency Credit Line involves downstream environmental and social risks linked to the operations of sub-borrowers. These include but not limited to resource efficiency, occupational health and safety, and wastewater and solid waste management, all to be managed through the Environmental and Social Management System (ESMS) established for the participating banks.

- Component 3 (EDC and MME): Low risk. Activities are primarily technical assistance, training, and project management support, with negligible direct environmental or social risks and impacts.

Table 2 Summary of Risk Level by Sub-components

Project Component/Sub-component	Environmental Risk	Social Risk
Component 1: Grid strengthening for energy transition (Implemented by EDC)		
SC 1.1: Grid Strengthening	Substantial	Substantial
SC 1.2: Battery Energy Storage Systems (BESS) investment	Low to Moderate	Low to Moderate
SC 1.3: Distribution Network Expansion and Strengthening	Moderate to Substantial	Low to Moderate
Component 2: Industrial Energy Efficiency and Institutional Strengthening (Implemented by MME)		
SC 2.1: Credit Line for Energy Efficiency Technologies	Low to Moderate	Low to Moderate
Component 3: Implementation Support and Technical Assistance		
SC 3.1 – Implementation Support to MME	Low	Low
SC 3.2 – Implementation Support to EDC	Low	Low

H. Mitigation Measures and Safeguard Instruments

To ensure that environmental and social (E&S) risks are properly identified, mitigated, and monitored in compliance with Cambodia's legal framework and the World Bank Environmental and Social Framework (ESF), all sub-projects and activities under the CSET Project will undergo a structured environmental and social risk management process. This approach follows the mitigation hierarchy: avoidance, minimization, mitigation/ compensation, and enhancement of positive impacts. The procedures for E&S risk management consist of systematic screening, assessment, review, approval, implementation, and monitoring of sub-projects across all relevant components. These steps are outlined in the following table:

Table 3 Steps for E&S Risks and Impacts Management Process

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Process	Timing for Screening	Responsible Entity / Person	Resource / Toolkit
Step 1: E&S Screening			
Eligibility screening	Initial planning and site selection	EDC, MME, and FIs	• Annex 1: Exclusion List
Risks & Impacts Screening	During preparation stage of the activities	PMUs of EDC, MME with support from E&S consultant	• Annex 2: Risks and impacts screening forms
Step 2: Preparation of Environmental and Social Risks and Impacts Management Tools, Approval, and implementation			
Preparation of E&S Instruments prior to the commencement of the activities, approval and implementation	Once required E&S management tools and instruments are confirmed	PMUs of EDC, MME with the support of E&S Consultants/Firm	• Annex 4: ToR of ESIA • Annex 5: ESMP template • Annex 6: ESMS template • RAP/ARAP as per RPF • IPP as per IPPF • LMP • SEP with GRMs
Step 3: Monitoring and Reporting			
Monitoring & Reporting	During implementation of sub-components /activities	PMUs of EDC and MME with the support of E&S Consultants	• Internal and External Monitoring Procedures and semi-annual reporting using E&S Monitoring and Reporting template (Annex 10)

Safeguard Instrument Requirements

- Low Risk: No detailed E&S instrument is required beyond application of Environmental and Social Codes of Practice (ESCOPs).
- Moderate Risk: Requires site-specific plans or specified plans resulted from risks and impacts screening process. These will address temporary, small-scale, site-specific and manageable risks and impacts.
- Substantial Risk: Requires site-specific ESMPs or ESIA, RAP/ARAP, and additional plans such as LMP or Fire Safety Plan, Battery Management Plan (e.g., for BESS or substations).
- High Risk: Reconsideration of design and location of the sub-project activities mitigating the risk level to the substantial risk.

I. Institutional Arrangements for ESMF Implementation

The CSET Project will be implemented by EDC and MME, with EDC leading Component 1: Grid strengthening for energy transition and MME overseeing Component 2: Industrial Energy Efficiency and Institutional Strengthening. Both agencies will be responsible for relevant sub-component of Component 3: Implementation Support and Technical Assistance, which includes capacity building, safeguards implementation, and project management support.

MME, as the national energy policy authority and secretariat of the National Energy Efficiency Committee, has established a dedicated Project Management Unit (PMU) comprising specialists in energy efficiency, procurement, environmental and social safeguards, finance,

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and management information systems. The PMU oversees concessional financing through financial intermediaries, and technical assistance aligned with Cambodia's clean energy strategy. The PMU's capacity to manage and monitor E&S compliance will be enhanced through the recruitment of part-time one Environmental Standard Consultant and one Social Standard Consultant.

EDC, the state-owned utility co-owned by MME and the Ministry of Economy and Finance (MEF), is responsible for implementing grid-related infrastructure and services. A PMU within EDC, led by the Managing Director of EDC, is supported by different departments including a Project Management Office (PMO) and specialized teams in technical operations, procurement, credit financing, and environmental and social management (SEPRO). The PMU will strengthen its E&S compliance by engaging one Environmental Standard Consultant and one Social Standard Consultant to support day-to-day operation and management.

Project governance is overseen by a Project Steering Committee (PSC) composed of representatives from the Ministry of Economy and Finance (MEF), Ministry of Mines and Energy (MME), Electricité du Cambodge (EDC), Electricity Authority of Cambodia (EAC), Ministry of Industry, Science, Technology and Innovation (MISTI), SME Bank of Cambodia, and the Foreign Trade Bank of Cambodia (FTB), with the World Bank participating as an observer. The PSC ensures inter-agency coordination, alignment with government policy, approval of annual work plans and budgets, and transparent implementation of all project components.

J. Capacity Development

A capacity needs assessment was conducted during project preparation to evaluate the institutional readiness of the implementing agencies—Ministry of Mines and Energy (MME), Electricité du Cambodge (EDC), and the participating banks (SME Bank and Foreign Trade Bank (FTB) - to manage environmental and social (E&S) risks and ensure compliance with World Bank Environmental and Social Framework (ESF) requirements. The assessment revealed varying levels of capacity across institutions, with tailored capacity-building plans developed accordingly.

The capacity-building plan—comprising general, technical, and specialized training modules—is fully integrated into the project's ESMF to ensure all implementing agencies are equipped to manage environmental and social risks in compliance with national legislation and World Bank standards throughout the project lifecycle.

K. Stakeholder Engagement

The CSET Project promotes inclusive and meaningful stakeholder engagement across all project stages, with an emphasis on transparency, accountability, and accessibility. A Stakeholder Engagement Plan (SEP) has been developed to guide the disclosure of project information and ensure the participation of all stakeholders, including vulnerable groups at risk of exclusion from project benefits.

During project preparation, EDC and MME conducted consultations with key stakeholders, including local authorities, provincial EDC offices, REEs, and village communities in project target areas across Kratie, Steung Treng, Pursat, Takeo, Prey Veng, and Kandal Provinces. These consultations informed project design, especially for rural electrification. Public disclosure of key Environmental and Social (E&S) instruments—including the ESMF, ESCP, SEP, RPF, and IPPF—will be carried out through EDC and MME websites, with Khmer-language

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summaries provided for accessibility. These documents will be made available at least 14 days prior to consultation meetings, and feedback from stakeholders will be incorporated into final versions.

The SEP outlines responsibilities for stakeholder engagement, particularly by the PMUs at EDC and MME, and describes mechanisms for grievances, feedback, and ongoing communication. Planned consultations for each sub-component are detailed by level (national, provincial, district/commune), including targeted participants and timing.

During implementation, continued stakeholder engagement and disclosure will be maintained. EDC and MME will disclose project updates and site-specific environmental and social documents (e.g., ESIA, ESMP, ESMS) via official websites, social media, and physical locations near project sites. These documents will be disclosed at least 14 days before consultations, and sessions will be conducted in local languages to ensure understanding and inclusion. Monitoring reports and project progress updates will also be publicly disclosed throughout the project lifecycle.

L. Grievance Redress Mechanism (GRM)

The CSET Project will establish a robust Grievance Redress Mechanism (GRM) to ensure that project-affected individuals, workers, and other stakeholders can raise concerns related to environmental and social performance, including land acquisition, labor issues, construction impacts, SEA/SH, and more. GRM is accessible, confidential, and responsive, with clearly defined procedures and timeframes.

For Component 1, implemented by Electricité du Cambodge (EDC), two main channels at the 1st stage will be in place such as community/authority channels, where grievances can be raised through village/commune chief or commune councils; and contractor-level resolution, where worker related grievances can be submitted directly to the contractor or site supervisor through complaint boxes or on-site contact points, and then those grievances will be reviewed and resolved by EDC's Social, Environmental and Public Relations Office (SEPRO). Unresolved complaints are escalated to the District Office for resolution and report to the EDC PMU as 2nd stage and Provincial Grievance Redress Committee at 3rd stage and, if necessary, to the court system as 4th Stage. The PER&L under the PMU, maintains the grievance log, monitors progress, and reports outcomes to the World Bank as part of regular E&S performance reporting.

For Component 2, led by MME, grievances related to industrial enterprises (IEs) are first addressed through internal GRMs of policy bank (e.g., SME Bank) and participating financial institution (e.g. FTB), with escalation to the MME's PMU and courts if needed. The E&S Focal Point from MME's PMU tracks and reports the outstanding complaints to the Project Steering Committee and the World Bank as required through monitoring and reporting mechanism.

Multiple channels, including in-person, phone, SMS, email, and anonymous submissions—are available. A dedicated labor GRM is included under the project's LMP, and SEA/SH complaints are handled with survivor-centered protocols and referral mechanisms in line with international good practices.

M. Monitoring, Reporting

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The CSET Project incorporates a comprehensive Monitoring and Reporting (M&R) framework to ensure timely and effective implementation of environmental and social (E&S) risks and impacts management across all project components. The E&S Focal Points with the support of Environmental and Social Standard Consultants at the PMUs will be responsible for supporting the PMU for E&S monitoring and reporting. Internal monitoring is conducted by the implementing agencies—EDC and MME—through their respective PMUs. EDC, supported by the PMO, PER&L and SEPRO, leads monitoring for Component 1, focusing on compliance with SS-ESMPs, site supervision, community consultations, stakeholder engagement, and grievance tracking. MME oversees Component 2, with regular monitoring carried out by the Policy Bank and Participating Financial Institution, who are responsible for screening, site supervision, E&S documentation, and reporting.

External monitoring, aligned with the World Bank's ESF, will be conducted by qualified third-party experts to independently verify E&S performance, particularly for high-risk activities. These experts will coordinate with PMUs and report their findings to MME and the World Bank.

The PMUs of EDC and MME will perform regular semi-annual reporting to the Bank. All contractors and implementing partners (including EDC, contractors and Financial Institutions) will be required to prepare quarterly environmental and social reports and submit them to the PMUs. These inputs will feed into the consolidated quarterly or semi-annual report submitted to the World Bank.

In the event of incidents, the PMUs must notify the World Bank within 48 hours and submit a detailed report within 10 working days, including root cause analysis and a Corrective and Preventive Action Plan (CAPA). All contractors and EDC teams must maintain site-specific incident registers and report serious events such as fatalities, forced evictions, SEA/SH, or major environmental damage immediately.

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1. INTRODUCTION

1.1. Project Background

The Royal Government of Cambodia (RGC), through the Ministry of Mines and Energy (MME) and Electricité du Cambodge (EDC), is implementing the Cambodia Sustainable Energy Transition (CSET) Project with financial support from the World Bank under an International Development Association (IDA) credit of approximately *US*$ 110 million for Phase 1 of a multi-phase investment program.

The project is designed under a Multi-Phase Approach (MPA) to accelerate Cambodia's transition to a reliable, low-carbon, and climate-resilient power system. It will strengthen transmission and distribution infrastructure, integrate renewable energy and storage, and promote industrial energy-efficiency investments through concessional financing mechanisms.
The Phase 1 investment program (2026–2030) will focus on:

- strengthening grid reliability and capacity in the Phnom Penh–Kandal corridor.
- deploying grid-scale Battery Energy Storage Systems (BESS) to enable renewable integration and load shifting.
- expanding and reinforcing distribution networks in priority EDC service areas and
- supporting industrial energy-efficiency financing through a simplified credit-line arrangement managed by MME.

These activities will contribute to achieving the government's energy transition targets - 70 percent renewable energy share by 2030 - while improving power quality, system stability, and private-sector competitiveness.

1.2. Objectives of ESMF

The ESMF provides a framework for identifying, assessing, and managing environmental and social (E&S) risks and impacts associated with CSET Project activities in accordance with:

- the World Bank Environmental and Social Framework (ESF) and its Environmental and Social Standards (ESSs); and
- applicable laws and regulations of the Kingdom of Cambodia, including the Code on Environment and Natural Resources (2023) and related sectoral instruments.

The ESMF ensures that project interventions are implemented in an environmentally sound and socially responsible manner by:

- establishing clear screening and assessment procedures for sub-projects and activities.
- defining institutional responsibilities for Environmental and Social (E&S) management and monitoring.
- providing standardized templates and guidance for the preparation of site-specific instruments (ESIA, ESMP, RAP/ARAP, IPP, ESMS for FIs, etc.).
- ensuring stakeholder engagement and disclosure throughout the project cycle and
- supporting capacity-building of implementing agencies (EDC, MME, SME Bank, and FTB) to comply with national and World Bank requirements.

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1.3. Scope of ESMF

At the time of Phase 1 appraisal, detailed design and exact locations for several sub-projects—particularly transmission lines, substations, and BESS sites—remain under preparation. Accordingly, this ESMF serves as a framework document that defines the environmental and social management principles, processes, and instruments to be applied once site-specific information becomes available. The ESMF applies to all activities financed under Phase 1 of the CSET Project, including:

- Component 1: Grid Strengthening for Energy Transition (transmission, substations, BESS, and distribution upgrades) implemented by EDC.
- Component 2: Industrial Energy Efficiency Credit Line, implemented by MME through SME Bank (as policy bank) and the Foreign Trade Bank (FTB) (as participating financial institution) and
- Component 3: Implementation Support, providing technical assistance, capacity-building, and safeguards management support to EDC and MME.

Future phases of the MPA may include additional investments such as electric-vehicle (EV) infrastructure, rural electrification, and clean-cooking initiatives; these will be addressed in subsequent updates to the ESMF.

The framework follows the **mitigation hierarchy**—avoid, minimize, mitigate, and compensate—and includes procedures for –

- Environmental and Social Risks and Impacts screening
- Risk Classification, including **Critical Habitat Assessment** for transmission corridors, etc. .
- Procedures for preparation, review, approval, and disclosure of sub-project-specific instruments, and
- Internal and external monitoring, reporting, and grievance management.

The ESMF report is organized as follows:

- Chapter 1 (this chapter) provides a brief overview of the Project background, objectives and scope of the ESMF.
- Chapter 2 elaborates the CSET development objectives and components and sub-components.
- Chapter 3 outlines the relevant policies, legal and institutional framework including gap analysis between RGC's relevant legislation and WB's ESSs for the Project.
- Chapter 4 presents the information on environmental and social baseline conditions of the target provinces under the project, along with site-specific preliminary baseline data for project activities at known locations during the preparation stage.
- Chapter 5 identifies the potential environmental and social impacts associated with activities in each sub-component and proposes the mitigation measures.
- Chapter 6 provides guidance for the environmental and social management approach and procedures for each component.
- Chapter 7 describes the institutional arrangement for the implementation of ESMF and capacity building plan for the implementing agencies (MME and EDC).
- Chapter 8 outlines the process of stakeholder consultation and engagement, including procedures for disclosure and consultation of ESMF.
- Chapter 9 presents the Grievance Mechanisms for each implementing agencies to be operated under the Project.
- Chapter 10 and 11 describe the monitoring and reporting procedures and the proposed budget for implementation of ESMF, respectively.

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A series of technical annexes give specific guidance on methodologies and procedures to be applied in managing specialized aspects of environmental and social aspects of the CSET Project. These include Annexes on exclusion list, screening of project activities and other safeguard instruments. They are intended to serve as a minimum standard for identifying, assessing, and mitigating project-related risks. The instruments may be modified or adjusted from time to time in response to operational experience, incorporating feedback from affected stakeholders or implementing agencies of the CSET project.

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2. PROJECT DESCRIPTION

2.1. Project Development Objective

The Project Development Objective (PDO) of the CEST Project is to strengthen the reliability and capacity of the power-system grid infrastructure and improve demand-side energy efficiency.

Phase 1 of the CSET Project (2026–2030) will support priority investments that enable the country's clean-energy transition and climate commitments. The project will enhance grid reliability in the Phnom Penh–Kandal corridor, increase flexibility for renewable-energy integration through battery storage, and scale up industrial energy-efficiency investments. These activities contribute directly to the National Energy Efficiency Policy (NEEP) and Cambodia's Power Development Plan.

2.2. Project Beneficiaries

The project will benefit a broad range of stakeholders, including:

- **Households and communities** in Phnom Penh and Kandal provinces who will experience improved electricity reliability, reduced power interruptions, and more stable supply from the strengthened grid and upgraded distribution systems.
- **Industrial and commercial enterprises**, especially in energy-intensive sectors such as manufacturing, agro-processing, and construction materials, which will gain access to concessional financing for energy-efficient technologies and equipment under the Industrial Energy Efficiency Credit Line.
- **Government institutions**, including the Ministry of Mines and Energy (MME), Electricité du Cambodge (EDC), Electricity Authority of Cambodia (EAC), Ministry of Economy and Finance (MEF), SME Bank of Cambodia, and Foreign Trade Bank (FTB), which will receive technical assistance, training, and institutional-capacity support to manage energy-transition investments and environmental and social (E&S) risk.
- **The wider Cambodian population**, who will benefit indirectly from lower greenhouse-gas emissions, improved air quality, and greater energy security through diversification of the national power supply mix.

2.3. Phases of CEST Project

The CSET Project will be implemented in **two sequential phases** to align with financing availability, readiness of technical designs, and implementation capacity of the implementing agencies.

Phase 1 (2026 – 2030): This phase will focus on core grid strengthening and enabling investments, including the 230 kV, associated substations in Phnom Penh and Kandal, and the Battery Energy Storage System (BESS). It will also initiate key distribution network expansion works in priority rural areas as well as AMI/SCADA integration, establish the Industrial Energy Efficiency Credit Line through the participating financial institutions (SME Bank and FTB), and launch capacity-building and project-management activities under Component 3. Total financing for Phase 1 is estimated at US$ 110 million, implemented primarily by EDC and MME.

Phase 2 : Building on Phase 1 achievements, Phase 2 will expand grid capacity and coverage such as 115kV transmission line to connect the sub stations constructed under Phase 1, scale up industrial energy-efficiency financing, and deepen distribution network improvements. It will also provide continued technical assistance and institutional capacity strengthening for both implementing

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agencies. The Phase 2 envelope is approximately US$ 49.5 million, subject to performance and readiness criteria agreed with the World Bank.

This ESMF covers the activities planned under Phase 1, which have defined technical scopes and locations. When Phase 2 activities are ready for implementation, the required environmental and social due diligence will be carried out in accordance with the World Bank Environmental and Social Framework (ESF) and relevant national regulations. The ESMF will be revisited and updated as necessary to ensure continued compliance with evolving project design and environmental and social requirements.

2.4. Project Components and Its Sub-components

The components and sub-components to be implemented under Phase 1 are outlined below.

Component 1: **Grid strengthening for Energy Transition (Implemented by EDC – US$ 115 million IDA)**
This component addresses the urgent need to reinforce grid capacity and reliability in support of renewable-energy integration. It includes three sub-components.

Table 2-1 Sub-component of Component 1

Sub-Component	Description	Indicative Budget (US$ Million)
1.1 Grid Strengthening (Transmission Lines and Substations)	Construction of one 230 kV and one 115 kV double-circuit transmission line (approx. 15 km) connecting Lvea Am – Arey Ksat – Chroy Changvar III – Wat Phnom, including two new GIS substations (ARK and CCVIII) and extensions at Lvea Am, GS Wat Phnom and GS 9. Supports Phnom Penh load growth and clean-power imports from Laos.	43.5
1.2 Battery Energy Storage System (BESS)	Deployment of 100–150 MW grid-scale BESS to enhance system stability and enable load shifting for renewable energy integration. Hazard/risk assessment to be undertaken during implementation.	35
1.3 Distribution Network Expansion and Strengthening	Upgrade and extend distribution lines (MV/LV, poles, transformers) in EDC license areas to reduce losses and improve service quality; prepare for future e-mobility connections. Installation of Advanced Meter Infrastructure (AMI) will also be included as part of the component.	15

Component 2: Industrial Energy Efficiency Improvement (Implemented by MME – US$ 15 million IDA)

This component promotes the adoption of energy-efficient technologies across Cambodia's industrial sector through concessional credit facilities.

Table 2-2 Sub-component of Component 2

Sub-Component	Description	Indicative Budget (US$ Million)
2.1 Industrial Energy Efficiency Credit Line	Establishment of a credit line managed by MME and implemented through the SME Bank of Cambodia (as Policy Bank) and the Foreign Trade Bank (FTB) (as Participating Financial Institution). Financing will be provided to industrial enterprises for eligible energy-efficiency technologies. The	15

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Sub-Component	Description	Indicative Budget (US$ Million)
	credit line will support both direct (Type-A) lending model and indirect (Type-B) lending model.	

Component 3: Implementation Support and Technical Assistance (US$ 6.5 million – US$ 1.5 million IDA + US$ 5 million Grant)

Table 2-3 Sub-component of Component 3

Sub-Component	Description	Indicative Budget (US$ Million)
3.1 Implementation Support to MME	Grant support to strengthen MME capacity to manage the energy-efficiency credit line and oversee environmental and social risk management. Covers training, technical consultancy, development of Operational Manual, and ESMS capacity building for policy banks.	5 (Grant)
3.2 Implementation Support to EDC	Technical and safeguards support for EDC's PMU on procurement, financial management, engineering supervision, and E&S compliance monitoring through SEPRO.	1.5 (IDA)

2.5. Project's Activities and Its Locations

Most of the activities under component 1 are concentrated in Phnom Penh and Kandal provinces, where the transmission and substation investments are located. The distribution and energy-efficiency investments will extend to the other provinces as well. Exact sub-project sites for distribution upgrades will be finalized at a later stage and are subject to environmental and social screening as outlined in Chapter 6.

2.5.1. Component 1 Grid strengthening for energy transition.

2.5.1.1. Sub-Component 1.1 Grid Strengthening (Transmission Lines and Substations)

This sub-component involves the construction of new overhead transmission lines and substations to reinforce grid reliability and expand capacity within the Phnom Penh–Kandal corridor. It includes the following indicative elements:

- Approximately 15 km of 230 kV double-circuit overhead transmission line connecting the existing Lvea Am (LVA) substation to the proposed Arey Ksat (ARK) substation.
- Construction of two new GIS substations at ARK and CCVIII, together with two 230 kV line-bay extensions at LVA.

The 15km of 230 kV route has been proposed by EDC based on preliminary feasibility studies and represents the most technically and economically viable alignment identified to date. However, the final alignment has not yet been confirmed. Alternative routing options and substation locations will be further analyzed during detailed design and environmental and social impact assessment. Any revisions to the plan will be carefully considered through the project's environmental and social assessment procedures, in accordance with this ESMF and applicable national requirements.

The indicative locations of the transmission lines and substations under this sub-component are illustrated in the figure below.

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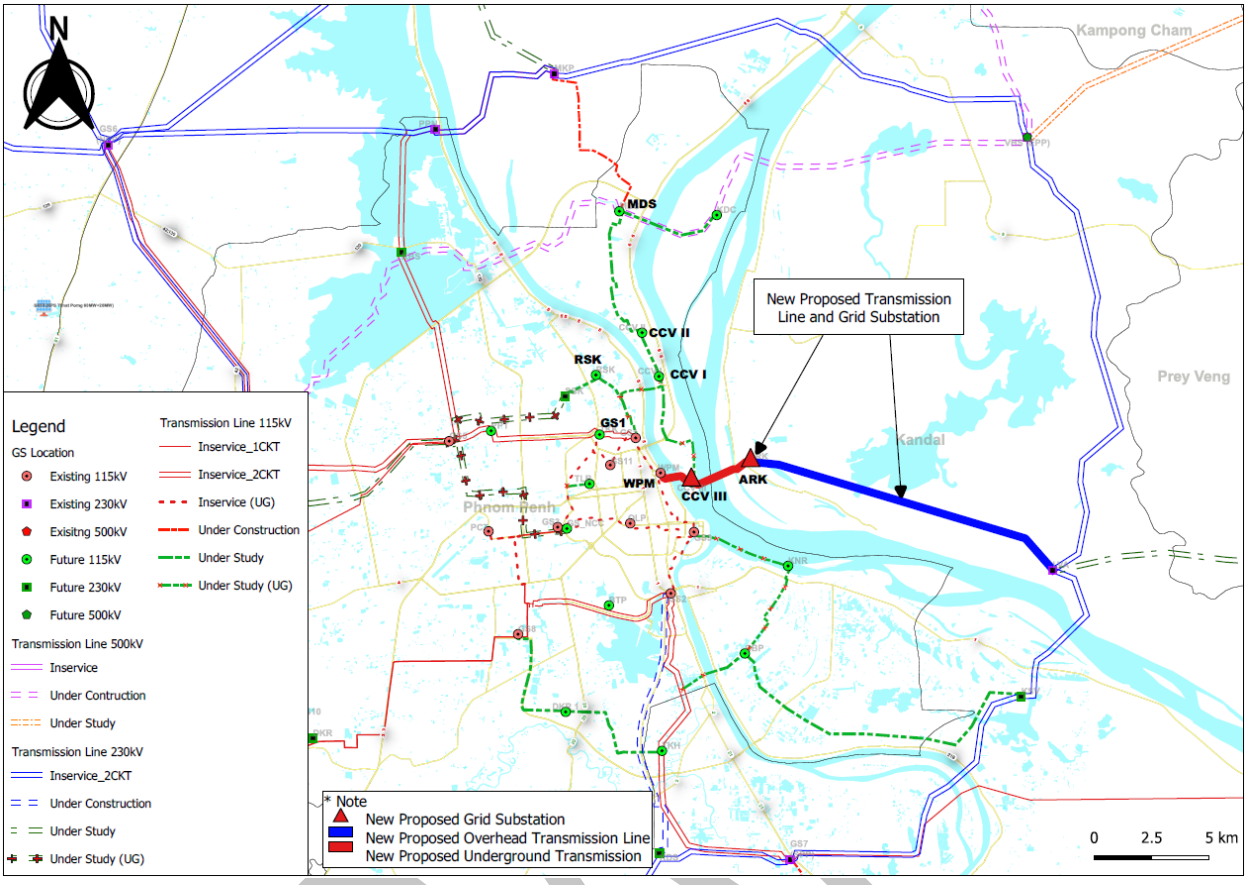

Figure 2-1 Location Map of Proposed Overhead Transmission Lines and Substations

Source: EDC

Note: Underground transmission lines is not included in the Phase I but planned to be implemented under Phase II.

Table 2-3 Description of Proposed Transmission Lines and Substations

Proposed Transmission Lines and Substations	Name	Area / Distance	Latitude	Longitude	Status
230kV overhead transmission lines	From LVA to ARK	15 km	- (Starting Point)	- (End Point)	New
230kV underground transmission	From CCVIII to Wat Phnom	2 km	- (Starting Point)	- (End Point)	New
Existing Substation	GS – 47 (LVA)	387107 m^2	11° 32'10.72"N	105° 4'41.07"E	Existing
Construction of Substation	ARK (80m x 60m)	4800 m^2	TBD	TBD	New
Construction of Substation	CCVIII (60m x 30m)	1800 m^2	TBD	TBD	New
Existing Substation	Wat Phnom GS 57	1736 m^2	11 °34'35.11"N	104° 55'32.05"E	Existing

2.5.1.2. Sub-Component 1.2 Battery Energy Storage System (BESS)

A 100–150 MW / 200 MWh stand-alone Battery Energy Storage System (BESS) is planned for development under Sub-Component 1.2 of the CSET Project. The BESS will serve as a utility-scale, grid-connected facility designed to provide fast-response energy storage and frequency-control services, enhance load-management efficiency, and support Cambodia's 2030 renewable-energy targets. The system will perform multiple grid functions, including:

- Primary, secondary, and tertiary frequency regulation.
- Peak-shaving and load-shifting to reduce system stress and optimize dispatch, and
- Firming of variable renewable energy (VRE) from solar PV and wind resources as Cambodia transitions away from coal and large hydro generation.

Designed for rapid deployment and compliant with international technical and safety standards, the BESS will contribute to modernizing the national power system and improving grid stability and resilience.

The GS TKM substation is tentatively selected following comparative assessment of six candidate 230 kV substations—GS 6, GS 12, GS TKM, GS Bati, GS EPP, and GS KDS—based on criteria including available land, flood risk, proximity to load and Variable Renewable Energy (VRE) centres, and transfer capacity. GS TKM ranked among the top feasible sites, offering available land for BESS installation (approximately 1.7 ha) owned by EDC, no overlap with protected areas, adequate distance from sensitive receptor areas (school, market,etc.) and favourable connectivity to planned renewable-energy hubs in the eastern region. The geographic distribution of substations assessed for BESS installation is presented in the figure below.

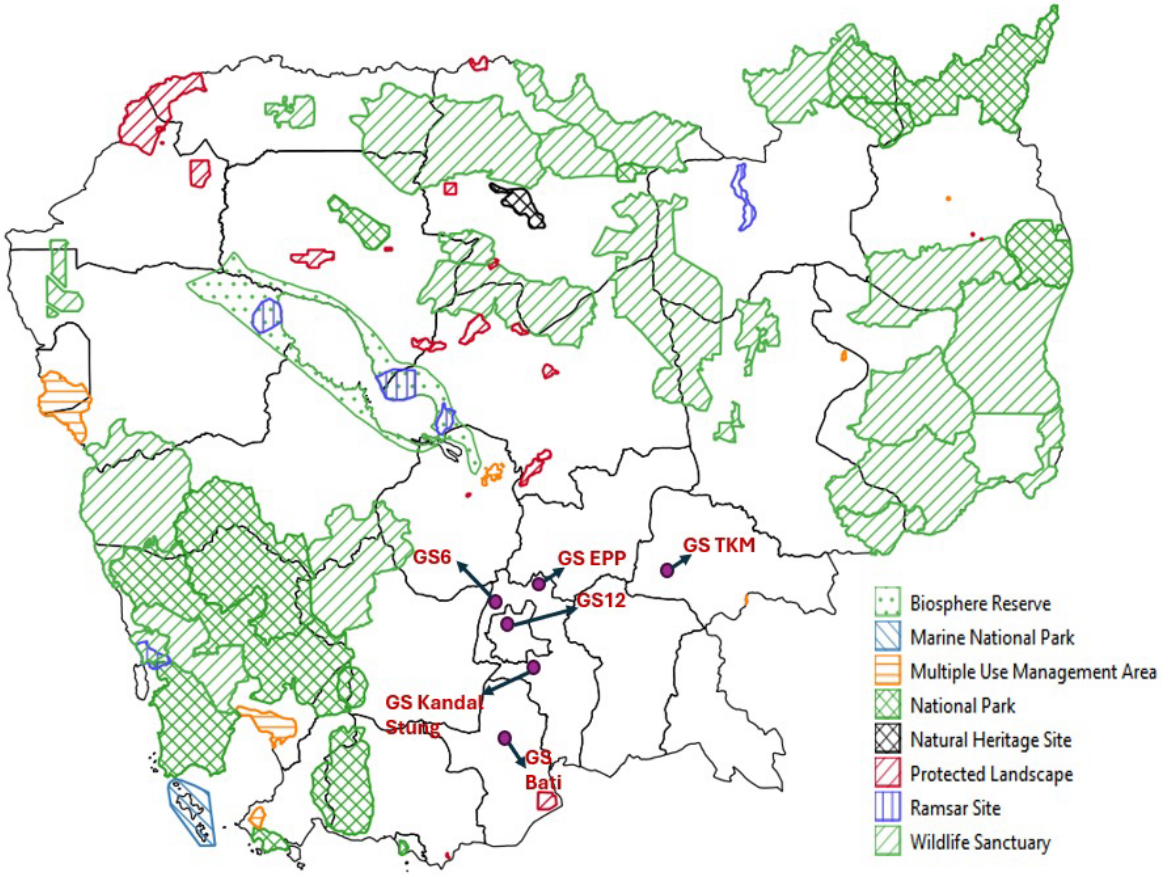

Figure 2-2 Locations of Substations Screened for BESS

(a) Key Component of BESS Substation

The BESS substation should be designed to enable energy exchange between the BESS and the grid. To achieve this, a BESS project typically includes the following key components:

Electrical infrastructure	Other permanent on-site ancillary infrastructure	Temporary construction of ancillary facilities
• A BESS comprised of batteries installed in a building or enclosures/containers and associated ancillary infrastructure • Power Conversion Stations (PCSs), including inverters, transformers and switchgear • A project substation and control room within the developable footprint • Underground and overhead electrical reticulation connecting the battery containers to PCSs, the PCSs to the substation, and an underground or overhead high voltage transmission line from the substation to electricity transmission network • Other electrical infrastructure as required	• Control room • Site office • Maintenance and spare parts storage facility including a maintenance workshop • Onsite car parking area • Weather stations • Lighting and closed-circuit television (CCTV) • Security fence around the site perimeter and vegetation screening, where required • Lightning protection • Access track network • Access and egress points from public roads • Internal access tracks	• Construction compounds • Laydown areas • Construction access tracks and associated infrastructure

In a BESS setup, battery modules consist of individual cells that store energy, with each module managed to charge and discharge as needed. These modules are installed in racks, which are then linked together in strings. The battery strings are connected to inverter stations. The BESS is designed to include a combination of buildings or containers housing the batteries, power conversion systems (PCSs), and various cables, providing a total capacity of approximately 100–150 MW / 200 MWh.

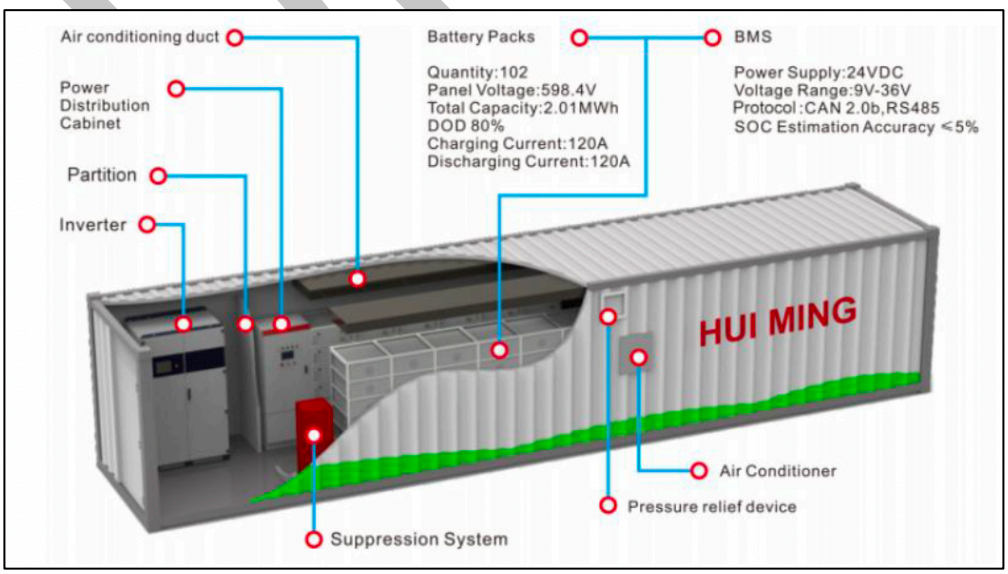

Figure 2-3 The Main Component of BESS Container

Source[1]

[1] https://www.linkedin.com/pulse/main-components-containerized-bess-coco-liufu/

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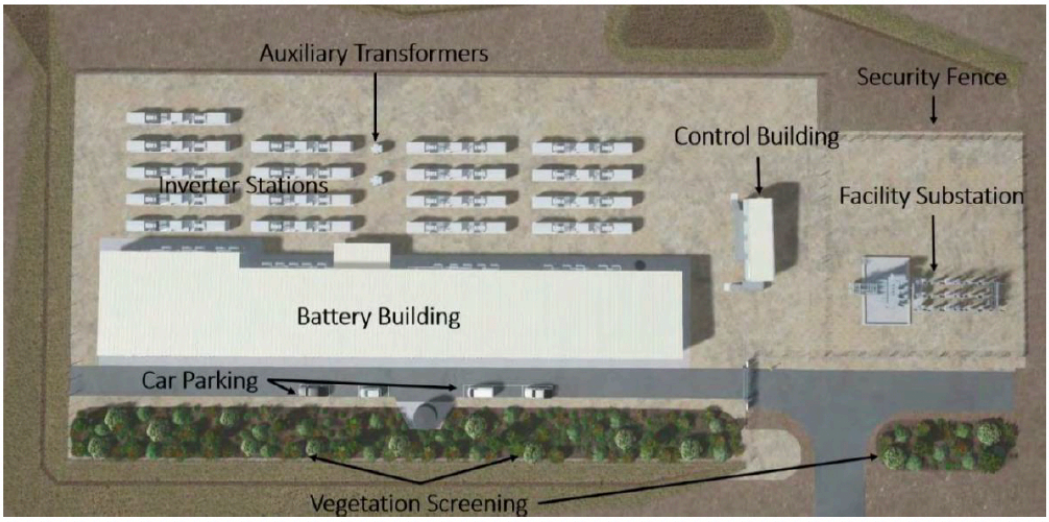

Figure 2-4 Example of BESS Layout

Source: Venaenergy[2]

(b) Tentatively Selected Substation for BESS (GS TKM)

The Grid Substation Tboung Khmum / TKM (GS48), tentatively selected for the installation of the Battery Energy Storage System (BESS), is a 230 kV facility located in Ponreay Village, Sangkat Soung, Krong Soung, Tboung Khmum Province. Established in 2018, the substation is part of the national transmission network operated by EDC and plays a critical role in stabilizing power flow between the southern and eastern grid corridors. The site visit to the GS TKM is conducted on 24 October 2025 to confirm the suitability of the designated area and layout, to identify potential environmental, social, occupational health and safety risks, to confirm the practices and procedure emergency plan, and to verify the presence of nearby sensitive receptors.

The proposed BESS will be installed within the existing substation boundary, occupying approximately 1.69 hectares (130m × 130m) of vacant land owned by EDC. No additional land acquisition or resettlement is required, and no informal land users or structures were found within or around the site. The GS TKM site lies outside flood-prone, environmentally sensitive, or densely populated areas, with the nearest residences located approximately 600 meters away. The surrounding land—also owned by EDC—is currently leased for short-term agricultural use, which can be discontinued without impact when construction begins. The area is accessible by existing paved roads and already equipped with internal drainage and fencing. Only minimal shrub clearance will be required before site preparation.

The substation provides a robust electrical connection through existing 230 kV circuits and offers adequate grid stability for integrating the proposed 100–150 MW / 200 MWh BESS. The installation will enhance load management, frequency regulation, and renewable energy integration, particularly benefiting variable renewable energy (VRE) sources such as solar PV and wind from central and northeastern Cambodia.

The site location presents low environmental and social risk, with no protected areas, water bodies, or cultural heritage sites nearby. The site already has existing Occupational Health and Safety (OHS) measures, emergency response procedures, and fire suppression systems in place.

[2] https://www.venaenergy.com.au/wp/wp-content/uploads/2023/04/20230414-Belhaven-BESS-Scoping_Final_v4.0.WebsiteV.pdf

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Table 2-4 Description of Selected Substation for BESS Installation (Tentative)

Substation for BESS	Name	Area (ha)	Latitude	Longitude	Status
Existing Substation (Potential Substation for BESS Installation)	GS Tboung Khmum / TKM (GS48)	1.69	11°53'24.00"N ,	105°40'48.00"E	Existing

Figure 2-5 GS TKM Substation and BESS target location

2.5.1.3. Sub-Component 1.3 Distribution Network Expansion and Strengthening

This sub-component aims to improve the reliability, resilience, and operational efficiency of Cambodia's power-distribution network within EDC-licensed service areas. It will finance upgrades and extensions of medium- and low-voltage networks—including lines, poles, transformers, and switchgear—to reduce technical losses, address growing electricity demand, and enhance voltage stability in both urban and rural load centers. The proposed grid improvement and expansion activities by both EDC and Rural Electricity Enterprises (REEs) are summarized in the tables below.

This sub-component will support the deployment of electric-vehicle (EV) charging infrastructure in Phnom Penh, Kratie and Prey Veng provinces initially as part of Cambodia's broader energy-transition strategy. This includes the installation of approximately 25 public charging stations, each capable of fast charging up to four vehicles simultaneously. To supply the charging stations, the project will finance the installation of new transformers, or the replacement of existing transformers where capacity is insufficient. The electrical connection will be made through new overhead MV lines routed from the nearest existing MV feeders or substations to the designated transformer sites.

This component also involves converting single phase and 3 phase meters in both Phnom Penh and Kandal provinces, including the already installed Advanced Meter Readers (AMR) with Advanced Metering Infrastructure (AMI) and the associated soft and hard infrastructure to lay the foundation for the development of a smart grid.

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The list of Grid Improvement investments proposed by EDC is presented in the following table:

Table 2-5 Grid Improvement Activities along with grid extension

No.	Description	Unit	Quantity	Location	Type of Investment
1	Underground Cable (Connection from Substations to Initial MV Lines)	km	14.04	Phnom Penh, Kandal, Tboung Khmum, Battambong, Preash Shihanouk, Kratie, Koh Kong	Grid Improvement
2	Overhead Line (MV)	km	105.28		Grid Improvement
Total			**119.32**		

The list of the support on EV infrastructures is tabulated in the table below.

Table 2-6 Proposed investment plan for EV infrastructure

No.	Description	Unit	Quantity	Location	Type of Investment
1	Overhead Line (MV)	cct-km	220	Phnom Penh, Kratie, Prey Veng	Support for EV Infrastructure
2	Transformer 800kVA	set	28		Support for EV Infrastructure
3	Transformer 250kVA	set	39		Support for EV Infrastructure
4	Transformer 160kVA	set	44		Support for EV Infrastructure

Table 2-7 Description of Provinces and Communes for AMI Meter Installation

Provinces	Covered Communes	Number of Single-Phase Meter	Number of Three-Phase Meter	Number of Single-Phase Meter (Total)	Number of Three-Phase Meter (Total)	Note
Phnom Penh	TBD	TBD	TBD	29,500	60,000	
Kandal	TBD	TBD	TBD			

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Figure 2-6 Proposed Locations for EV Charging Stations in Phnom Penh (In front of MME and EDC offices)

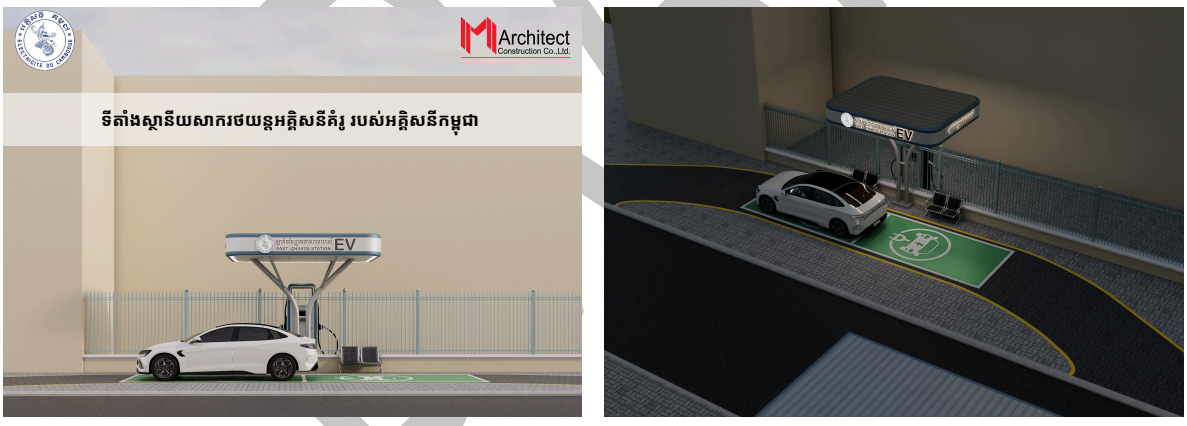

Figure 2-7 Proposed Design Layout of Charging Station and Parking Area

2.5.2. Component 2 Industrial Energy Efficiency (MME)

This component aims to promote sustainable industrial growth and reduce greenhouse-gas emissions by scaling up the adoption of energy-efficient (EE) technologies and practices in Cambodia's manufacturing and commercial sectors. It will address the key barrier of limited access to long-term finance for energy-efficiency investments by establishing a dedicated Industrial Energy Efficiency Credit Line.

The objective of this component is to catalyze investment in EE technologies that enhance productivity, lower production costs, and contribute to Cambodia's National Energy Efficiency Policy (NEEP) target of a 19 percent reduction in energy intensity by 2030.

The component will be implemented by the Ministry of Mines and Energy (MME) through two banks:

- SME Bank of Cambodia, a state-owned commercial bank, will act as the Policy Bank, administering the IDA credit line and on-lending to industrial enterprises directly, referred to as Type A loans.
- Foreign Trade Bank (FTB) with 10% of state ownership. will serve as the Participating Financial Institution (PFI), receiving funds from SME Bank to provide end-borrowers with established energy-efficiency project pipelines, referred to as Type B loans.

MME will provide overall policy guidance, technical oversight, and environmental and social (E&S) risk-management supervision for the credit line. MME's Project Management Unit (PMU) will supervise and guide to SME Bank and FTB on appraisal, monitoring, and reporting of sub-loans.

2.5.2.1. Eligible Activities

The Industrial Energy Efficiency Credit Line will finance investments that deliver measurable energy savings and emissions reductions in Cambodia's industrial sector. The credit line will prioritize energy-intensive enterprises with verifiable efficiency potential, consistent with the National Energy Efficiency Policy (NEEP 2023).

The MME, as the implementing agency, will develop, maintain, and periodically update a list of eligible technologies and subsectors that have the highest energy-saving potential. This list will guide the appraisal of sub-loans by the participating financial institutions.

Illustrative eligible investments may include high-efficiency motors, compressors, chillers, boilers, lighting systems, waste-heat recovery, and other equipment or process improvements that yield verifiable energy-efficiency benefits.

Eligible subsectors are expected to focus on industrial and manufacturing enterprises such as textiles, food and beverage processing, construction materials, and light manufacturing. Other sectors (e.g., agro-processing or services) may be considered only if they meet the technical and environmental eligibility criteria established by MME and the participating banks (SME Bank and FTB), respectively.

All sub-loans will undergo environmental and social risk screening through the participating banks' Environmental and Social Management Systems (ESMS), consistent with ESS9 and the exclusion list provided in Annex 1 of this ESMF.

2.5.3. Component 3: Implementation Support and Technical Assistance

This component provides technical assistance and institutional support to strengthen the capacity of the MME, EDC and participating financial institutions to effectively implement and monitor the CSET Project. It will finance project management, training, consultancy services, and environmental and social (E&S) capacity building. The component includes two main sub-components:

- Sub-Component 3.1: Implementation Support to MME (US$ 5 million, grant) – This sub-component will strengthen MME's institutional and technical capacity to oversee the Industrial Energy Efficiency Credit Line (Component 2), including development of the Operational Manual, establishment of the ESMS for SME Bank and FTB, and provision of training on E&S risk management, gender, and grievance handling.

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- Sub-Component 3.2: Implementation Support to EDC (US$ 1.5 million, IDA) – This will support EDC's Project Management Unit (PMU), including technical supervision, procurement and financial management support, and environmental and social compliance monitoring through EDC's Social, Environmental, and Public Relations Office (SEPRO).

2.6. Project Geographical Coverage and Area of Influence

The Phase 1 of the CSET Project will be implemented primarily within EDC's licensed service areas in Cambodia, focusing on the national load centre and surrounding provinces that require grid reinforcement and capacity expansion. The project will finance investments in transmission lines, substations, distribution networks, and a utility-scale BESS to strengthen grid reliability and enable the integration of renewable energy sources.

Component 1 - transmission and substation investments will concentrate along the Phnom Penh–Kandal corridor, while distribution-network improvements and grid-extension works will occur across selected service areas across the country where demand growth and network upgrades are prioritized under EDC's grid improvement program. These areas represent a mix of urban, peri-urban, and rural settings aimed at enhancing service reliability and improving the accessibility to the existing electrified communities.

Component 2 - Industrial Energy Efficiency Credit Line will be implemented nationwide, as sub-loans will be extended to eligible industrial enterprises across the country through policy bank and participating financial institution. Hence, the geographical coverage of this component is considered as national at this stage.

Component 3 - Implementation Support and Technical Assistance will mainly support institutional strengthening, training, and capacity-building activities for EDC and MME including the policy bank and participating financial institution. Therefore, this component will focus on technical assistance on capacity building and does not involve any civil works or site-specific interventions.

2.6.1. Project's Area of Influence (AOI)

The Area of Influence (AoI) is applicable primarily to Component 1, which involves physical infrastructure investments. Since the detailed engineering designs and subproject exact locations for Component 1 are still being finalized, this ESMF defines a provisional Area of Influence (AoI) covering the indicative grid corridors and distribution areas. The indicative AoI for Component 1 covers all physical works associated with the construction and operation of transmission lines, substations, the BESS, and distribution-network upgrades. It includes:

- **Primary impact zones:** physical footprints of new transmission lines, substations, distribution works, and the BESS facility, including temporary construction areas, access roads, and rights-of-way.
- **Secondary impact zones:** nearby communities (generally within 500 meters) that may experience temporary construction-related impacts such as dust, vibration, noise, or restricted access.
- **Cumulative-impact zone:** the broader network of areas where multiple energy and infrastructure projects (e.g., bridges, roads, and power facilities) may interact with CSET activities.

While acknowledging the nationwide operational coverage, the precise AoI in line with ESS1 and the World Bank General EHSGs will be refined in site-specific E&S assessment (Environmental and Social Impact Assessment (ESIA) or Environmental and Social Management Plan (ESMP) , as per screening outcomes and the site-specific details.

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3. POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

3.1. Applicable National Legislation in Cambodia

In 1993, the Royal Government of Cambodia promulgated a new Constitution that, for the first time, included explicit provisions on environmental protection and natural-resource management. Article 59 of the Constitution requires the State to protect the environment and the balance of natural resources, and to establish a precise plan for the management of land, water, air, wind, geology, ecosystems, mines, energy, petroleum and gas, rocks and minerals, forests and forest products, wildlife, and aquatic resources. Within this constitutional context, the Ministry of Environment (MoE) was established to serve as the competent authority for environmental protection and natural-resource conservation.

The hierarchy of the legislation in Cambodia is classified by:

- Royal Decree (Kret) – signed by the King; ratifies laws adopted by the National Assembly and Senate.
- Sub-Decree (Anukret) – signed by the Prime Minister; provides implementation rules for laws.
- Ministerial Decision (Prakas) – signed by a Minister; sets specific procedures, technical standards, or administrative requirements.
- Circulars or Guidelines (Sarachor/Guideline Notes) – issued by ministries or inter-ministerial bodies to interpret or operationalize existing legal instruments.

Royal Decrees established the overarching legal framework and may be supplemented by sub-decrees and Prakas that define technical standards, permitting procedures, and enforcement mechanisms. While many sub-decrees and standards have been drafted, several remain under development or pending ratification by Parliament.

The principal environmental legislation currently in force derives from the Code on Environment and Natural Resources (ENR Code, 2023), which consolidates previous environmental laws and sub-decrees. The ENR Code serves as the primary legal foundation for environmental and social assessment, biodiversity protection, pollution control, and environmental compliance monitoring in Cambodia. All activities under the Cambodia Sustainable Energy Transition (CSET) Project will comply with this Code and other applicable national laws.

3.1.1. Environmental Laws, Regulations, Guidelines, and Standards

The environmental laws, regulations, guidelines, and standards associated with the CSET project are listed in Table 3-1.

Table 3-1 Relevant Environmental Laws, Regulations, Guidelines, and Standards

Laws/Regulations/ Guidelines/Standards	Responsible Ministry	Key Description
Environmental Protection, Conservation and Management		
Code on Environment and Natural Resources (2023)	Ministry of Environment	The Code on Environment and Natural Resources (2023) serves as Cambodia's comprehensive legal framework for environmental protection, natural resource conservation, and sustainable development. It consolidates previous environmental legislation and introduces new measures to support Cambodia's commitments to green growth, climate change adaptation, and sustainable energy development.

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Laws/Regulations/ Guidelines/Standards	Responsible Ministry	Key Description
		Specifically, Section 10 of the Code focuses on the promotion of sustainable energy, including renewable energy sources and environmentally friendly technologies. Key articles under this section include: **Article 121.** Purpose. This section aims to promote environmentally friendly technology, renewable energy, and civil nuclear energy in managing and organizing electricity supply and services frameworks. **Article 122.** Scope. This section applies to all activities promoting electricity consumption, renewable energy, and civil nuclear energy in Cambodia's supply, service, and use of electricity. **Article 123.** Responsible institutions. The ministry responsible for energy shall be responsible for developing policies and development plans and managing the use of electricity, renewable energy, and civil nuclear energy. **Article 130.** Household generation and consumption of renewable energy. Household generation and consumption of renewable energy shall follow the guidelines of the ministry or institution responsible for energy in the cases that the installation and the consumption do not connect to the common grid/system, which affects the operation and the safety of the national grid. **Article 132.** Management and consumption of electricity in addition to supply by the national grid. (1) The ministry or institution responsible for electricity generation, transmission and distribution, and electricity consumption management shall determine the management, addition, and supply of electricity on top of the national grid's supply by installing rooftop solar systems connected to the national grid supply. The ministry or institution responsible for energy shall develop policies and legal instruments to manage additional supply. Individuals wishing to install a rooftop solar system for additional personal consumption and connect to the national grid shall follow the policies and legal instruments to manage additional supply developed by the ministry or institution responsible for energy. (2) The ministry or institution responsible for energy shall develop technical, economic, and safety provisions concerning managing additional electricity consumption from the grid. **Article 134.** Requirements for connecting a solar system to the national grid. Personal solar systems wishing to connect to the national grid shall follow the policies, legal instruments, and technical, economic, and safety provisions developed by the ministry or institution responsible for energy.
Protected Area Law (2008), replacing the Royal Decree on Natural Area (1993)	Ministry of Environment	The Law builds on the Royal Decree on Protected Areas (2008), which formally designated the national protected-area system and zoning framework. The Protected Area Law (2008) provides the legal foundation for the management, conservation, and sustainable use of Cambodia’s protected areas. It outlines the zoning system within protected areas, regulates permissible activities, and

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Laws/Regulations/ Guidelines/Standards	Responsible Ministry	Key Description
		establishes environmental safeguards to preserve biodiversity, natural resources, and ecosystem services. **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. **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 (ESIA).
Prakas No. 021 on Classification of Environmental Impact Assessment for Development Projects (2000)	Ministry of Environment	This prakas supplements Sub-Decree No. 72 by providing a more detailed classification system for determining which development projects must undergo an Initial Environmental Impact Assessment (IEIA), a Full Environmental Impact Assessment (EIA), or prepare an Environmental Management Plan (EMP) and Environmental Protection Contract (EPC). Key provisions of the Prakas include: **Project Classification:** Projects are classified based on their nature, size, and potential environmental impact. **Three categories are established:** Projects requiring a Full EIA. Projects requiring an Initial EIA (IEIA). Projects required to prepare an Environmental Management Plan (EMP) and sign an Environmental Protection Contract (EPC) with the Ministry of Environment. **Specific Requirements for Energy Projects:** **Substation construction is subject to IEIA.** Transmission lines are classified as follows: Transmission lines below **115 kV** require an **EPC**. Transmission lines between **115 kV and 230 kV** require an **IEIA**. Transmission lines **above 230 kV** require a Full **EIA**. **Substation construction and transmission lines between 115 kV and 230 kV may be combined into a single IEIA report if developed under the same project.** The Department of Environmental Impact Assessment (DEIA) in MoE oversees reviewing IEIA/EIA reports. Based on Prakas (Declaration) on General Guideline for Conducting Initial and Full Environmental Impact Assessment Reports, 2009, **the project owner either, as private or ministries/government**

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Laws/Regulations/ Guidelines/Standards	Responsible Ministry	Key Description
		agencies must contract with a registered EIA consulting firm at MoE to prepare an IEIA or EIA report for the projects and submit it to MOE for approval. In the reviewing and providing comment on IEIA or EIA report shall be **30 working days** counting from the date of official receipt of the report by DEIA.
Law on Forestry (2002)		Provides general jurisdiction and enforcement activities for all forest related offences that occur within the protected areas; supervised by the MAFF in coordination with the MoE.
Water Resources Management		
Law on Water Resources Management (2007)	Ministry of Water Resources and Meteorology	Requires license/permit/written authorization for the: (i) abstraction and use of water resources other than for domestic purposes, watering for animal husbandry, fishing & irrigation of domestic gardens and orchards; (ii) extraction of sand, soil and gravel from the beds and banks of water courses, lakes, canals and reservoirs; (iii) filling of river, tributary, stream, natural lakes, canal and reservoir; and (iv) discharge, disposal or deposit of polluting substances that are likely to deteriorate water quality and endangering human, animal and plant health **(Articles 12 & 22)**. **Article 24** stipulates that the Ministry of Water Resources and Meteorology (MOWRAM), in collaboration with other concerned agencies, may designate a floodplain area as a flood retention area.
Sub-Decree no.47 on Determining the Mekong River Dolphin Management Area (2023)	Ministry of Agriculture, Fishery, and Forestry	Sub-Decree No. 47 (2023) establishes the Mekong River Dolphin Management Area to protect and conserve the critically endangered Irrawaddy dolphin populations in Cambodia. **Chapter 1** **Article 1:** This sub-decree identifies the Mekong River dolphin management area to protect and conserve dolphins, which are sacred natural resources, to effectively participate in the development of ecotourism, improve the economy, society and livelihood of the people, and maintain the balance of the nature for the growth of biodiversity and sustaining the life of dolphins. **Article 2:** This sub-decree covers the management area of dolphins in Stung Treng and Kratie province. **Chapter 4** **Article 7:** The following activities are prohibited in the dolphin management area: • Fishing of all kinds • Aquaculture • Navigation across the river with fishing gear ready • Navigation across the river with speed over 30km/hour • Settlement • Other activities that affect endangered species of fishery resources, especially dolphins **Article 8:** Fishing is prohibited in the following dolphin protection area. • Fishing with nets or hooks • Fishing with medium and large fishing gears.

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Laws/Regulations/ Guidelines/Standards	Responsible Ministry	Key Description
		Article 9: The following activities are permitted in the dolphin management area • Fishing with small scale fishing gears in the protected area, except the uses of nets or hooks. • Dolphin tour/visit • Eco-tourism development • Scientific economic research
Pollution Control		
Sub-Decree on the Control of Air Pollution and Noise Disturbance (2000)	Ministry of Environment	Regulates air and noise pollution from mobile and fixed sources through monitoring, curb and mitigation activities to protect the environmental quality and public health. It contains the following relevant standards: (i) **ambient air quality standard** (Annex 1 of the Sub-decree); and (ii) **maximum allowable noise level in public and residential areas** (Annex 6 of the Sub-decree). **Article 3 A.** "Source of pollution" is defined and separates mobile sources (including transport) and fixed sources such as factories and construction sites. **Article 3 B.** "Pollutant" is defined as smoke, dust, ash particle substance, gas, vapor, fog, odor, radio-active substance
Sub-decree on Water Pollution Control (2009)	Ministry of Environment	Regulates activities that cause pollution in public water areas in order to sustain good water quality so that the protection of human health and the conservation of biodiversity are ensured. **Annexes 2, 4 and 5** provide the **industrial effluent standards**, including effluent from wastewater stabilization ponds, **water quality standards** for public waters for the purpose of **biodiversity conservation**, and **water quality standards** for **public waters and health**, respectively. In addition, water quality standards and associated parameters for public water areas, specifically water quality for lakes and reservoirs, are pH (6.5-8.5), COD (1.0- 8.0mg/l), Suspended Solid (1.0-15mg/l), Dissolved Oxygen (2.0-7.5mg/l), Coliform (<1000MPN/100ml), Total Nitrogen (1.0-0.6mg/l), and Total Phosphorus (0.005-0.05mg/l).
Waste Management		
Sub-decree on Solid Waste Management (1999)	Ministry of Environment	This sub-decree establishes the legal framework for the regulation, collection, transport, recycling, and disposal of solid and hazardous waste in Cambodia. **Article 1:** Regulates solid waste management to ensure the protection of human health and the conservation of biodiversity through using appropriate technical approaches. **Article 2:** This Sub-decree applies to all activities related to disposal, storage and collection, transport, recycling, dumping of garbage and hazardous waste. **Article 4:** The Ministry of Environment (MOE) shall establish guidelines on disposal, collection, transport, storage, recycling, minimizing, and dumping of household waste in provinces and cities in order to ensure the safe management of household waste. The authorities of the provinces and cities shall establish the waste management plan

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Laws/Regulations/ Guidelines/Standards	Responsible Ministry	Key Description
Sub-Decree on Garbage and Urban Solid Waste Management (2015)	Ministry of Environment	This sub-decree aims to enhance the management of garbage and solid waste of downtowns with effective, transparency and accountability to ensure aesthetics, public health and environmental protection. This sub-decree covers separating, storing, cleaning, collecting, transporting, recycling and management of landfills of garbage and solid waste of downtowns in the Kingdom of Cambodia. This sub-decree specifically targets the waste management needs of capital cities, provinces, districts, khans, and other urban areas to improve service delivery and reduce environmental impacts.
Sub-decree on Management of Drainage and Wastewater Treatment System (2017)	Ministry of Public Works and Transport and Ministry of Environment	This sub-decree aims to improve the management of drainage and wastewater treatment systems in terms of efficiency, transparency, and accountability to ensure safety, public health, and biodiversity conservation. The scope of this Sub-Decree applies to the management of drainage and wastewater treatment systems in capital, provincial, district, khan and resorts or recreation centers in the Kingdom of Cambodia. Its **annexes 1 and 2** provide **Effluent Discharge Standards** from Commercial Building, Borey, Satellite City and Resort or Recreation Center Discharges Directly to the Drainage/Sewerage System connected to Centralized Wastewater Treatment Plant, and to **the Public Waterbody or Drainage/ Sewerage System.**

3.1.2. Laws, Regulations, Guidelines, and Standards on Social, Land and Ethnic Matters

The laws, regulations, guidelines, and standards on social, land, and ethnic matters that are applicable with the CSET project are listed in Table 3-2.

Table 3-2 Relevant laws, regulation, guidelines, and standards on social, land, and ethnic matters

Laws/Regulations/ Guidelines/Standards	Responsible Ministry	Key Description
Expropriation Law (2010)	Ministry of Land Management, Urban Planning, and Construction	The Expropriation Law (2010) is the principal legal framework governing land acquisition and involuntary resettlement in Cambodia. It authorizes the State to expropriate immovable property or real rights over immovable property strictly for public and national interests and only after fair and just compensation has been paid in advance. The law ensures that land acquisition processes are transparent, justified, and compliant with constitutional protections of property rights. 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.

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Laws/Regulations/ Guidelines/Standards	Responsible Ministry	Key Description
		• **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.
Law on the Protection of Cultural Heritage (1996)	Ministry of Culture and Fine Arts	Regulates the protection of national cultural heritage and cultural property in general against illegal destruction, modification, alteration, excavation, alienation, exportation or importation. • **Article 37** stipulates that in case of chance find of a cultural property during construction, work should be stopped and the person who found the property should immediately make a declaration to the local police, who shall, in turn, transmit the property to the Provincial Governor without delay.
Labor Law (1997, amended 2021)	Ministry of Labor and Vocational Training	This law governs relations between employers and workers resulting from employment contracts to be performed within Cambodia. The key sections relevant to this project include: **Chapter VIII Health and Safety of Worker.** The key provisions relate to the quality of the premises; cleaning and hygiene; lodging of personnel, if applicable (such as workers camp); ventilation and sanitation; individual protective instruments and work clothes; lighting and noise levels in the workplace. **Article 230:** Workplaces must guarantee the safety of workers. **Chapter IX Work-Related Accidents Article 248: All occupational illness, as defined by law, shall be considered a work-related accident. The law sets out how accidents should be managed in terms of compensation.**
The Land Law (2001)	Ministry of Land Management,	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

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Laws/Regulations/ Guidelines/Standards	Responsible Ministry	Key Description
	Urban Planning, and Construction	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.
Law on the Prevention of Domestic Violence and the Protection of Victims (2005)	Ministry of Women's Affairs	This law establishes the legal framework to prevent domestic violence, protect victims, and promote a culture of non-violence and respect within Cambodian families and society. It applies to acts of physical, sexual, psychological, and economic violence among family or household members, including spouses, parents and children, and other relatives living together. Authorities are empowered to issue urgent protective orders, ensure access to shelters and medical services, and support psychological recovery for victims. In the context of project implementation, particularly where workers are accommodated in camps or interact with communities, preventive measures against domestic and gender-based violence must be integrated, and grievance mechanisms should be established in accordance with this law.
Standard Operating Procedures for Externally Financed Projects in Cambodia on Land Acquisition and Involuntary Resettlement (2018)	General Department of Resettlement Ministry of Economy and Finance	The Land Acquisition and Involuntary Resettlement (LAR) in Cambodia has been guided through the Standard Operating Procedures for the Externally Financed Projects in Cambodia (2018). The LAR follows the Cambodian Constitution (1993), Land Law (2001) and Expropriation Law (2010). The General Department of Resettlement (GDR) of the Ministry of Economy and Finance (MEF) oversees any project requiring the land acquisition and the resettlement. The

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Laws/Regulations/ Guidelines/Standards	Responsible Ministry	Key Description
		policy of resettlement and land expropriation for each project are discussed in the IRC (Inter-ministerial Resettlement Committee) while GRD serves as a secretariat. IRC is composed of MEF, MPWT, MLMUPC (Ministry of Land Management, Urban Planning and Construction) and related province/city organizations. MEF heads up IRC. On the other hand, the government document issued on December 28, 2012, stipulates that EDC is responsible for the resettlement and land expropriation for projects that EDC is involved in. In the case of this CSET Project, therefore, EDC will take care of those issues coordinated with DPWT, MLMUPC and other related organizations if this project requires land acquisition and resettlement. If any project requires them, EDC shall implement a survey on a social economic reconnaissance and estimation of the land acquisition. Based on the survey result, EDC negotiates a compensation or resettlement action plan with the affected people or landowner, consulting with other related organizations as needed.
National Policy on the Development of Indigenous Peoples (2009)	Ministry of Rural Development	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.
Policy on Registration and Right to Use of Indigenous Communities (2009)	Ministry of Rural Development Ministry of Land Management, Urban Planning, and Construction	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.
Prakas on Light Work (2008)	Ministry of Labor and Vocational Training	This Prakas provides specific guidelines on the types and conditions of light work that may be performed by children aged 12 to 15 years. It permits children in this age group to engage in a defined list of 15 types of light work, provided such work does not endanger their health, safety, or moral development, and does not interfere with their education. Children aged 12–15 are allowed to work up to 12 hours per week during the school year and up to 35 hours per week during school holidays. The regulation strictly prohibits

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Laws/Regulations/ Guidelines/Standards	Responsible Ministry	Key Description
		children from engaging in hazardous work, as defined under other Cambodian labor laws and international conventions.
Prakas on the Prohibition of Hazardous Child Labour (2004)	Ministry of Labor and Vocational Training	This Prakas defines and prohibits hazardous forms of labor for children under the age of 18. It identifies **38 specific types of hazardous work and activities** deemed dangerous to the health, safety, and development of minors. Employment of children in any of these listed occupations is strictly forbidden. Among the prohibited activities, several are directly relevant to infrastructure and construction works such as: • 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 labour 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.
Law on Gender Equality (2021)	Ministry of Women's Affairs	This law establishes the legal foundation for promoting **gender equality and non-discrimination** in Cambodia. It aims to ensure equal rights, opportunities, and treatment for women and men in all areas of political, economic, social, cultural, and public life. The law reinforces provisions of the Constitution on equality and prohibits any form of gender-based discrimination or violence. Key provisions include: • Guarantees **equal access to education, employment, and professional advancement** for women and men in both public and private sectors. • Promotes gender-responsive policies and programs in all ministries and institutions. • Requires government agencies to take measures to **prevent gender-based violence** and promote participation of women in decision-making processes, and • Supports the integration of gender perspectives in all development and infrastructure projects.
Law on the Protection and the Promotion of the Rights	Ministry of Social Affairs, Veterans and	This law ensures the **protection and promotion of the rights of persons with disabilities**, fostering their participation in political, economic, social, and cultural life on an equal basis

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Laws/Regulations/ Guidelines/Standards	Responsible Ministry	Key Description
of Persons with Disabilities (2009)	Youth Rehabilitation	with others. It aligns with Cambodia's commitments under the **UN Convention on the Rights of Persons with Disabilities (CRPD)**, ratified in 2012. Key provisions include: • Prohibits discrimination on the basis of disability in education, employment, and access to public services. • Mandates that public buildings and infrastructure, including transport and energy facilities, provide **universal access** and reasonable accommodation for persons with disabilities. • Encourages public and private employers to hire persons with disabilities and ensure a safe and inclusive work environment, and • Assigns MoSVY as the focal institution to coordinate with ministries and sub-national authorities for the implementation of disability-inclusive policies and programs.
Prakas No.961 on the Implementation of Right of Way Policy on National Roads, Provincial Roads, Communal Roads, and Railway in Cambodia" (2000)	Ministry of Public Works and Transport	The Ministry of Public Works and Transport (MPWT) is responsible for managing and using the rights of way of national roads and railways, planning, studying design development plans of national roads and railways or providing other services related to national roads and railways to serve the benefit of users of national roads and railways in an effective manner The Right of Way (ROW) of the National, Provincial and Communal Road and Railway is specified in "Prakas No.961 Regarding the Implementation of Right of Way Policy on National Roads, Provincial Roads, Communal Roads, and Railway in Cambodia" (2000), which MPWT issued to Provincial Agencies. After Prakas No.961 is amended, the ROW of the national road with one digit and two digits supervised by MPWT is specified by the "Sub-Decree on the Right of way of the National Road and Railways of the Kingdom of Cambodia" (2009). In cases where the road passes the capital city, provincial city or a crowded city area, however, this Sub-Decree does not apply.
Relevant International Agreements on Indigenous Peoples	Ministry of Environment	Cambodia is a signatory to a number of international instruments that protect the rights of indigenous peoples , 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, Non-Governmental Organization (NGO) Forum on Cambodia. Other relevant international agreements Cambodia has signed up to include: • The United Nation (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

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Laws/Regulations/ Guidelines/Standards	Responsible Ministry	Key Description
		• The United Nations Educational, Scientific, and Cultural Organization (UNESCO) Convention on the Protection and Promotion of the Diversity of Cultural Expressions (2005) • The Convention on Biological Diversity (1992), which recognizes the role of indigenous peoples and local communities in biodiversity conservation and sustainable resource use.
Prakas No.075/11 K.B/BR.K on Sanitation at the Construction Site (2011)	Ministry of Labor and Vocational Training	The Prakas sets to ensure that the sanitation and safety conditions are fulfilled for workers at construction sites by owners, directors, contractors or sub-contractors of construction establishments or construction companies. Articles 3 and 4 ensure that workers are provided with shelter, sanitation facilities and safe potable water for drinking and washing.
Prakas No. 076/11 K.B/BR.K on the Protection of Risk Resulting from Climate Change at Construction Sites. (2011)	Ministry of Labor and Vocational Training	This Prakas require safety measures and break times for workers at the construction site during extreme weather events.
Prakas No. 077/11 K.B/BR.K on Providing of Information at the Construction Site. (2011)	Ministry of Labor and Vocational Training	This Prakas states requirements for owners or responsible persons of a construction site to provide information, i.e. name and address of the owner of enterprise, construction establishment, Construction Company, name and address of architect, nature of construction, date for the start of the construction, estimated time to finish the construction works, and estimated number of workers to be employed for construction activities.
Prakas No. 078/11 K.B/BR.K on Stock of Materials, Waste Disposal and Clearance at Construction Site. (2011)	Ministry of Labor and Vocational Training	This Prakas provides safety guidelines and requirements for the safe storage of construction materials and hazardous substances/objects that can pose health and safety risks to workers.

3.1.3. Policy and Regulations on Energy and Electricity Sectors

The laws, regulations, guidelines, and standards on Energy and Electricity Sectors that are applicable with the CSET project are listed in Table 3-3.

Table 3-3 Relevant Laws, Regulations, Guidelines, and Standards on Energy and Electricity Sectors

Laws/Regulations/ Guidelines/Standards	Responsible Ministry	Key Description
Electricity Law of the Kingdom of Cambodia (2001)	Ministry of Mine and Energy and Electricity Authority of Cambodia	As per the Electricity Law of the Kingdom of Cambodia, "no person may operate as an electric power utility or provide electric power services unless he/she has performed under and in accordance with the terms of a valid license issued by EAC. **Article 3** of the Electricity Law of the Kingdom of Cambodia defines the responsibility of Ministry of Mines and Energy and Electricity Authority of Cambodia (EAC) separately. As per the provisions of this article, after EAC has started its operation, the governing of the power sector in the Kingdom of Cambodia shall be bifurcated, 1-the Ministry of Mines and Energy shall be responsible for setting and administrating the government policies, strategies and

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Laws/Regulations/ Guidelines/Standards	Responsible Ministry	Key Description
		planning in the power sector and 2-the Electricity Authority of Cambodia shall ensure that the provision of services and the use of electricity shall be performed efficiently, qualitatively, sustain ably and in a transparent manner. The Ministry of Mines and Energy, through its duty for setting and administering the government policies, strategies and planning in the power sector, is the institution of the Royal Government to chalk out the path that the power sector in the Kingdom of Cambodia is going to take. This institution is also responsible for setting technical standards for the power sector. EAC is responsible to issue rules, regulations and procedures and to monitor, guide, and coordinate the operators in power sector, both suppliers and consumers, including requiring them to follow the policy and guidelines and technical standards issued by Ministry of Mines and Energy. EAC has to ensure that the provision of services and the use of electricity shall be performed efficiently, qualitatively, sustainably and in a transparent manner.
Electricity Law of the Kingdom of Cambodia (2001, as amended in 2007 and 2015)	Electricity Authority of Cambodia	The standards of the clearance of Overhead Line (OHL) are set up on Electric Power Technical Standards of the Kingdom of Cambodia, Electricity Authority of Cambodia, 2007. EDC set up ROW based on Electric Power Technical Standards in consideration of safety. **The transmission lines of 230kV and 115kV incorporate a 30m ROW, covering 15 m either side of the centerline**, **where settlement and structures will not be permitted, and where 3m vegetation height restrictions will apply.** However, **in urban areas both the 115kV and 230 kV transmission lines incorporate 15m ROW for settlement and structures, covering 7.5m** either side of the centerline.
Prakas on Establishment of Specific Requirement of Electric Power Technical Standards of the Kingdom of Cambodia (2004)	Ministry of Mine and Energy	This Prakas sets out technical standards for the installation, operation, and maintenance of electric power facilities in Cambodia, with a strong focus on safety for both workers and the public. **Article 7:** Prevention of Electric Power Disasters. The electrical equipment shall be installed in such a manner that it does not cause electric shock, fire or other accidents. **Article 8:** Prevention of Accidents Caused by Electric Power Facilities. The electric power facilities shall be installed with proper measures for operators not to touch their moving parts, hot parts and other dangerous parts, and to prevent them from falling accidentally. **Article 9:** Safety of Third Persons. (1) Safety of Third Persons at Power Stations, Substations and Switching Stations. Appropriate measures shall be taken to prevent third persons from entering compounds containing power stations, substations and switching stations. These measures shall include a. External fences or walls separate from the outside compound. The height of external fences or walls shall not be lower than 1,800 mm. b. Signs to alert third persons to danger shall be installed at the entrances/exits. Moreover, where necessary, signs shall also be displayed on walls and fences. c. Locking devices or

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Laws/Regulations/ Guidelines/Standards	Responsible Ministry	Key Description
		other appropriate devices shall be installed at the entrances/exits. (2) Safety of Third Persons at Electric Supporting Structures Appropriate measures shall be taken to prevent third persons from climbing supporting structures of overhead electrical lines. To prevent danger to third persons related the supporting structures of electrical lines the following measures shall be taken: - Any metal steps on supporting structures shall be installed more than 1.8m from the ground. - Warning signs to alert the third persons to danger shall be installed at each supporting structure. - As for high-voltage lines, appropriate devices shall be installed at all legs of supporting structures to prevent third persons from climbing the supporting structures. However, in case the supporting structures are located at places where third persons seldom approach such as in the mountains or where the supporting structures are surrounded by fences or walls with of an appropriate height, this article shall not be applicable. **Article 27:** Safety Factor of Bare Conductors and Ground Wires of Overhead Electrical Lines. As for tensile strength of conductors and ground wires for overhead electrical lines except for cables, the safety factor shall be 2.5 or more.
Renewable Energy Development Strategy (2019)	Ministry of Mine and Energy	The Renewable Energy Development Strategy (REDS, 2019) provides the policy framework for the development and promotion of renewable energy resources in Cambodia. It aims to diversify the national energy mix, enhance energy security, and reduce dependence on imported fossil fuels. The strategy focuses on the development of solar, wind, biomass, biogas, and small hydropower resources through both public and private investment. Key objectives of the REDS include: • Establishing an enabling environment for renewable-energy development through supportive policies, regulatory mechanisms, and investment incentives. • Promoting the integration of renewable energy into the national power system through grid upgrades and modernization. • Encouraging the use of renewable energy in rural electrification and off-grid applications to support inclusive economic growth, and • Strengthening institutional capacity and technical standards to ensure the safe and sustainable deployment of renewable-energy technologies. The strategy emphasizes coordination among MME, EDC, EAC, and development partners to achieve Cambodia's renewable-energy targets in line with national sustainable development and climate policies.
National Energy Efficiency Policy and Action Plan (2023)	Ministry of Mine and Energy	The National Energy Efficiency Policy and Action Plan (NEEP, 2023) set Cambodia's long-term vision to improve energy efficiency across all sectors of the economy. It builds on the National Energy Efficiency Policy approved by the Royal

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Laws/Regulations/ Guidelines/Standards	Responsible Ministry	Key Description
		Government and provides a roadmap for implementing measures to reduce energy intensity, enhance energy security, and support climate change mitigation. The NEEP establishes clear institutional responsibilities and implementation mechanisms, including coordination between MME, EAC, and relevant ministries. It identifies key priority areas such as industry, transport, buildings, and agriculture, with specific targets and policy actions for each sector. Key features include: • Setting an indicative national target to reduce energy intensity by **19 percent by 2030** compared with the 2020 baseline. • Establishing energy-efficiency standards and labeling programs for equipment and appliances. • Promoting energy management systems, energy audits, and certification for large energy consumers. • Developing fiscal and financial incentives to encourage private-sector investment in energy-efficient technologies, and • Strengthening data collection, monitoring, and reporting systems to track progress toward national targets. The policy also promotes awareness, education, and technical training on energy efficiency, ensuring sustainable and inclusive energy use that contributes to Cambodia's socio-economic development.

3.1.4. National IEIA/EIA Requirements for CSET's sub-projects under each component

The following table identifies the national environmental assessment requirements (IEIA, EIA, or EPC) for each sub-component of the project, based on Cambodia's legal framework.

Table 3-4 National IEIA/EIA Requirements

Component	Sub Components and its Sub projects	Justification under National Requirements
Component 1	SC1.1: 230 kV Transmission Line (GS Lvea Am to GS Arey Ksat, 15 km)	High-voltage line exceeding 10 km in length and falls under the 115–230 kV category, which, according to **Prakas No. 021**, requires an **Initial Environmental Impact Assessment (IEIA)**.
	SC1.1: New 115 kV Substations (ARK, CCV III) and 2 × 230 kV Line Bay Extension	Prakas No. 021 requires new substations at or above 115 kV and extensions of 230 kV facilities to undergo an **IEIA**.
	SC 1.2 – Battery Energy Storage System (BESS, 100–150 MW / 200 MWh at GS TKM)	Prakas No. 021 on the Classification of EIA for Development Projects (2000) does not explicitly list Battery Energy Storage Systems.

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Component	Sub Components and its Sub projects	Justification under National Requirements
		Under the Code on Environment and Natural Resources (2023), the Ministry of Environment (MoE) has the authority to determine the appropriate level of assessment - **IEIA, EIA, or Environmental Protection Contract (EPC)** based on the project's scale, technology, and potential environmental or safety risks. Since the proposed BESS will be installed within an existing substation compound, MoE will review the project description during screening and decide the applicable assessment requirement accordingly.
	SC 1.3 – Distribution Network Expansion and Grid Improvement	Construction and reinforcement of distribution lines typically fall below thresholds for IEIA/EIA, but if works occur **within or near environmentally sensitive areas** (e.g., wetlands or protected zones), MoE may require an **IEIA** in accordance with Article 44 of the Protected Area Law (2008). Otherwise, an **Environmental Protection Contract (EPC)** may suffice.
Component 2	Industrial Energy Efficiency	Sub-projects financed under the credit line will consist of energy-efficiency upgrades in existing industrial facilities. These are not subject to national IEIA/EIA/EPC under Prakas No. 021.

3.2. International Treaties, Conventions and Agreements

The Royal Government of Cambodia (RGC) has ratified in many international and regional conventions and/or agreements and has been playing an active role. Summaries international agreements and/or conventions related to environmental management, water resources management, waste management, and labor management.

Table 3-5: International Treaties, Conventions and Agreements

No.	Treaties/Conventions /Agreements	Years of Ratification
1	Biodiversity Convention	1994
2	Convention on International Trade in Endangered Species of Fauna and Flora (CITES)	Entered into force on 01 July 1975 (Cambodia ratified on 04 July 1997)
3	Ramsar Convention	1999
4	United Nations Framework Convention on Climate Change (UNFCC)	1992, entered into force on 21 March 1994 (Cambodia ratified on 18 December 1995);
5	Kyoto Protocol	1997, entered into force on 16 February 2005 (Cambodia accessed on 22 August 2002)
6	Paris Agreement to UNNFCCC	Ratified on 6 February 2017
7	Vienna Convention for the Protection of the Ozone Layer	entered into force on 22 September 1988 (Cambodia accessed on 27 June 2001)
8	Montreal Protocol on Substances that Deplete the Ozone Layer	1987, entered into force on 1 January 1989 (Cambodia accessed on 27 June 2001);
9	Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal	entered into force on 5 May 1992 (Cambodia accessed on 02 March 2001);
10	Stockholm Convention on Persistent Organic Pollutants (POPs)	Ratified on 24 February 2001

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No.	Treaties/Conventions /Agreements	Years of Ratification
11	United Nations Convention to Combat Desertification	entered into force on 26 December 1996 (Cambodia ratified on 18 August 1997)
12	Cambodia joined the UNESCO Network of Biosphere Reserves	1997
13	Association of Southeast Asian Nations (ASEAN) Agreements:	
	(a) Transboundary Haze Pollution	2006
	(b) on Disaster Management and Emergency Response	2009
	Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin	1996
14	International Labour Organization (ILO) Core Conventions – including: Forced Labour (C029), Freedom of Association (C087), Abolition of Forced Labour (C105), Equal Remuneration (C100), Discrimination (C111), Minimum Age (C138), and Worst Forms of Child Labour (C182)	Ratified between 1969 and 2008

3.3. Applicable World Bank Environmental and Social Standards

Table 3-6: Applicable World Bank Standards

No.	Applicable ESS	Objectives of ESS	Relevant
1	ESS1: Assessment and Management of Environmental and Social Risks and Impacts	Identify, evaluate, and manage environmental and social (E&S) risks and impacts in a manner consistent with the ESSs. Adopt the mitigation hierarchy; promote the use of differentiated measures to ensure vulnerable groups are not disproportionately affected; strengthen national E&S systems; and promote continuous improvement in environmental and social performance.	**Relevant.** The project involves activities with potential environmental and social risks, ranging from biodiversity impacts such as bird collision and mortality, land acquisition, requiring assessment and management through the ESMF, ESMPs, and ESMS procedures.
2	ESS2: Labor and Working Conditions	Promote safe and healthy working conditions; ensure fair treatment, non-discrimination, and equal opportunity; prevent the use of child and forced labor; support freedom of association and collective bargaining; and provide accessible grievance mechanisms for project workers.	**Relevant.** The project will employ direct and contracted workers, requiring compliance with national labor laws, occupational health and safety (OHS) standards, and worker grievance procedures.
3	ESS3: Resource Efficiency and Pollution Prevention and Management	Promote sustainable use of resources, including energy, water, and raw materials; avoid or minimize pollution and emissions; reduce waste generation; and manage hazardous and non-hazardous materials safely.	**Relevant.** Construction and operation of substations, transmission lines, and industrial energy-efficiency technologies may generate waste and emissions requiring pollution-prevention and resource-efficiency measures.
4	ESS4: Community Health and Safety	Anticipate and avoid adverse impacts on community health and safety; promote safe and climate-resilient infrastructure; manage traffic, hazardous materials, and communicable-disease risks; and ensure emergency preparedness.	**Relevant.** Construction and operation activities may pose community health, safety, and traffic risks that require mitigation and monitoring.

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No.	Applicable ESS	Objectives of ESS	Relevant
5	ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Avoid involuntary resettlement or minimize it where unavoidable; prevent forced eviction; mitigate adverse economic and physical displacement; improve or restore affected persons' livelihoods and living standards; and ensure consultation and participation in resettlement planning.	**Potentially Relevant.** Minor land acquisition or restrictions on land use may occur for substations, rights-of-way of OHT, or distribution-line extensions. Mitigation will follow ESS5 and national legislation and procedures.
6	ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Protect and conserve biodiversity; apply the mitigation hierarchy and precautionary approach; promote sustainable management of living natural resources; and support livelihoods that integrate conservation and development objectives.	**Relevant.** Some works may implement near modified or natural habitats, requiring screening, mitigation, and potential Critical Habitat Assessment (CHA).
7	ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Ensure full respect for Indigenous Peoples' rights, dignity, and culture; promote equitable access to benefits; ensure meaningful consultation and participation; and obtain Free, Prior, and Informed Consent (FPIC) in specific circumstances.	**Potentially Relevant.** The standard will apply if Indigenous Peoples are present in or affected by project activities in the project areas, requiring culturally appropriate engagement and FPIC where relevant.
8	ESS8: Cultural Heritage	Protect tangible and intangible cultural heritage from adverse impacts; support preservation; ensure meaningful stakeholder consultation; and promote equitable sharing of benefits derived from cultural heritage use.	**Relevant.** Construction activities may encounter archaeological or cultural resources, requiring a chance-find procedure.
9	ESS 9: Financial Intermediaries (FIs)	Ensure FIs assess and manage E&S risks in subprojects they finance; promote good E&S risk management practices; and strengthen human-resource and E&S management within FIs.	**Relevant.** SME Bank and FTB will act as financial intermediaries for energy-efficiency investments and requiring to establish and maintain ESMS consistent with ESS9.
10	ESS10 Stakeholder Engagement and Information Disclosure	Establish a systematic approach to stakeholder engagement; ensure timely and accessible disclosure of information; enable stakeholder participation throughout the project cycle; and provide an inclusive grievance redress mechanism (GRM).	**Relevant.** Continuous stakeholder engagement, public disclosure, and functioning grievance redress mechanisms will be implemented across all components.

3.4. World Bank Group's Environmental Health and Safety Guidelines (EHSG)

The World Bank Group's Environmental, Health, and Safety Guidelines (EHSGs) provide internationally recognized technical reference standards for managing environmental, occupational health and safety, and community health and safety risks during project development and operation. The EHSGs are intended to be applied alongside host country requirements to promote sustainable environmental

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and social practices across a wide range of sectors. The preparation of E&S instruments such as ESIA, ESMP, and ESMS will consider the applicable measures under the following guidelines:

- **General Environmental, Health, and Safety (EHS) Guidelines**: Cover common issues applicable to all sectors, such as air emissions, wastewater management, noise control, energy conservation, occupational health and safety, and community safety.
- **IFC's Environmental, Health, and Safety Guidelines for Electric Power Transmission and Distribution:** covers the environmental issues, occupational health and safety and community health and safety issues that could be affected by power transmission and distribution project construction activities including: terrestrial habitat alteration aquatic habitat alteration, electric and magnetic fields, and hazardous materials, working at height, exposure to chemicals, visual amenity and noise impacts, etc. .
- **Industry-Specific Guidelines:** Provide additional technical recommendations tailored to particular sectors, such as Agribusiness, Chemicals, Forestry, General Manufacturing, Infrastructure, Oil, Gas and Mining, Power, etc.

Note: * https://www.ifc.org/content/dam/ifc/doc/2010/2016-sector-specific-ehs-guidelines-applicability-en.pdf

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3.5. Gap Analysis between RGC's Relevant Legislation and WB's ESSs

Table 3-7 Gap Analysis between RGC's Relevant Legislation and WB's ESSs

No.	Areas of Difference	RGC 's Relevant Regulations	WB's Environmental and Social Framework (ESF)	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 labour 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 labour, 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.	The **ESMF** applies an integrated ES screening/assessment consistent with **ESS1**, including vulnerability analysis, cumulative effects, and transboundary considerations where relevant; site-specific **ESIAs/ESMPs** (C1) and FI **ESMS** procedures (C2) will operationalize this.
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.	The **ESMF** mandates use of the mitigation hierarchy in alternatives analysis, routing/siting, and design; subproject instruments will document how hierarchy was applied.
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	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 to	Given construction and electrical hazards, the **LMP** sets **minimum age 18** for all project works; contractor procedures include age verification, induction, supervision, and worker GRM. The ESMF will provide monitoring guidelines and requirements of the

No.	Areas of Difference	RGC 's Relevant Regulations	WB's Environmental and Social Framework (ESF)	Key Gaps	Measures/Clarifications to Address Differences
			labour and that Borrower conducts regular monitoring of health, working conditions, hours of work and the other requirements of ESS2.	their health and affect their schooling.	Borrower and contractors (see Labor Management Procedures (LMP)).
4	**Land acquisition, and Livelihood Restoration and Assistance**	The Standard Operating Procedures for Land Acquisition and Resettlement (SOP-LAR) recognizes informal users but eligibility criteria are still complexity in documentation with replacement cost requirement relying on provincial committee rates while Prakas No. 1518 Sor Chor Nor applied by EDC focuses mainly on legal owners and registered users through using unit rates (market) and depreciation. The Prakas No. 1518 allows only compensation with no livelihood restoration support while SOP- LAR provides allowances and transitional support.	Provision of recognizing of legal, recognizable, and informal users for eligibility with compensation at full replacement cost. 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.	Informal land users and customary users at risk of non-recognition under Prakas and compensation under Prakas may fall below replacement cost 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	The Resettlement Planning Framework (RPF) will ensure to address the outlined gaps as per WB ESS5. Based on RGC's SOP-LAR, an Income Restoration Program would be provided in order to re-establish sources of livelihoods for those Affected Persons (APs) who have permanently lost their sources of livelihood. As the government document issued on December 28, 2012, stipulates that EDC is responsible for the resettlement and land expropriation for projects that EDC is involved in, the Detailed Resettlement Plans (DRPs) under the CSET will include provisions to ensure livelihood restoration programs are robust and can accurately meet the livelihood restoration objectives in line with WB ESS5. The resettlement policy framework will
5	**Grievance Redress Mechanism (GRM)**	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	Annex 1 of ESS10 includes details of administrative and judicial process on GRM to handle grievances under all ESSs. Participation in resettlement planning and implementation, including in developing appropriate GRM that are useful and accessible to local people.	Lack of requirements for grievances to be resolved in a manner that is culturally appropriate.	The Standard Operating Procedures (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

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No.	Areas of Difference	RGC 's Relevant Regulations	WB's Environmental and Social Framework (ESF)	Key Gaps	Measures/Clarifications to Address Differences
		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.			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 Indigenous Peoples' (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.
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 EDC.	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 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 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 consultation and stakeholder engagement process is maintained throughout project cycle to ensure appropriate information disclosure, meaningful consultations and effective grievance redress mechanism.	Meaningful consultations, inclusive of all gender-sensitive and vulnerable people, as per WB ESS10 will be conducted with particular attention to ensure 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. A Stakeholder Engagement Plan (SEP) has been developed following the guidelines of ESS10.

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No.	Areas of Difference	RGC 's Relevant Regulations	WB's Environmental and Social Framework (ESF)	Key Gaps	Measures/Clarifications to Address Differences
		The legislation on environmental impact assessment details the number of steps to carry out public consultation prior to the start of the construction activities			
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 livelihood at current levels; (d) no land donors are relocated; (e) 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.	Lack of regulations on voluntary on land donation and cases where land donation is acceptable	**Not used** for this project. The Resettlement Policy Framework (RPF) states Voluntary Donation (VLD) will **not** be applied for CSET (linear assets and safety setbacks); all land needs handled via SOP-LAR with compensation at replacement cost.
8	**Procedures for implementing Indigenous Peoples Plan (IPP)**	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	An IPPF has been prepared on the basis of WB ESS7 considering relevant Cambodian policies and regulations. The Indigenous Peoples Planning Framework (IPPF) details procedures for preparing IPP(s) and how to conduct meaningful and consultation that is culturally appropriate.

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No.	Areas of Difference	RGC 's Relevant Regulations	WB's Environmental and Social Framework (ESF)	Key Gaps	Measures/Clarifications to Address Differences
				described in ESS5, ESS7 and ESS8.	
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 xxx) in case of impacts on heritage, whether tangible or intangible.
10	**Biodiversity and protected areas**	Law on Protected Area aims to conserve the biodiversity and protected area by divided the protected area into 4 zones (core zone, conservation zone, sustainable use zone, and community zone). However, the boundary of each zone is unclear demarcated.	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.	Biodiversity screening per ESS6, with Critical Habitat Assessment (CHA) where risk indicates; exclusion list avoids non-permitted zones; if residual significant impacts remain, apply ESS6 mitigation framework in coordination with MoE.
11	**Pollution prevention**	Sub-decree on the Control of Air Pollution and Noise Disturbance Sub-decree on Water Pollution Control (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 (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.	ESIA / ESMPs will adopt WBG EHSGs for air/noise/wastewater; materials and waste plans include hazardous waste/PCB-free equipment; for BESS, fire safety and hazardous materials management per international standards.
12	**Health and safety**	Labour 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. The CHSG will be developed as part of the and included as annex of this ESMF (see Annex 9).

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No.	Areas of Difference	RGC 's Relevant Regulations	WB's Environmental and Social Framework (ESF)	Key Gaps	Measures/Clarifications to Address Differences
13	**Sexual Exploitation and Abuse (SEA, Sexual Harassment (SH), Violence against Children (VAC) and HIV/AIDs**	There are regulations in Cambodia that protect the rights of women, violence against women and children, and the information dissemination on HIV/AIDS.	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 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 labour, these issues are particularly relevant in construction projects.	Lack of provisions/requirements for mitigating the impacts and phases	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 Labour Management Procedures and Code of Conduct (see LMP).
14	**Forced labour**	Regulations Against forced labour 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 labour. ESS2 and ESS4 requirements are embedded in the Standard Bidding Document (SBD) of the Bank, requiring contactors to comply with.	Lack of provisions / requirements for mitigating the impacts and phases	The ESMF provides provisions to monitor compliance by contractors and of their primary suppliers in bidding documents (see Chapter 10).

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4. ENVIRONMENTAL AND SOCIAL BASELINE

4.1. Environmental Baseline

4.1.1. Geographical

Cambodia covers a land area of 181,035 square kilometers. It is bordered on the northwest by Thailand, on the north by Laos People's Democratic Republic (PDR), and on the east and southeast by Vietnam, and on the southwest by the Gulf of Thailand. The country comprises 24 provinces plus 1 capital city, with the project covering 18 provinces and 1 capital city: Battambong, Kampong Cham, Kampong Chhnang, Kampong Thom, Kandal, Kep, Koh Kong, Kratie, Mondul Kiri, Phnom Penh (capital city), Preah Vihear, Preah Sihanouk, Prey Veng, Pursat, Siem Reap, Stung Treng, Svay Rieng, Takeo, Tboung Khmum. The geographical locations of project's provinces can be seen in Table 4-1 and Figure 4-1.

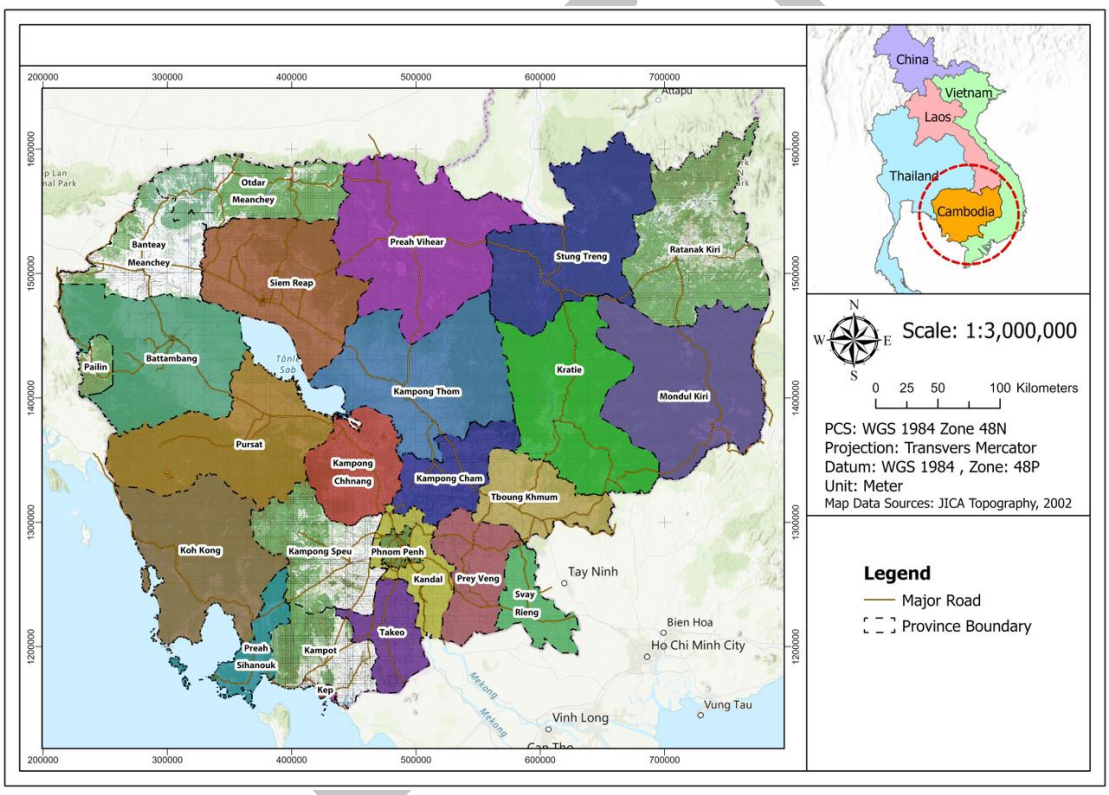

Figure 4-1 Location of Target Provinces under CSET Project

Table 4-1 List of Project's Provinces and geographic condition

No.	Province	Area[3] (km^2)	Location	Bordering Provinces / Country	Relevant Sub-Component
1	Battambong	11,702	Northwest	Banteay Meanchey (N), Pursat (E & S), Siem Reap (NE), Thailand (W)	SC 1.3
2	Kampong Cham	4,549	Central-east	Kampong Chhnang (W), Kampong Thom (N), Kratie (NE), Tboung	SC 1.3

[3] https://ontheworldmap.com/cambodia/provinces-of-cambodia-map.html?

No.	Province	Area[3] (km^2)	Location	Bordering Provinces / Country	Relevant Sub-Component
				Khmum (E), Prey Veng (S), Kandal (S)	
3	Kampong Chhnang	5,521	Central	Kampong Cham (E), Kampong Thom (N), Tonlé Sap Lake (S)	SC 1.3
4	Kampong Thom	13,814	Central	Siem Reap (NW), Preah Vihear (N), Stung Treng (NE), Kratie (E), Kampong Cham (S), Kampong Chhnang (S), Tonlé Sap (W)	SC 1.3
5	Kandal	3,179	South	Phnom Penh (inside), Kampong Speu (W), Takeo (W), Kampong Chhnang (N), Kampong Cham (N), Prey Veng (E), Vietnam (S)	SC 1.3
6	Kep	336	South	Kampot (adjacent), Gulf of Thailand (S), Vietnam (sea frontier)	SC 1.3
7	Koh Kong	10,090	Southwest	Pursat (N), Kampot (W), Preah Sihanouk (W), Gulf of Thailand (E & S)	SC 1.3
8	Kratie	11,094	East	Stung Treng (N), Mondul Kiri (E), Kampong Chhnang (W), Kampong Thom (W), Tboung Khmum (S)	SC 1.3
9	Mondul Kiri	14,288	Far east	Stung Treng (NW), Ratanakiri (N), Kratie (W), Vietnam (E)	SC 1.3
10	Phnom Penh (capital city)	679	Central	Surrounded by Kandal	SC 1.1, SC 1.3
11	Preah Sihanouk	1,938	Southwest	Koh Kong (W), Kampong Speu (N), Kampot (E), Gulf of Thailand (S)	SC 1.3
12	Preah Vihear	13,788	North	Thailand (NW), Kampong Thom (S), Stung Treng (E)	SC 1.3
13	Prey Veng	4,883	Southeast	Kandal (W), Takeo (SW), Svay Rieng (E & S), Kampong Cham (N)	SC 1.3
14	Pursat	12,692	West	Battambong (W), Tonlé Sap (N), transition to western highlands (S & E)	SC 1.3

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No.	Province	Area[3] (km²)	Location	Bordering Provinces / Country	Relevant Sub-Component
15	Siem Reap	10,299	Northwest	Battambong (W), Kampong Thom (E), near Tonlé Sap Lake	SC 1.3
16	Stung Treng	11,092	Far northeast	Preah Vihear (S & W), Kratie (S), Laos (N)	SC 1.3
17	Svay Rieng	2,966	Southeast	Prey Veng (W & N), Vietnam (E & S)	SC 1.3
18	Takeo	3,563	South	Kandal (N), Prey Veng (E), Vietnam (S & SE)	SC 1.3
19	Tboung Khmum	5,250	East	Kampong Cham (W), Vietnam (E)	SC 1.2, SC 1.3

4.1.2. Climate and Meteorology

Cambodia is located in a tropical zone north of the equator, and warm to hot year-round and the climate is dominated by annual monsoon cycle with two distinct seasons: a dry season (November-April) influenced by the northeast monsoon and a rainy season (May-October) brought by the southwest monsoon, with temperatures remaining consistently warm throughout the year. The average annual rainfall ranges from 1,400 to 2,000 mm, with higher rates in coastal and highland areas and lower rates in inland regions.

April is generally the hottest month, averaging 29.31 °C (ranging from 24.19 to 34.47 °C), while December is the coolest with an average mean temperature of 25.55°C (ranging from 20.96 to 30.19 °C).

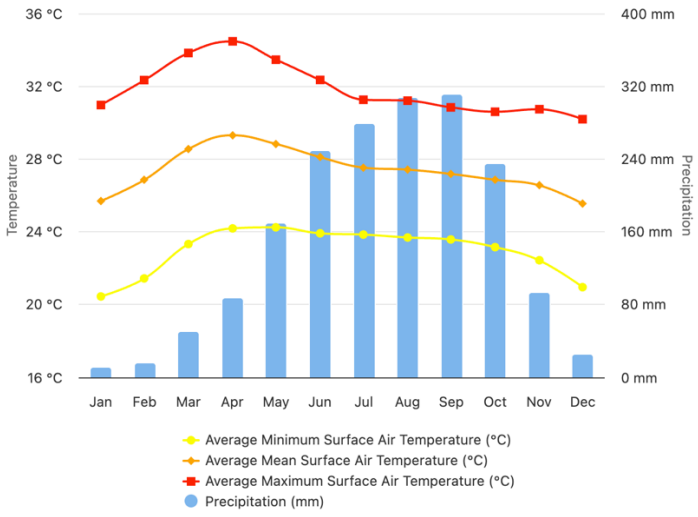

Figure 4-2 Average monthly temperature in Cambodia (1991–2020)[4]

Based on the observed climate data between 1991 to 2020, for all the 18 project provinces and capital city, Siem Reap Province records the highest mean temperatures, with April averaging 30.31 °C (ranging from 24.50–36.16 °C), making it the hottest province during the warmest month. In contrast, Mondul Kiri Province experiences the coolest conditions, with

[4] https://climateknowledgeportal.worldbank.org/country/cambodia/climate-data-historical

January averaging 24.05 °C (19.29–28.85 °C). Regarding precipitation, Koh Kong Province receives the highest annual precipitation of 3,272.99 mm, while Prey Veng Province has the lowest annual precipitation at around 1,444.64 mm. The detail of all 18 project provinces and capital city can be seen in Table 4-2 List Observed Temperature and Precipitation Trends for 1991–2020 Climatology Across Project's Provinces.

Table 4-2 List Observed Temperature and Precipitation Trends for 1991–2020 Climatology Across Project's Provinces[5]

No.	Province	Warmest (Left) Observed Warmest and Coolest (Right) Months by Mean Temperature		Observed Annual Precipitation
1	Battambong	Apr: 29.66°C (24.02°C, 35.35°C)	Dec: 26.09°C (21.22°C, 31.02°C)	1,920.69 mm
2	Kampong Cham	Apr: 29.80°C (24.55°C, 35.10°C)	Dec: 26.39°C (22.06°C, 30.75°C)	1,445.54 mm
3	Kampong Chhnang	Apr: 29.45°C (24.12°C, 34.83°C)	Dec: 26.36°C (22.01°C, 30.76°C)	1,747.86 mm
4	Kampong Thom	Apr: 30.00°C (24.62°C, 35.43°C)	Dec: 26.03°C (21.33°C, 30.78°C)	1,573.77 mm
5	Kandal	Apr: 29.69°C (24.52°C, 34.92°C)	Dec: 26.81°C (22.84°C, 30.82°C)	1,492.36 mm
6	Kep	Apr: 28.74°C (23.85°C, 33.68°C)	Dec: 26.46°C (22.68°C, 30.29°C)	2,061.55 mm
7	Koh Kong	Apr: 27.97°C (23.23°C, 32.76°C	Jan: 25.75°C (21.01°C, 30.54°C)	3,272.99 mm
8	Kratie	Apr: 29.63°C (24.63°C, 34.67°C)	Dec: 25.46°C (20.87°C, 30.10°C)	1,625.30 mm
9	Mondul Kiri	Apr: 28.42°C (23.83°C, 33.05°C)	Jan: 24.05°C (19.29°C, 28.85°C)	1,728.04 mm
10	Phnom Penh (capital city)	Apr: 29.61°C (24.42°C, 34.85°C)	Dec: 26.78°C (22.76°C, 30.86°C)	1,557.07 mm
11	Preah Sihanouk	Apr: 28.66°C (23.96°C, 33.41°C)	Dec: 26.49°C (22.55°C, 30.49°C)	2,607.29 mm
12	Preah Vihear	Apr: 30.15°C (24.68°C, 35.68°C)	Dec: 25.43°C (20.21°C, 30.69°C)	1,593.35 mm
13	Prey Veng	Apr: 29.80°C (24.60°C, 35.05°C)	Dec: 26.71°C (22.68°C, 30.80°C)	1,444.64 mm
14	Pursat	Apr: 28.56°C (23.21°C, 33.95°C)	Dec: 25.71°C (21.08°C, 30.38°C)	2,458.05 mm
15	Siem Reap	Apr: 30.31°C (24.50°C, 36.16°C)	Dec: 25.90°C (20.84°C, 31.01°C)	1,418.18 mm
16	Stung Treng	Apr: 29.55°C (24.72°C, 34.44°C)	Jan: 24.85°C (19.19°C, 30.55°C)	1,837.46 mm
17	Svay Rieng	Apr: 29.84°C (24.64°C, 35.09°C)	Dec: 26.69°C (22.59°C, 30.86°C)	1,548.74 mm
18	Takeo	Apr: 29.46°C (24.41°C, 34.55°C)	Dec: 26.88°C (23.03°C, 30.72°C)	1,689.63 mm
19	Tboung Khmum	Apr: 29.73°C (24.54°C, 34.97°C)	Dec: 26.18°C (21.85°C, 30.56°C)	1,474.66 mm

[5] https://climateknowledgeportal.worldbank.org/sites/default/files/country-profiles/16814-WB_Cambodia%20Country%20Profile-WEB.pdf

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4.1.3. Natural Disasters

Cambodia is vulnerable to a wide range of natural hazards, with Cyclone, Wildfire, river and urban flooding being the most prevalent risks across the project's provinces. The province of Tboung Khmum has no available data. Detailed information by province and disaster type is presented in Table 4-3.

Table 4-3 Risk of natural disasters in project's provinces[6]

Province	River Flood	Urban Flood	Earthquake	Landslide	Cyclone	Water Scarcity	Extreme Heat	Wildfire
Battambong	High	High	Low	Medium	High	Low	Medium	High
Kampong Cham	High	High	Low	Very Low	High	Very Low	Medium	High
Kampong Chhnang	High	High	Low	Low	Medium	Very Low	Medium	High
Kampong Thom	High	Medium	Low	Very Low	High	Very Low	Medium	High
Kandal	High	High	Low	Very Low	High	Very Low	Medium	High
Kep	Low	Very Low	Low	Low	High	Very Low	Medium	High
Koh Kong	Medium	High	Low	High	High	Low	Medium	High
Kratie	High	High	Low	Very Low	High	Very Low	Medium	High
Mondul Kiri	High	High	Low	Low	High	Very Low	Medium	High
Phnom Penh (capital city)	High	High	Low	Very Low	High	Very Low	Medium	High
Preah Sihanouk	Low	High	Low	High	Low	Very Low	Medium	Medium
Preah Vihear	High	High	Low	Very Low	High	Very Low	Medium	High
Prey Veng	High	High	Low	Very Low	High	Very Low	Medium	High
Pursat	High	High	Low	High	High	Very Low	High	High
Siem Reap	High	Low	Low	Very Low	High	Very Low	Medium	High
Stung Treng	High	Low	Low	Very Low	High	Very Low	Medium	High
Svay Rieng	High	Low	Low	Very Low	High	Very Low	Medium	High
Takeo	High	High	Low	Low	High	Very Low	Medium	High
Tboung Khmum	No data	No data	No data	No data	No data	No data	No data	No data

4.1.4. Topography

Cambodia's topography is characterized by a low-lying central plain that is surrounded by uplands and low mountains and includes the Tonle Sap Lake and the upper reaches of the Mekong River delta. The elevation is less than 50m above sea level (masl) was considered as lowland, more than 1,000masl as upland, and the highest point is 1,813masl, where located at Aoral mountain, Kampong Speu Province.

[6] https://thinkhazard.org/en/report/44-cambodia

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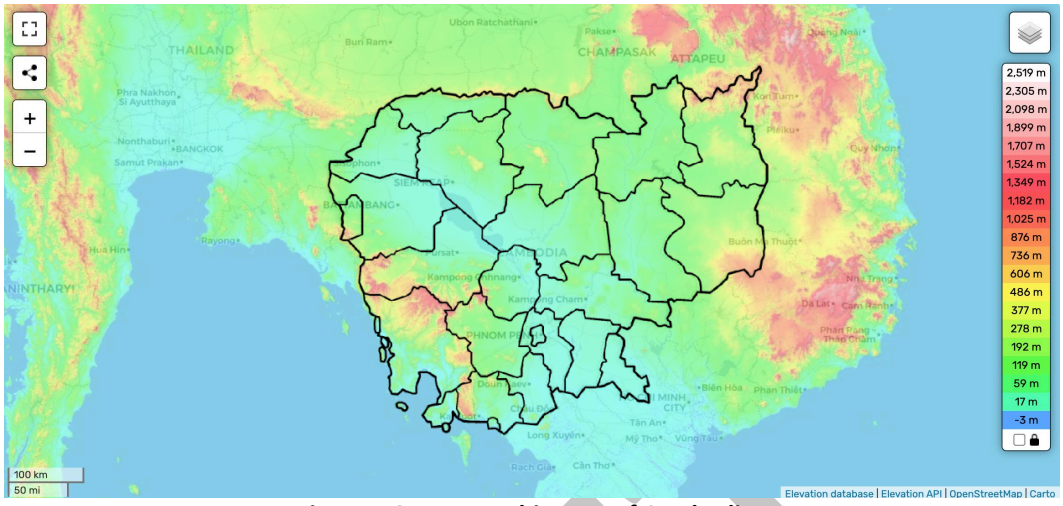


Figure 4-3 Topographic Map of Cambodia7

4.1.5. Geology and Soil

Cambodia's soils are mainly developed on the old alluvial and/or colluvial plains. Sandy materials cover a large proportion of the country. The soils in Cambodia were classified by Crocker (1962)[8] into 16 soil group (Red yellow podzols, Latosols, Planosols, Plinthite podzols, Cultural hydromorphics, Grey hydromorphics, Plinthitic hydromorphics, Brown hydromorphics, Alumisols, Regurs, Acid Lithosols, Basic Lithosols, Alluvial Lithosols, Brown Alluvial Soils, Lacustrine Alluvial Soils, and Costal Complex) and categorized as low (53%), medium (19%), and high (28%) fertility levels.

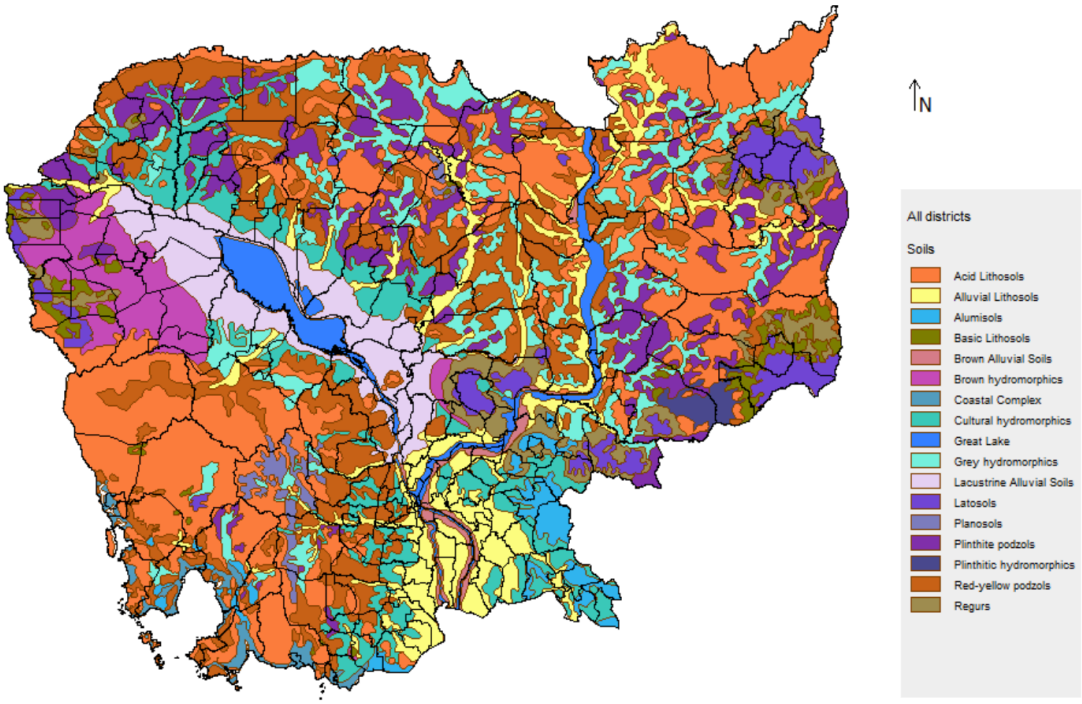


Figure 4-4 Soil types in Cambodia9

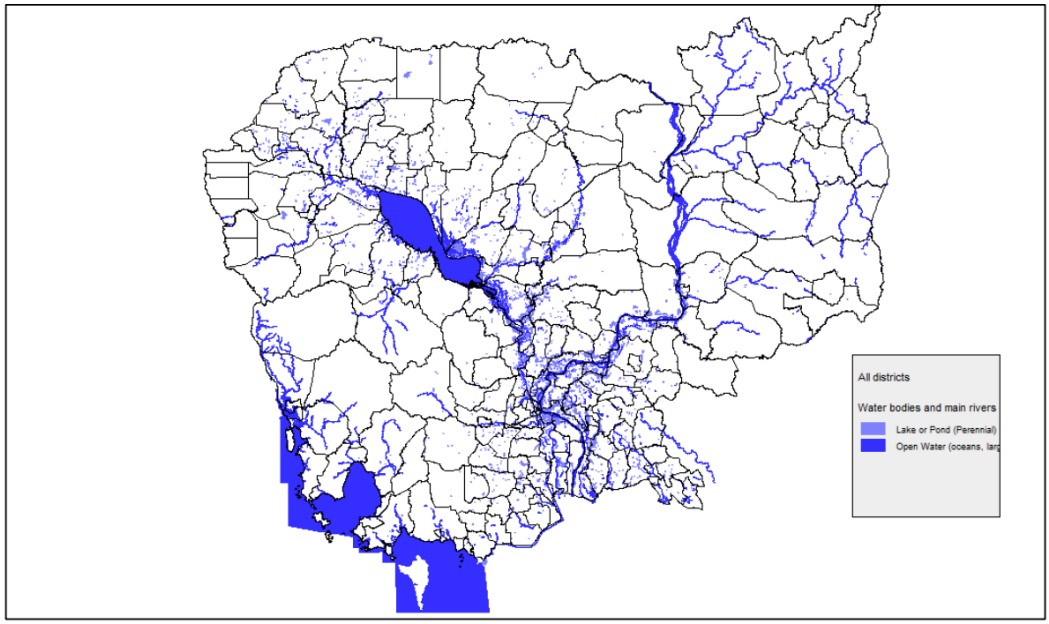
[7] https://en-gb.topographic-map.com/map-l4cgt/Cambodia/?base=3

[8] Crocker, C.D. 1962. *The general soil map of the kingdom of Cambodia and the exploratory survey of soils of Cambodia*. Royal Cambodian Government Soil Commission/USAID, Phnom Penh.

[9] https://hismohcambodia.org/public/fileupload/ENVIRONMENTAL_AND_SOCIAL_MANAGEMENT_FRAMEWORK_ESMF_For_Additional.pdf

4.1.6. Hydrology and Water Resources

Cambodia's topography consists primarily of flat, low-lying plains that are drained by the Tonle Sap Lake and the Mekong and Bassac Rivers. The Mekong River flows more than 500 kilometers through Cambodia; and in some places, it is up to 5 kilometers wide. The rich sediment deposited during the rainy season when the Mekong River swells and floods adds to the fertile growing conditions that exist throughout the Upper Mekong Delta. The Tonle Sap Lake, located in western central Cambodia, connects with the Mekong River at Phnom Penh via a 100-kilometer-long natural channel. During the dry season when the water level of the Mekong is low, water flows southeast out of the Tonle Sap Lake into the Mekong River. However, during the rainy season when the level of the Mekong rises, an extraordinary phenomenon takes place. The swollen and swift-moving Mekong River causes the flow of water in the channel linking the Tonle Sap Lake with the Mekong to reverse, forcing water to drain back into the Tonle Sap and, over time, causing the Lake to more than double in size. As a result of this unique occurrence, the Tonle Sap is one of the richest sources of freshwater fish in the world.



Source: Ministry of Rural Development

Figure 4-5 Main Rivers and Lakes in Cambodia[10]

[10] https://hismohcambodia.org/public/fileupload/ENVIRONMENTAL_AND_SOCIAL_MANAGEMENT_FRAMEWORK_ESMF_For_Additional.pdf

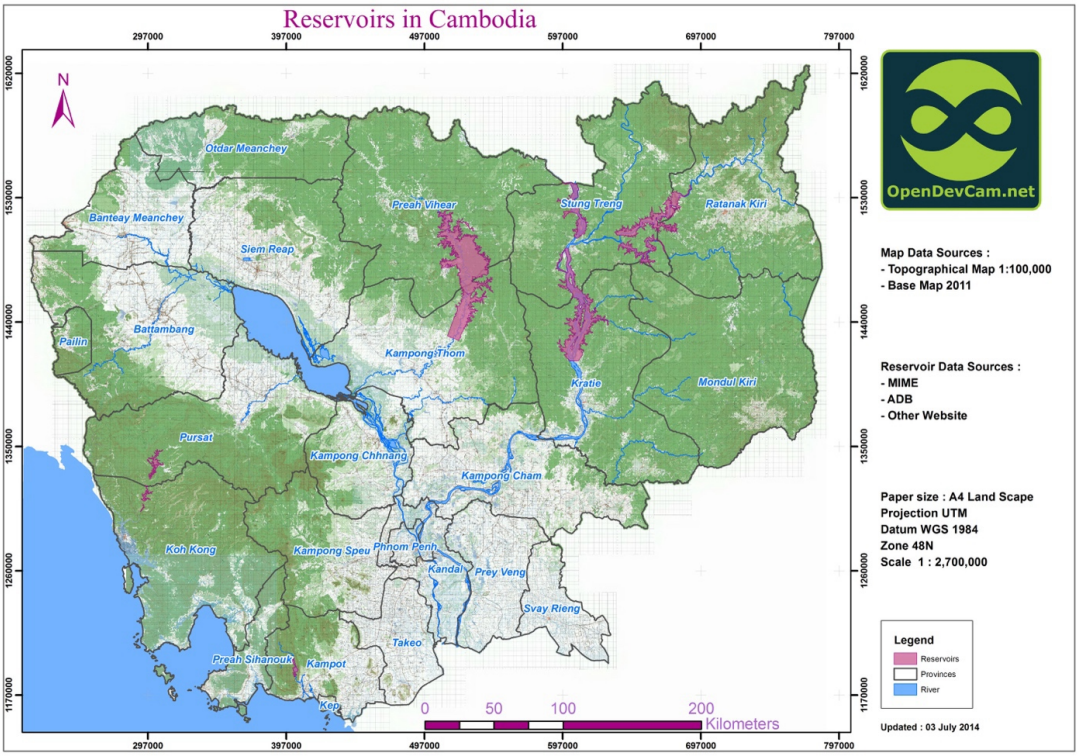


Figure 4-6 Reservoirs in Cambodia11

Reservoirs are observed in Koh Kong, Pursat, Preah Vihear, Kampong Thom, Stung Treng, Kratie, Ratanak Kiri and Kampot Provinces.

4.1.7. Land Resources

Cambodia has classified the land into three main categories: private land, state public land, and state private land as defined in the Land Law 2001. The land use in Cambodia is categorized broadly into agricultural, forest, and other land, with agricultural land primarily used for rice cultivation and other crops, while forest land covers a significant portion of the country, and other land includes urban areas, water bodies, and shrubland as shown in the Figure.

[11] https://data.opendevelopmentcambodia.net/en/dataset/hydropower-reservoirs-in-cambodia-1999-2010

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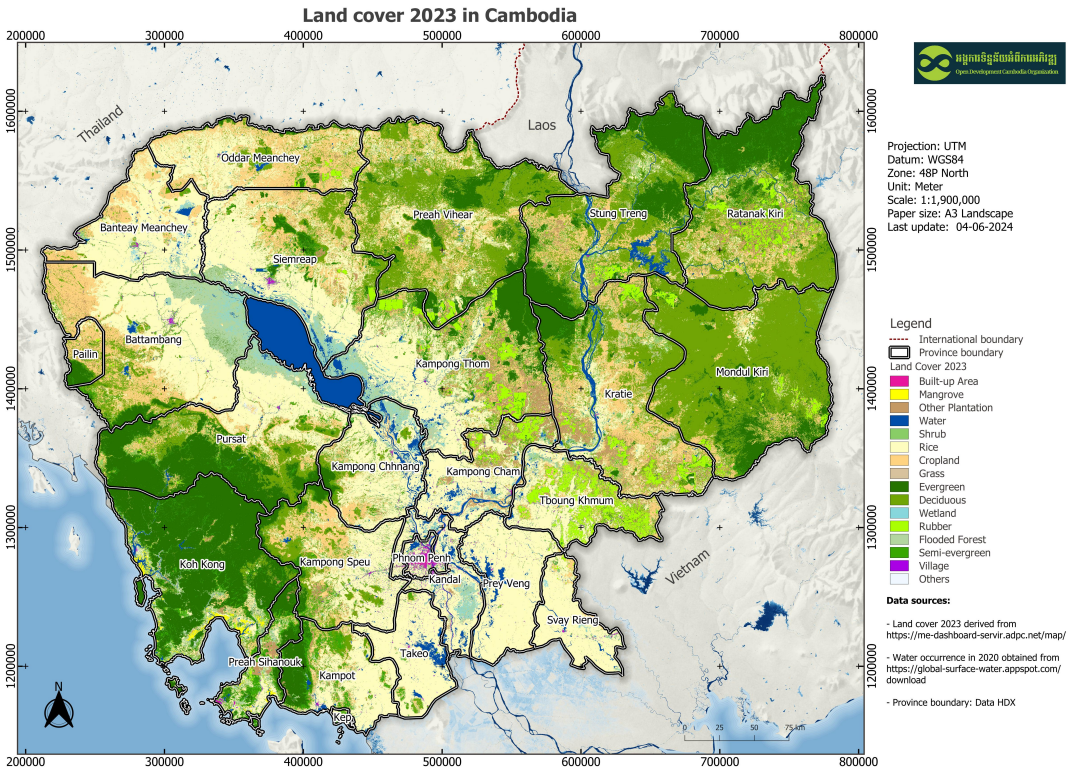

Figure 4-7 Map of Land Cover (2023)

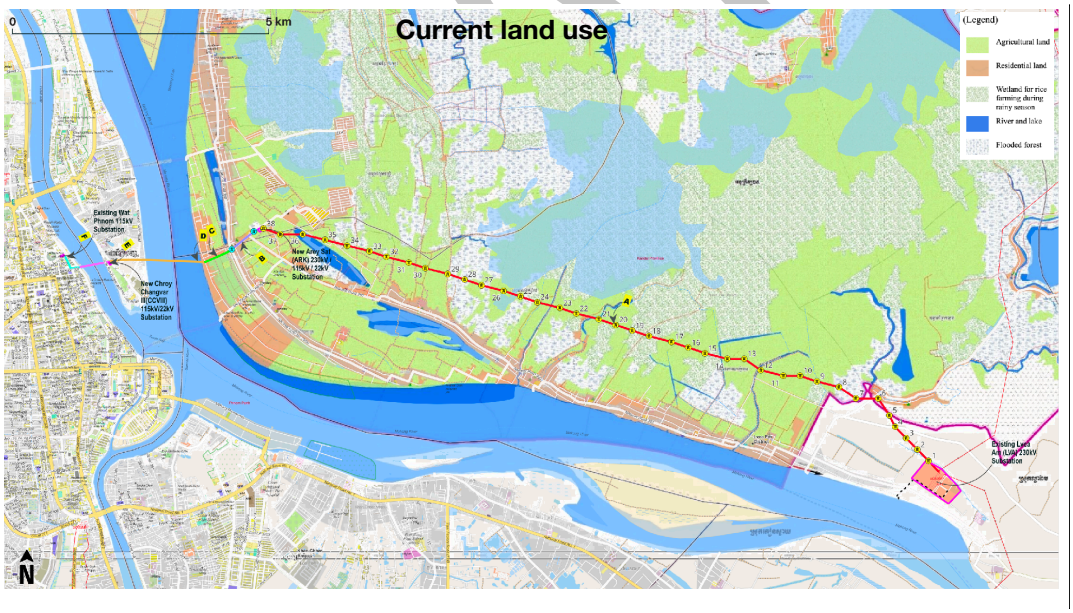

Figure 4-8 Map of Current Land Use along the proposed transmission line

According to the current land-use map for the proposed transmission line route in Phnom Penh Capital City, the following land-use types have been identified along the corridor: agricultural land, residential land, wetland , flooded forest, and river and lake which likely to be affected by the construction of OHT.

4.1.8. Protected Areas and Key Biodiversity Areas

As of 2023, Cambodia has 89 Protected Areas (PAs) and Key Biodiversity Areas (KBAs). In the project provinces under the CSET project, Kampong Cham, Kandal, Kep, Phnom Penh, Svay

Rieng have no PA and KBA. It is noted that several PAs and KBAs extend across multiple provincial boundaries. Detail description of the PAs and KBAs in the project provinces under CSET project is shown in Table 4-4.

Table 4-4 PAs and KBAs in the project provinces under CSET project[12]

Project province	Name	Size (ha)	Provincial Coverage	Category	Issue Date
Battambong	Samlaut Multiple Use Area	60,000	01 Province (Battambong)	Multiple Use Management Area	1/11/1993
	Kiriyong Natural Heritage Site	984.31	01 Province (Battambong)	Natural Heritage Site	25/5/2020
	Phnom Taktrang Natural Heritage Site	79.82	01 Province (Battambong)	Natural Heritage Site	25/5/2020
	Phnom Prampi Natural Heritage Site	353.90	01 (Province Battambong)	Natural Heritage Site	25/5/2020
	Ramsar Prek Toal	21,342	01 Province (Battambong)	Ramsar Site	2/10/2015
	Roniem Daun Sam III Wildlife Sanctuary	2,121	01 Province (Battambong)	Wildlife Sanctuary	29/9/2003
	Roniem Daun Sam II Wildlife Sanctuary	21,335	01 Province (Battambong)	Wildlife Sanctuary	29/9/2003
Kampong Chhnang	Phnom Neang Kang Rey- Phnom Teuk Meas Multiple Use Area	5,063	01 Province (Kampong Chhnang)	Multiple Use Management Area	28/11/2017
	Phnom Krang Dei Meas Protected Landscape	288	01 Province (Kampong Chhnang)	Protected Landscape	12/4/2019
Kampong Thom	Sambor Prey Kok Temple Cultural Resort	2,982	01 Province (Kampong Thom)	Protected Landscape	13/3/2003
	Ramsar Stung Sen	9,293	01 Province (Kampong Thom)	Ramsar Site	11/02/2018
	Beng Per Wildlife Sanctuary	242,500	01 Province (Kampong Thom)	Wildlife Sanctuary	1/11/1993
Koh Kong	Dong Peng Multiple Use Area	27,700	01 Province (Koh Kong)	Multiple Use Management Area	1/11/1993
	Botum Sakor National Park	171,250	01 Province (Koh Kong)	National Park	1/11/1993
	Koh Kapik and Associated Islets	12,000	01 Province (Koh Kong)	Ramsar Site	23/6/1999
	Tatai Wildlife Sanctuary	144,275	01 Province (Koh Kong)	Wildlife Sanctuary	9/5/2016
	Peam Krasop Wildlife Sanctuary	23,750	01 Province (Koh Kong)	Wildlife Sanctuary	1/11/1993

[12] https://opendevelopmentcambodia.net/profiles/natural-protected-areas/?utm_source=chatgpt.com

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Project province	Name	Size (ha)	Provincial Coverage	Category	Issue Date
Kratie	Sor Sor Sdom Tao Multiple Use Area	839	01 Province (Kratie)	Multiple Use Management Area	28/11/2017
	Preaek Prasab Wildlife Sanctuary	12,770	01 Province (Kratie)	Wildlife Sanctuary	10/05/2018
	Sambour Wildlife Sanctuary	50,093	01 Province (Kratie)	Wildlife Sanctuary	10/05/2018
	Dolphin Santuary Khsach Mkak and Koh Pdao	5,550	01 Province (Kratie)	Natural Heritage Site	27/02/2023
	Dolphin Sanctuary Kampir	2,240	01 Province (Kratie)	Natural Heritage Site	27/02/2023
Mondul Kiri	Srepok Wildlife Sanctuary	372,971	01 Province (Mondul Kiri)	Wildlife Sanctuary	9/5/2016
	Phnom Namlear Wildlife Sanctuary	47,500	01 Province (Mondul Kiri)	Wildlife Sanctuary	1/11/1993
Preah Sihanouk	Prek Teuk Sap Kbal Chhay Multiple Use Area	5,520	01 Province (Preah Sihanouk)	Multiple Use Management Area	9/5/2016
	Ream National Park	150,000	01 Province (Preah Sihanouk)	National Park	1/11/1993
Preah Vihear	Techo Sen Russey Treb Cambodian Royal Academy National Park	11,435	01 Province (Preah Vihear)	National Park	17/4/2014
	Phnom Tbeng Natural Heritage Site	25,269.41	01 Province (Preah Vihear)	Natural Heritage Site	13/9/2016
	Koh Kae Protected Resort	3,508	01 Province (Preah Vihear)	Protected Landscape	28/5/2004
	Prasat Bakan Protected Landscape	2,124	01 Province (Preah Vihear)	Protected Landscape	31/8/2017
	Preah Vihear Temple Protected Landscape	5,000	01 Province (Preah Vihear)	Protected Landscape	1/11/1993
	Preah Rokar Wildlife Sanctuary	90,361	01 Province (Preah Vihear)	Wildlife Sanctuary	9/5/2016
Prey Veng	Toul Pon Taley Boeung Snae Multiple Use Area	3,557	01 Province (Prey Veng)	Multiple Use Management Area	02/05/2021
Pursat	Bakan Protected Landscape	384,430	01 Province (Pursat)	Protected Landscape	07/04/2023
Siem Reap	Phnom Kulen National Park	37,500	01 Province (Siem Reap)	National Park	1/11/1993
	Angkor Wat Protected Landscape	10,800	01 Province (Siem Reap)	Protected Landscape	1/11/1993
	Beng Mealea Protected Area	315	01 Province (Siem Reap)	Protected Landscape	28/4/2004
Stung Treng	Siem Pang Wildlife Sanctuary	133,707.73	01 Province (Stung Treng)	Wildlife Sanctuary	11/06/2019

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Project province	Name	Size (ha)	Provincial Coverage	Category	Issue Date
	Stung Treng Protected Landscape	37,852	01 Province (Stung Treng)	Protected Landscape	17/07/2023
	Stung Treng Ramsar Site	14,600	01 Province (Stung Treng)	Ramsar Site	23/06/1999
	Toul Bospnheav Multiple Use Area	1,252.37	01 Province (Stung Treng)	Multiple Use Management Area	25/04/2023
	Virachey National Park	332,500	01 Province (Stung Treng)	National Park	11/01/1993
Takeo	Boeung Prek Lpeou Protected Landscape	8,305	01 Province (Takeo)	Protected Landscape	05/09/2016
Tboung Khmum	Ponhea Kraek Multiple Use Area	199	01 Province (Tboung Khmum)	Multiple Use Management Area	9/5/2016
	Boeung Spei	13	01 Province (Tboung Khmum)	Multiple Use Management Area	15/11/2021
	Boeung Sroul	91	01 Province (Tboung Khmum)	Multiple Use Management Area	15/11/2021
	Boeung Kade, Boeung Chileng Multiple Use Area	1,539	01 Province (Tboung Khmum)	Multiple Use Management Area	15/11/2021
Multiple provinces	Mekong River Dolphine Management Area	12,000 ha	02 Provinces (Kratie and Stung Treng)	Natural Heritage Site	27/02/2023
	Dolphin Sanctuary Koh Santuk, Koh Konsat, and Tboung Khla	13,850 ha	02 Provinces (Kratie and Stung Treng)	Natural Heritage Site	27/02/2023
	Keo Seima Wildlife Sanctuary	292,690 ha	02 Provinces (Kratie and Mondul Kiri)	Wildlife Sanctuary	05/09/2016
	Prey Lang Wildlife Sanctuary	431,683 ha	04 Provinces (Stung Treng, Kampong Thom, Kratie, Preah Vihear)	Wildlife Sanctuary	05/09/2016
	Boeung Chhmar and Associated River System and Floodplain Ramsar Site	28,000	02 Provinces (Kampong Thom, Siem Reap)	Ramsar Site	23/6/1999
	Tonle Sap Northern Lowland Protected Landscape	31,159	02 Provinces (Kampong Thom, Siem Reap)	Protected Landscape	9/5/2016
	Tonle Sap Biosphere Reserve	316,250	05 Provinces (Kampong Chhnang,	Biosphere Reserve	11/01/1993

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Project province	Name	Size (ha)	Provincial Coverage	Category	Issue Date
			Kampong Thom, Siem Reap, Battambong, and Pursat)		
	Central Cardamom Mountains National Park	401,313	03 Provinces (Koh Kong, Pursat, and Kampong Speu)	National Park	05/09/2016
	Southern Cardamom Mountains National Park	410,392	04 Provinces (Koh Kong, Pursat, Kampong Speu, and Preah Sihanouk)	National Park	05/09/2016
	Roniem Daun Sam I Wildlife Sanctuary	16,565	02 Provinces (Battambong, Banteay Meanchey)	Wildlife Sanctuary	29/9/2003
	Phnom Aural Wildlife Sanctuary	253,750	03 Provinces (Koh Kong, Pursat, and Kampong Chhnang)	Wildlife Sanctuary	1/11/1993
	Koh Rung Marine National Park	52,498	02 Provinces (Preah Sihanouk Koh Kong)	Marine National Park	8/2/2018
	Preah Soramrit-Kosomak "Kirirom" National Park	35,000	04 Provinces (Kampong Speu, Koh Kong, Preah Sihanouk)	National Park	1/11/1993
	Phnom Prich Wildlife Sanctuary	222,500	02 Provinces (Ratanak Kiri, Mondul Kiri)	Wildlife Sanctuary	1/11/1993
	Lomphat Wildlife Sanctuary	250,000	02 Provinces (Ratanak Kiri, Mondul Kiri)	Wildlife Sanctuary	1/11/1993
	Dolphin Sanctuary Koh Santuk, Koh Konsat, and Tboung Khla	13,850	02 Provinces (Kratie and Stung Treng)	Natural Heritage Site	27/02/2023
	Mekong River Dolphine Management Area	12,000	02 Provinces (Kratie and Stung Treng)	Natural Heritage Site	27/02/2023
	Chheb Wildlife Sanctuary	190,027	02 Provinces (Preah Vihear and Stung Treng)	Wildlife Sanctuary	05/09/2016

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Project province	Name	Size (ha)	Provincial Coverage	Category	Issue Date
	Kulen Promtep Wildlife Sanctuary	402,500	02 Provinces (Siem Reap, Preah Vihear)	Wildlife Sanctuary	1/11/1993
	Phnom Thnout-Phnom Pok Wildlife Sanctuary	42,097	02 Provinces (Preah Vihear, Siem Reap)	Wildlife Sanctuary	31/8/2017
	Prey Lang Wildlife Sanctuary	431,683	04 Provinces (Stung Treng, Kampong Thom, Kratie, Preah Vihear)	Wildlife Sanctuary	05/09/2016
	Veun Sai-Siem Pang National Park	57,469	02 Provinces (Stung Treng and Ratanakiri)	National Park	05/09/2016

Figure 4-9 Map of Protected Areas in Cambodia

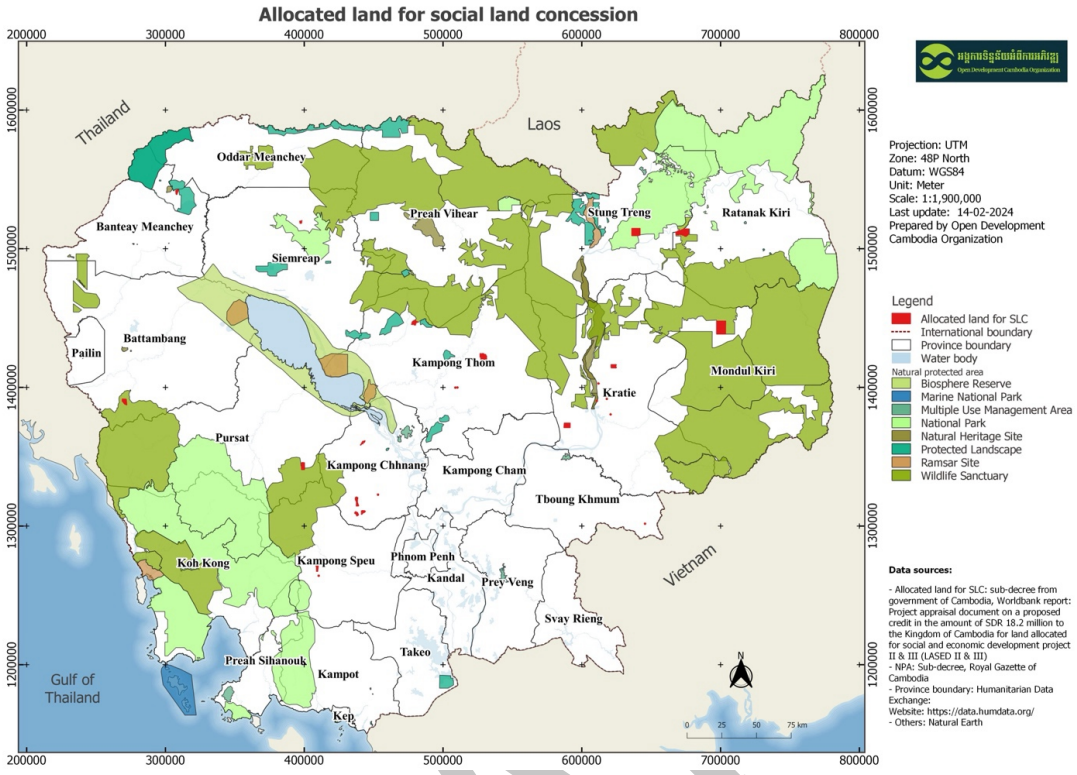

Figure 4-10 Natural protected areas[13]

4.1.9. Risk of UXOs

The Cambodian government has targeted to rid the country of landmines and other unexploded ordnance by 2025. Data from the Cambodia Mine Action Authority (CMAA) shows sixty-five people were killed or injured by landmines and unexploded ordnance (UXO) in Cambodia in 2020, down 16 percent from 77 casualties in the year before. Children, the curious or those just scavenging for scrap metal, are often among the victims but UXO is problem that still afflicts the entire country. Cambodia is still at high risk of landmine and UXOs specifically for any construction involving piling or digging. Based on the government commune database 2018, the UXO risk varies by provinces.[14]

From January 1979 to August 2025, a total of 65,120 Explosive Ordnance (EO) casualties were recorded by the Cambodia Mine/ERW Victim Information System (CMVIS) officers. All of the 65,120 EO casualties: 79% were mine casualties, and 21% were explosive remnants of war (ERW) casualties; 30% people were killed, 56% people were injured, and 14% people were amputated.

According to the CMVIS monthly report of August 2025, some of the project provinces are among the most affected provinces between January 2024 to August 2025. The details can be seen on the table.

[13] https://data.opendevelopmentcambodia.net/en/dataset/allocated-land-for-social-land-concession

[14] https://hismohcambodia.org/public/fileupload/ENVIRONMENTAL_AND_SOCIAL_MANAGEMENT_FRAMEWORK_ESMF_For_Additional.pdf

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Table 4-5 Five Most Affected Provinces for Explosive Ordnance Casualties, Ranked by Total Casualties (Jan2024 - Aug2025) [15]

Rank	Province	Mine Casualties	ERW Casualties	Total Casualties	Cumulative Total
1	Battambong	8	9	17	17
2	Preah Vihear	9	1	10	27
3	Oddar Meanchey	9	0	9	36
4	Kampong Thom	0	6	6	42
5	Mondul Kiri	0	6	6	48

According to the Royal Government of Cambodia (RGC) Commune Database (2018), the presence of unexploded ordnance (UXO) varies significantly across the project's provinces. Several provinces such as Kampong Cham and Phnom Penh (capital city) reported no communes affected by UXOs. In contrast, provinces such as Prey Veng (67%) and Siem Reap (60%) show a high proportion of communes reporting UXO presence, suggesting high contamination risk in these areas. Battambong (29%), Kampong Chhnang (34%), and Kampot (39%) also exhibit notable UXO presence, while other provinces including Kandal (18%), Kratie (13%), Takeo (10%), Stung Treng (3%), and Pursat (8%) report relatively lower levels of UXO contamination. The detail of UXO presence in project's provinces can be seen in Table 4-6.

Table 4-6 UXO presence from Commune Database 2018[16]

Province	Total # Communes /Sangkats	Communes Reporting the Presence of UXOs	%
Banteay Meanchey	65	9	14%
Battambang	101	29	29%
Kampong Cham	108	0	0%
Kampong Chhnang	70	24	34%
Kampong Speu	87	55	63%
Kampong Thom	80	7	9%
Kampot	93	36	39%
Kandal	125	22	18%
Kep	5	2	40%
Koh Kong	29	2	7%
Kratié	47	6	13%
Mondulkiri	21	2	10%
Oddar Meanchey	24	14	58%
Pailin	8	3	38%
Phnom Penh	101101	0	0%
Sihanoukville	25	7	28%
Preah Vihear	51	7	14%
Prey Veng	115	77	67%
Pursat	49	4	8%
Ratanakiri	50	6	12%
Siem Reap	100	60	60%
Stung Treng	34	1	3%
Svay Rieng	79	5	6%
Takéo	96	10	10%
Tboung Khmum	64	10	16%

Source: RGC Commune Database 2018

[15] https://www.cmaa.gov.kh/detail/content/tLSB8B7VELFF3DO10imT

[16] https://hismohcambodia.org/public/fileupload/ENVIRONMENTAL_AND_SOCIAL_MANAGEMENT_FRAMEWORK_ESMF_For_Additional.pdf

4.2. Preliminary Social Baseline

4.2.1. Socioeconomic Profile

4.2.1.1. Population and Demographics

Cambodia's population is estimated to be around 17,280,543 people in 2024, with a population density of 97 people per square kilometer.

Based on the population data of Cambodia in project's provinces, Phnom Penh (capital city) has the highest population with 2,352,851 people, accounting for 13.61% of the country's total population. It also has the highest population density, with 3,465 people per square kilometer, reflecting its status as the nation's capital and main urban center. In contrast, Kep Province has the lowest population, with only 48,772 people or 0.28% of the total population, while Mondul Kiri Province has the lowest population density, at just 7 people per square kilometer.

Table 4-7 Population, Population Density in Project's provinces[17]

No.	Province	Population	% of total population	Population Density (people per square kilometer)
1	Battambong	1,132,017	6.55%	97
2	Kampong Cham	1,062,914	6.15%	234
3	Kampong Chhnang	604,895	3.50%	110
4	Kampong Thom	807,254	4.67%	58
5	Kandal	1,352,198	7.83%	425
6	Kep	48,772	0.28%	145
7	Koh Kong	140,962	0.82%	14
8	Kratie	441,078	2.55%	40
9	Mondul Kiri	93,657	0.54%	7
10	Phnom Penh	2,352,851	13.61%	3,465
11	Preah Sihanouk	234,702	1.36%	121
12	Preah Vihear	249,973	1.45%	18
13	Prey Veng	1,277,867	7.39%	273
14	Pursat	516,072	2.99%	41
15	Siem Reap	1,099,825	6.36%	107
16	Stung Treng	176,488	1.02%	16
17	Svay Rieng	613,159	3.55%	207
18	Takeo	1,097,243	6.35%	308
19	Tboung Khmum	889,970	5.15%	170

4.2.1.2. Education & Health

Cambodia's education system follows a 6+3+3 structure[18]. This means 12 years for the completion of general education that divides up into six years for primary education (grade 1 to 6) and six years for secondary general education (grade 7 to 12). Secondary education consists of three years each for lower secondary education (grade 7 to 9) and upper secondary education (grade 10 to 12). This formulation does not include at least one year for pre-school education (kindergarten) for children from 3 to below 6 years old and university education of

[17] https://cambodia.unfpa.org/en/publications/cambodia-inter-censal-population-survey-2024-final-report

[18] UNESCO. (2008). *Secondary education regional information base: Country profile – Cambodia*. http://uis.unesco.org/sites/default/files/documents/secondary-education-regional-information-base-country-profile-for-cambodia-en_1.pdf

4 to 5 years. The Socio-Economic Survey 2019-2020 shows the Cambodian literacy rate from the age of 15 and above was 87.8 percent in 2020, up from 77.6 percent in 2008. In urban areas, the adult literacy rate increased to 93.3 percent compared with 83.8 percent in rural areas. The national literacy level is 62.24%[19].

Table 4-8 Literacy rate of aged 15+ in Project's provinces (2019)[20]

No.	Province	Literacy rate (%)
1	Battambong	84.8
2	Kampong Cham	83.9
3	Kampong Chhnang	86.6
4	Kampong Thom	79.1
5	Kandal	91.4
6	Kep	85.6
7	Koh Kong	81.7
8	Kratie	No data
9	Mondul Kiri	71.5
10	Phnom Penh	94.9
11	Preah Sihanouk	61.4
12	Preah Vihear	77.7
13	Prey Veng	89.1
14	Pursat	86.1
15	Siem Reap	78.2
16	Stung Treng	72.8
17	Svay Rieng	89.7
18	Takeo	89.2
19	Tboung Khmum	83.9

According to the thematic report on Literacy and Educational Attainment in 2019, literacy rates in Cambodia vary significantly across project's provinces. Phnom Penh (capital city) records the highest literacy rate at 94.9% and Kandal Province also demonstrates a high literacy rate of 91.4%. In contrast, Preah Sihanouk Province has the lowest literacy rate at 61.4%, followed by Mondul Kiri (71.5%) and Stung Treng (72.8%).

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[19] https://www.khmertimeskh.com/501506339/digital-education-program-to-be-implemented-in-phnom-penh-and-kandal-province/#google_vignette

[20] https://www.nis.gov.kh/nis/Census2019/Thematic%20Report%20Literacy%20and%20Educational%20Attainment-Eng.pdf

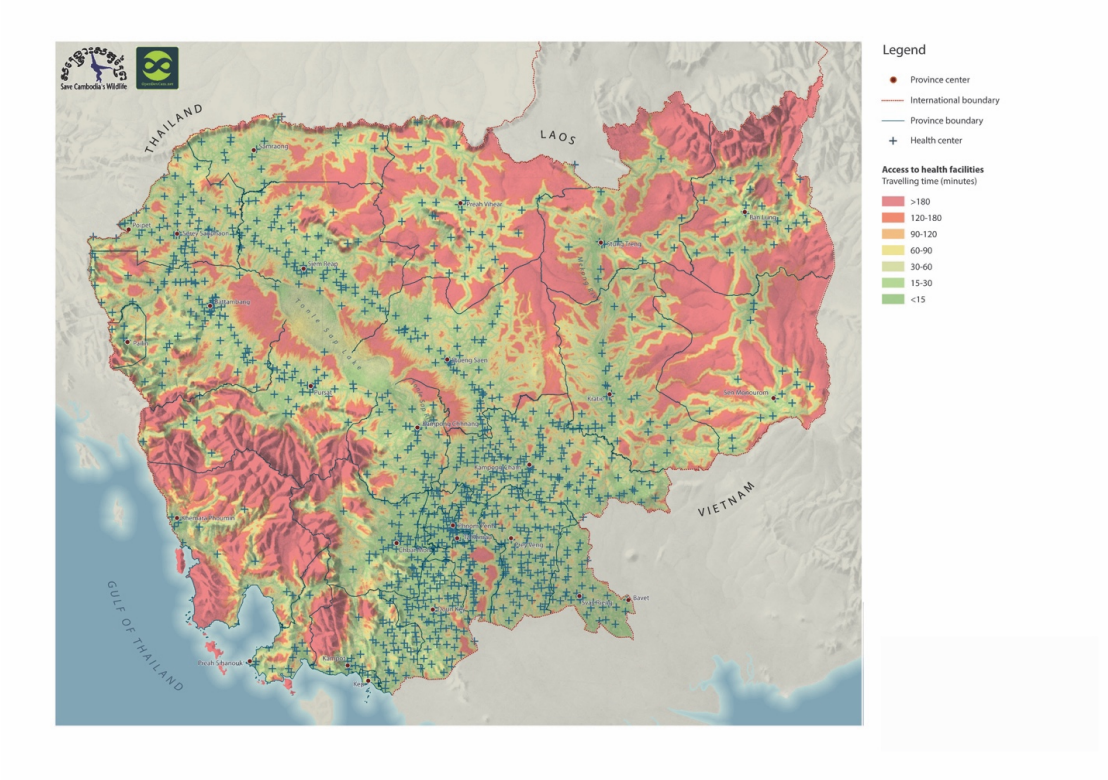

Figure 4-11 Access to Health Facilities[21]

As seen in the Figure 4-11, accessibility to health facilities is more limited in Preah Vihear, Stung Treng, Pursat, and Mondul Kiri provinces. In the figure, these provinces display larger red-colored areas, indicating that the travel time to reach the nearest health facilities exceeds 120 minutes and, in some areas, more than 180 minutes. In contrast, other project provinces show relatively fewer red zones and more green and yellow areas, signifying shorter travel times and better accessibility to health services.

4.2.1.3. Land Use & Livelihood

In Cambodia, livelihoods are heavily reliant on agriculture and other activities like fishing, forestry, and garment manufacturing also contributing to the economy, alongside tourism.

Agriculture remains the backbone of livelihoods in Cambodia, with more than half of all households (54.2%) engaged in agriculture. The sector is dominated by smallholders, as the average landholding size is 1.7 hectares and nearly 44% of farmers operate on less than one hectare. Crop cultivation continues to be the mainstay of rural livelihoods—93.9% of agricultural households grow crops, with rice covering about 66.6% of all cultivated land, while cassava has emerged as the second most prominent crop, occupying 13.2% of cultivated areas. Livestock and poultry rearing also play an important role, practiced by 58.6% of households, with 39.3% keeping chickens or ducks. Many rural families further supplement their income through forestry-related activities (19.5%).[22]

The fisheries sector remains a vital component of livelihoods in Cambodia, with approximately 286,000 household holdings engaging in capture‑fishing in rice-fields and 206,000 in rivers/

[21] https://data.opendevelopmentcambodia.net/en/dataset/access-to-health-facilities
[22] https://www.nis.gov.kh/nis/Agriculture%20Census/2-CAC2023-Main%20Report_EN.pdf

lakes, while only about 9,000 households fished in marine waters according to Cambodia Agriculture Survey 2023.[23]

4.2.2. Public Infrastructures in Project Area

4.2.2.1. Electricity

Cambodia's electricity system has significantly improved over the last decade. As of 2023, 95% of the country's population has access to electricity[24]. The Cambodian government continue promoting the development of alternative energy sources, such as solar power, to supplement grid electricity and ensure a more reliable supply. The Electricity Authority of Cambodia (EAC) has implemented a strategic plan to reduce electricity tariffs for consumers, including those in areas supplied by the national grid. The EAC provides subsidies to licensees through the Rural Electrification Fund (REF) to further reduce electricity costs for consumers. The number of consumers connected to the national grid has been increasing, indicating the success of the electrification efforts. Rural and remote provinces such as Kratie, Pursat, and Prey Veng still have limited electricity access and infrastructure gaps, underscoring the project's contribution to improved energy equity and service reliability.

4.2.2.2. Water Supply and Sanitation

Almost all (96.3%) urban households have access to water supplies. Piped water supply is the primary drinking water source for urban households (65.7%), more than two-thirds (72%) of whom have it piped into their premises. Urban households without access to piped water tend to rely on tube wells (13.8%) and bottled water (19.4%). On the other hand, only 18.5 percent of rural households have access to piped water, and only 12.8 percent have water piped directly into their premises. Almost three times as many rural families (32.6%) depend on tube wells; 13.7 percent rely on surface water.[25]

In 2023, eight provinces (Svay Rieng, Prey Veng, Kandal, Kampong Speu, Kampong Chhnang, Kep and Preah Sihanouk, Kampong Cham) have achieved Open Defecation Free (ODF) status (clean sanitation/having toilet access) in rural areas. From 2023 to the present, the ministry of rural development has provided more than 28,000 toilets for households, 73 shared toilets and over 2,400 hand-washing facilities.[26]

4.2.2.3. Cultural and Physical Cultural Resources

Cambodia has three world heritage sites such as Angkor located in Siem Reap province (listed in 1992), Temple of Preah Vihear (listed in 2008) and Koh Ker Archaeological Site of Ancient Lingapura or Chork Gargyar (listed in 2023) located in Preah Vihear province and Temple Zone of Sambor Prei Kuk, Archaeological Site of Ancient Ishanapura located in Kampong Thom province (listed in 2017).

[23] https://www.nis.gov.kh/nis/CAS/2023/CAS2023_Report_4_Aquaculture_and_Capture_Fishing_ENG.pdf

[24] https://tradingeconomics.com/cambodia/access-to-electricity-percent-of-population-wb-data.html#:~:text=Access%20to%20electricity%20(%25%20of%20population)%20in%20Cambodia%20was%20reported,compiled%20from%20officially%20recognized%20sources.

[25] https://www.unicef.org/cambodia/media/8401/file/An%20analysis%20of%20the%20situation%20of%20children%20and%20adolescents%20in%20Cambodia.pdf

[26] https://www.thestar.com.my/aseanplus/aseanplus-news/2024/07/26/kampong-cham-in-cambodia-declared-open-defecation-free-joins-seven-other-provinces

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4.2.2.4. Ethnic Groups (Indigenous People)

Most of the indigenous peoples in Cambodia originally live in the northern and eastern parts of Cambodia. Over a long period of time in the history, indigenous population has spread across Cambodia.

Table 4-9 Distribution of Indigenous People Groups in Project Provinces

No.	Province	Indigenous Groups (>= 1000 people)	Indigenous Groups (>= 100 people)	Indigenous Groups (<100 people)
1	**Kandal**		KJarai, Kleung, Stieng, Ja'ong	Kavet, Kuoy, Lun, Bunon, Brao, Tumpoun, Kroul, Radae, L'moon, Souy, S'och, Kajrouk, Mon
2	**Takeo**		Jarai, Ja'ong	Kavet, Kleung, Kuoy, Bunong, Stieng, L'moon, S'och, Kajrouk (Mel)
3	**Prey Veng**		Jarai, Stieng, Ja'ong	Kavet, Kleung, Kuoy, Kroul, Radae, S'och, Kajrouk (Mel)
4	**Pursat**		Jarai, Poar	Kavet, Kleung, Kuoy, Kreung, Stieng, Ja'ong, Kroul, S'och, Kajrouk
5	**Kratie**	Kuoy, Bunong, Stieng, Kroul, Mel	Jarai, L'moon, Khonh	Kavet, Kleung, Lun, Praov, Ja'ong, Poar, Souy, S'och, Kajrouk
6	**Stung Treng**	Kuoy, Kavet	Kreung, Lun, Bunong, Praov	Jarai, Kleung, Tumpuan, Stieng, Ja'ong, S'och

Source: Ministry of Planning and Ministry of Rural Development (2021) Report on Demographic and Socio-economic Situation of Indigenous Peoples in Cambodia.

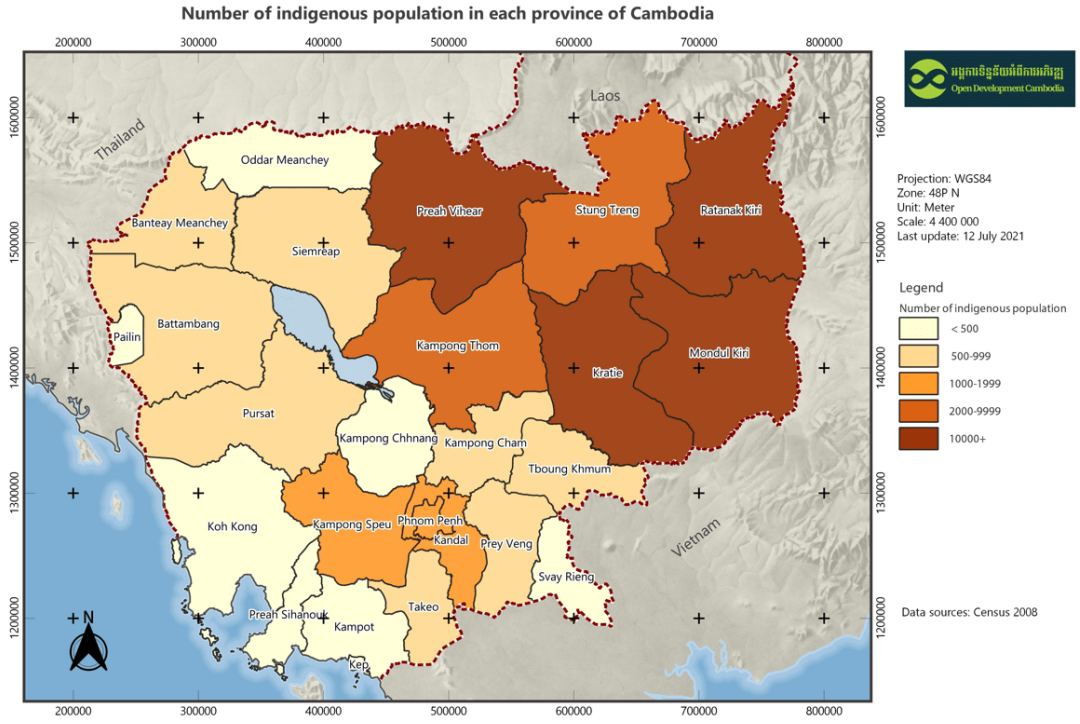

Figure 4-12 Number of Indigenous population in Cambodia by Province[27]

[27] https://opendevelopmentcambodia.net/topics/ethnic-minorities-and-indigenous-people/

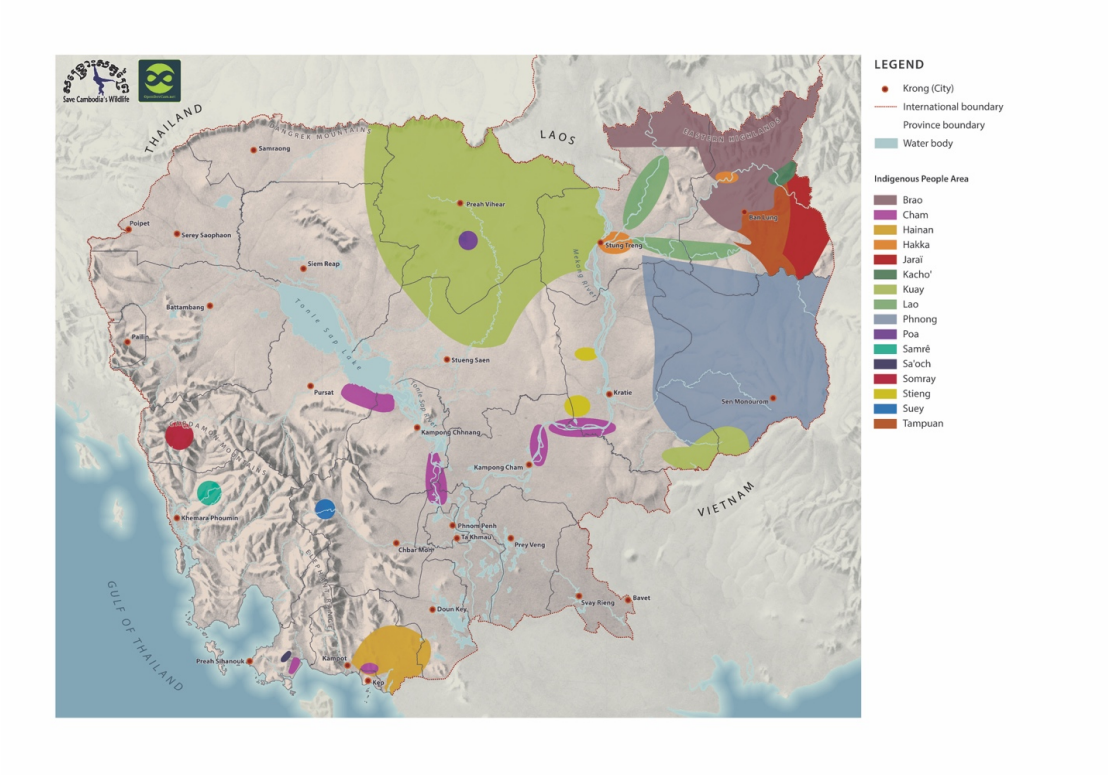

Figure 4-13 Indigenous people area in Cambodia[28]

Table 4-10 Population of ethnic minorities in project provinces (2019)[29]

No	Province	Total	Male	Female
1	Battambong	**5,705**	**2,752**	**2,953**
2	Kampong Cham	**23,032**	**11,103**	**11,929**
3	Kampong Chhnang	**30,137**	**14,382**	**15,755**
4	Kampong Thom	**13,422**	**6,513**	**6,909**
5	Kandal	**15,870**	**7,543**	**8,327**
6	Kep	**312**	**154**	**158**
7	Koh Kong	**1,921**	**947**	**974**
8	Kratie	**41,622**	**20,566**	**21,056**
9	Mondul Kiri	**35,337**	**17,564**	**17,773**
10	Phnom Penh (capital city)	**22,905**	**11,270**	**11,635**
11	Preah Sihanouk	**4,294**	**2,158**	**2,136**
12	Preah Vihear	**12,484**	**6,086**	**6,398**
13	Prey Veng	**2,512**	**1,177**	**1,335**
14	Pursat	**11,073**	**5,327**	**5,746**
15	Siem Reap	**4,523**	**2,199**	**2,324**
16	Stung Treng	**13,907**	**6,978**	**6,929**
17	Svay Rieng	**2,541**	**1,175**	**1,366**
18	Takeo	**6,013**	**2,833**	**3,180**
19	Tboung Khmum	**90,041**	**43,428**	**46,613**

Based on the 2019 Census, ethnic minorities in Cambodia are unevenly distributed across the country, with certain provinces having higher concentrations. Tboung Khmum has the largest ethnic minority population, totaling 90,041 individuals, followed by Kratie (41,622), Mondul Kiri (35,337), and Kampong Chhnang (30,137). In contrast, provinces such as Kep (312), Koh Kog (1,921), Prey Veng (2,512), and Svay Rieng (2,541) have relatively small ethnic minority

[28] https://data.opendevelopmentcambodia.net/en/dataset/map-indigenous-people-areas-in-cambodia
[29] https://www.nis.gov.kh/nis/Census2019/Ethnic%20Minorities.pdf

populations. Across these provinces, the gender distribution among ethnic minorities is fairly balanced, with slight variations in male and female numbers.

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5. POTENTIAL E&S RISKS AND IMPACTS, AND MITIGATION MEASURES

This chapter provides an assessment of the environmental and social (E&S) risks associated with the proposed CSET project. The chapter describes a range of direct and indirect risks and impacts including those that: (i) are directly caused by the Project; (ii) contribute to existing environmental and social challenges/issues; and (iii) are related to counterpart capacity and commitment to implement Project activities.

5.1. Methodology

The assessment of environmental and social (E&S) risks and impacts for this project was conducted by the implementing agency with support from an expert E&S team contracted to develop the necessary Environmental and Social Framework (ESF) instruments. The methodology combined desk-based analysis, field assessments, and stakeholder consultations, following international good practice and World Bank ESF requirements. The key steps included:

- Review of project documentation such as feasibility studies, technical reports, and engineering design concepts.
- Analysis of applicable regulatory frameworks and institutional capacities under the Code on Environment and Natural Resources (2023) and related sub-decrees.
- Benchmarking against World Bank Environmental and Social Standards (ESS1–ESS10) and lessons learned from comparable infrastructure and energy projects in the region, and
- Field visits and site reconnaissance for Component 1 activities, including potential corridors and sites in Phnom Penh and Kandal

The field assessments aimed to verify baseline environmental and social conditions, land-use patterns, and community sensitivities; to identify potential E&S risks; and to engage directly with local authorities, EDC operational staff, and affected communities. On-site observations covered proposed locations for substations, transmission lines, and distribution infrastructure upgrades, focusing on:

- Biodiversity values and habitat sensitivity.
- Land ownership and livelihood patterns.
- Cultural and physical features (e.g., temples, schools, settlements), and
- Potential interactions with biodiversity conservation zones.

The findings from these analyses informed the identification of potential E&S risks and mitigation measures presented in the following sections and guided the development of screening and management procedures under Chapter 6 of this ESMF.

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5.2. Potential Environmental and Social (E&S) Risks and Impacts

Table 5-1 summarizes the expected risks associated with individual components and sub-components of the Project. This table provides details related to specific activities and initiatives of the project.

5.2.1. Component 1: Grid Strengthening for Energy Transition

Table 5-1 Potential Environmental and Social Risks and Impacts of Activities under Component 1

Sub-Components	Potential Environmental Risks and Impacts	Potential Social Risks and Impacts
Sub-Component 1.1 Grid Strengthening for facilitation The key infrastructure components include: • A new 230kV double circuit overhead transmission line from an existing Lvea Am (LVA) station to Arey Ksat (ARK) station (15 km). • A new ARK 230/115kV substation. • A new CCVIII 115kV substation. • A new 230kV underground cable linking CCVIII substation to the existing Wat Phnom substation (2 km).	**Environmental Risks: Substantial** - **Cultural Heritage Sensitivity:** The underground cable segment connecting CCVIII to Wat Phnom might pass near a nationally significant cultural heritage site. Construction activities such as excavation, vibration, traffic, and equipment staging may pose risks to the structural, aesthetic, or cultural integrity of the Wat Phnom area. - **Construction Impacts (Air Quality):** Dust, vehicle emissions, and machinery exhaust during excavation and tower installation may affect surrounding communities and sensitive receptors. - **Noise and Vibration Impacts:** Pile driving, excavation, heavy vehicle movement may affect urban areas and sensitive receptors. - **Vegetation and Land Use:** Clearing for tower pads and substation plots may disturb existing agricultural land and small patches of modified vegetation.	**Social Risks: Substantial** - **Land Acquisition and Resettlement**: Acquisition of land for ARK and CCVIII substations may affect private agricultural plots. Tower base locations may lead to crop loss compensation or minor land acquisition. No physical displacement anticipated, but economic displacement is possible. - **Access Restrictions and Livelihood Impacts**: Construction activities in peri-urban areas may disrupt traffic circulation, small businesses, vendor stalls, and access to homes. Farmers may temporarily lose access to their lands during construction or stringing. - **Occupational Health and Safety:** Workers may face potential exposure to high-voltage equipment, posing the risk of electrocution or electric shock, particularly during the installation of transmission lines and substations. There is also the risk of mechanical injuries related to heavy machinery used in the construction process, including cranes, excavators, and trucks.

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Sub-Components	Potential Environmental Risks and Impacts	Potential Social Risks and Impacts
	- **Waste Generation:** Construction works may involve generation of solid and hazardous waste, including used electrical equipment, packaging materials, and construction debris. Inadequate disposal may lead to soil and water contamination. Risk of spills from fuels, lubricants, and transformer oils. - **Water Pollution:** Underground transmission line installation near the water resources may degrade water quality due to sediment disturbance and accidental spills. - **Wildlife and Habitat Disruption:** The overhead transmission line may affect bird migration routes and biodiversity, leading to potential collision risks for avian species. Transmission line electrocution could pose risks to large bird species. - **UXO Risks:** Some peri-urban areas in Kandal may still contain unexploded ordnance. - **Climate Resilience Risks**: The transmission infrastructure is vulnerable to extreme weather events such as storms, flooding, and heatwaves. Damage to substations and lines could result in power outages and increased maintenance costs.	- **Community Health and Safety Risks**: Increased traffic, transportation of heavy materials, and electrical infrastructure may pose risks to local communities. Noise pollution from construction activities may impact nearby residential areas and schools. - **Stakeholder Engagement and Consultation**: Uncertainties regarding the exact location of the Cambodia-Korea Friendship Bridge may create concerns and potential conflicts over project siting and the timeline of the delivery of the project. Inadequate stakeholder consultation may lead to lack of social acceptability. - **Employment and Labor Issues**: The project must ensure compliance with labor regulations, including the payment of fair wages, maintaining safe working conditions, and preventing the use of child or forced labor, in line with WB ESS2. It should also focus on providing job opportunities to local communities. - **Cultural Heritage**: If the transmission lines pass near culturally significant sites, additional assessment and consideration are required to ensure the protection of cultural heritage and historical landmarks. - **Gender and Social Inclusion**: Ensuring equitable benefit distribution and the inclusion of women

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Sub-Components	Potential Environmental Risks and Impacts	Potential Social Risks and Impacts
		and vulnerable groups in decision-making and employment. - **Security and Conflict Risks**: The presence of valuable infrastructure, such as the transmission lines and substations, could make the project vulnerable to vandalism or theft, including damage to electrical equipment or theft of materials like copper wiring, necessitating strong security measures. Furthermore, disagreements over land rights and compensation may result in conflicts between affected communities and the project.
Sub-Component 1.2 Battery Energy Storage System (BESS) Investment which includes • Deployment of BESS with a capacity of 150-200 MW in the existing substation (GS TKM Tentatively Selected).	**Environmental Risks: Low to Moderate** - **Chemical Handling and Spills:** The BESS requires handling of lithium-ion battery components, electrolytes, cooling fluids, and fire-suppression agents. These substances can pose risks to soil, water, and air quality if leaks or accidental releases occur. While the system is confined within an existing substation, any leakage from battery modules, or chemical storage could lead to localized contamination and requires strict spill-prevention and containment measures. - **Fire, Explosion, and Thermal Runaway Risks:** Lithium-ion systems present inherent risks of fire, gas release, or thermal runaway if not properly designed or operated. A Hazard and Risk Assessment (HRA) is required during detailed	**Social Risks: Low to Moderate** - **Workers' Health and Safety:** Construction activities may expose workers to risks such as accidents, exposure to hazardous materials, or heavy machinery-related injuries. Additional risks, including electric shock and burns, are also required to be considered due to the presence of high-voltage equipment in the established substation, increasing the likelihood of exposure to electrical hazards for workers. - **Community Health and Safety:** Construction of the BESS may cause temporary disruptions to local communities, including noise, traffic congestion, or disturbances to daily activities, particularly if the project is located near residential areas.

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Sub-Components	Potential Environmental Risks and Impacts	Potential Social Risks and Impacts
	design to assess fire safety, emergency shutdown systems, and ventilation requirements. Poor thermal management or electrical faults may cause high-consequence incidents. - **Wildlife and Habitat Disruption:** As the project is located in an existing substation, impacts on biodiversity are expected to be localized; however, construction noise, movement of machinery, and night-time lighting may temporarily disturb bird species or small fauna using adjacent agricultural land. - **Water Quality:** Excavation works and installation of foundations or underground infrastructure may increase sedimentation and stormwater runoff if not managed appropriately. Contaminated runoff from construction zones could temporarily affect nearby rice fields or drainage channels within the substation. **Noise and Vibration:** Heavy machinery used during civil works may generate vibration that could affect existing substation equipment and sensitive electrical infrastructure. During operation, the BESS will create consistent background noise from cooling systems, inverters, and ventilation units, though this is expected to remain within acceptable limits. - **Climate Resilience Risks**: the BESS infrastructure could still be vulnerable to extreme weather, such	- **Employment and Labour:** Employment during the construction and operation of the BESS could lead to labor-related issues such as unfair wages, unsafe working conditions, or exploitation of workers. - **Inadequate Stakeholder Engagement and Consultation:** Insufficient stakeholder engagement and consultation could lead to misunderstandings or misinformation, particularly if they feel excluded from the decision-making process. - **Security and Conflict Risks**: The high-value nature of the BESS infrastructures could make it a target for theft, vandalism, or other security threats. - **Emergency Response Capacity:** Local authorities may have limited experience with battery-related emergencies. Lack of preparedness could delay effective response in case of fire or chemical incidents, increasing community anxiety and potential harm.

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Sub-Components	Potential Environmental Risks and Impacts	Potential Social Risks and Impacts
	as heavy storms or flooding, which could cause system downtime or damage. - **UXO risks:** Excavation and construction activities in the provinces particularly in the heavily UXO/ ERW/Landmine contaminated provinces may expose UXO risks to workers and communities. - **Waste Disposal:** Construction and installation will generate packaging waste, damaged battery cells, electronic waste, and protective materials that may contain hazardous substances. Improper handling or disposal of battery components during the operation phase poses risks to soil and groundwater.	
Sub-Component 1.3 Distribution Network Expansion and Strengthening That includes: upgrades and extensions of medium- and low-voltage networks—including lines, poles, transformers, and switchgear • Replacing single phase and three phase meters with AMI meters.	**Environmental Risks: Moderate** - **Vegetation Clearing and Land Disturbance:** Distribution line reinforcement, pole replacement, and underground cable installation may require trimming or removal of vegetation and earthworks in both peri-urban and rural areas, although the works are dispersed and small in scale. - **Soil Erosion and Sedimentation:** Excavation for poles, trenches, or underground distribution segments may disturb topsoil and increase sedimentation, especially during the rainy season. Poorly managed spoil disposal may affect roadside drains, canals, or agricultural plots.	**Social Risks: Low to Moderate** - **Temporary Land and Asset Impacts:** Installation or replacement of distribution poles may temporarily restrict access to shops, houses, footpaths, or agricultural plots. - **Community Health and Safety:** Increased movement of bucket trucks, pole-erection machinery, and construction crews can pose safety risks to residents. Open trenches, stacked materials, or exposed conductors may endanger pedestrians or nearby households if not adequately secured.

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Sub-Components	Potential Environmental Risks and Impacts	Potential Social Risks and Impacts
	- **Waste Generation:** Replacement of poles, conductors, insulators, and transformer components will produce solid and potentially hazardous waste, including old, treated wood poles, scrap metal, and damaged meters. AMI installation will generate electronic waste requiring proper disposal. **Hazardous Materials Handling:** In some cases, transformer replacement or rehabilitation may involve handling used transformer oil, which may contain polychlorinated biphenyls (PCBs). Although PVC and modern transformer oil are typically PCB-free, there remains a residual risk that older transformers may contain PCB-contaminated oil. - **UXO risks:** Excavation and construction activities in the provinces particularly in the heavily UXO/ERW/Landmine contaminated provinces may expose UXO risks to workers and communities. - **Flooding and Climate Vulnerability Risks:** Some distribution infrastructure is in flood-prone areas, which may expose poles and transformers to inundation during heavy rains or seasonal flooding.	- **Occupational Health and Safety:** Distribution workers face risks of electric shock, falls from height, musculoskeletal injuries, and accidents involving vehicles. - **Limited Accessibility and Emergency Response Challenges:** The remoteness of the island villages means that emergency response times in case of electrical accidents, fires, or power failures may be slow. - **Stakeholder Engagement:** Resistance to the project may arise if communities feel excluded from decision-making processes or if concerns about specific environmental impacts are not properly addressed. - **Impacts on Indigenous People:** Distribution network works that extend into provinces with Indigenous communities may create social risks if construction activities, temporary access restrictions, or interactions with workers overlook or do not fully respect local cultural norms, customary practices, or community expectations. There is a risk of misunderstandings, tension, or perceived disrespect if engagement is not conducted appropriately, or if land and resource use patterns of Indigenous Peoples are inadvertently affected during pole installation or meter replacement.

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5.2.2. Component 2: Industrial Energy Efficiency (MME)

Table 5-2 Potential Environmental and Social Risks and Impacts of Activities under Component 2

Sub-Components	Potential Environmental Risks and Impacts	Potential Social Risks and Impacts
Sub-Component 2.1 **Industrial Energy Efficiency Financing**	**Environmental Risks: Low to Moderate** - **Legacy pollution issues:** Industries applying for EE financing may already have underlying environmental liabilities, including soil contamination, untreated wastewater, poor waste storage, or aging industrial infrastructure. EE investments could occur in facilities with pre-existing non-compliance, requiring careful screening through the FI ESMS. - **Hazardous waste generation:** Replacement of old machinery, boilers, lighting systems, compressors, and cooling units may generate hazardous waste such as waste oils, asbestos-containing insulation, mercury lamps, and electronic waste. Improper handling or disposal could create contamination risks. - **Air quality risks:** Installation or testing of EE equipment—particularly combustion-based technologies such as high-efficiency boilers or kilns—may release short-term emissions. Poorly tuned or improperly installed EE systems could also generate unintended air pollutants. - **Energy rebound effect:** Improved efficiency may reduce operating costs and unintentionally stimulate higher production	**Social Risks: Low to Moderate** - **Exclusion of MSMEs and informal industries:** Smaller firms may struggle to access financing due to limited financial literacy, insufficient collateral, or weak awareness of the credit line, which may create inequitable access across industrial sectors. - **Labor displacement:** Automation or digitalization associated with EE upgrades may reduce demand for manual labor, contributing to job losses or reassignments if not paired with upskilling or transition support. - **Occupational health and safety:** Installation, operation, and maintenance of EE machinery expose workers to risks such as electrical hazards, burns, chemical exposure, noise, and accidents involving heavy equipment. Poor contractor safety practices increase these risks. - **Gender and social inclusion gaps:** Women, ethnic minorities, and rural enterprises may be underrepresented among loan beneficiaries due to barriers in access to information, technical capacity, or application processes. - **Unequal regional distribution of benefits:**

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Sub-Components	Potential Environmental Risks and Impacts	Potential Social Risks and Impacts
	levels in some sectors, potentially increasing overall energy consumption or environmental emissions if not managed responsibly. - **Noise and vibration:** Upgraded machinery such as motors, fans, compressors, and HVAC systems may generate additional noise or vibration if not isolated or maintained properly, potentially affecting onsite workers or neighboring facilities. - **Fire and electrical safety:** Installation of high-voltage or high-temperature EE systems may introduce risks of fire, overheating, short circuits, or equipment failure if installations are substandard, unregulated, or not maintained. - **Water quality risks:** EE equipment that relies on cooling towers, condensers, or heat exchangers may cause leaks, wastewater discharges, or cooling water contamination if improperly designed or operated. **Chemical use and storage:** Some EE technologies (e.g., refrigerants, thermal fluids) may involve substances that pose environmental risks if leaks occur or if storage and handling do not meet regulatory requirement.	Industries in major urban centers (e.g., Phnom Penh, Kandal) may be more likely to access financing compared to rural provinces, potentially reinforcing regional disparities in industrial competitiveness. - **Community concerns or mistrust of financing mechanisms:** If communication about loan eligibility, environmental requirements, or responsibilities is unclear, communities or workers may misunderstand the purpose of upgrades, creating resistance or confusion. - **Labor management issues:** Risks include unfair wages, informal workers without contracts, unsafe working hours during equipment installation, or the use of untrained subcontractors, requiring strong LMP compliance and oversight..

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5.2.3. Component 3: Implementation Support and Technical Assistance

Sub-Component 3.1 and 3.2 Implementation Support to MME and EDC	**Environmental Risks: Minimal to Low** - **Indirect Environmental Footprint:** Activities consist mainly of technical assistance, capacity building, and training. No civil works or physical interventions will be financed. The component therefore has no / negligible direct environmental impacts. - **Resource Use and Waste Generation:** Minor environmental impacts may arise from office operations and workshops (e.g., energy use, travel, and general waste). These will be mitigated through environmentally responsible practices such as waste segregation, paperless training materials, and energy-efficient office operations. - **Integration of Environmental Sustainability:** There is a risk that E&S sustainability principles might not be fully integrated into training or policy support if capacity remains weak. Mitigation will include embedding E&S standards, climate resilience, and circular economy principles within all technical-assistance activities and terms of reference (ToR).	**Social Risks: Minimal to Low** - **Institutional Capacity and Coordination:** The main social risk relates to weak coordination or limited institutional capacity to apply and monitor E&S requirements. This will be mitigated through targeted capacity-building programs and continuous technical support from the World Bank and E&S consultants. - **Labor and Working Conditions:** Project staff, consultants, and trainers will be employed under fair and transparent terms consistent with **ESS2**. Occupational health and safety (OHS) risks are minimal but will be managed through standard office and travel safety protocols. - **Stakeholder Engagement and Inclusion:** Risks of limited participation or exclusion of vulnerable groups (e.g., women) in training and consultation processes will be mitigated by applying the principles and methods defined in the **Stakeholder Engagement Plan (SEP)**, including targeted outreach and gender-responsive engagement. - **SEA/SH and Code of Conduct Compliance:** All technical-assistance activities and contracted service providers will adhere to a **Code of Conduct** and **SEA/SH Prevention Guidelines** in line with ESS2 and ESS4 to prevent any form of harassment or discrimination.

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5.3. World Bank's Environmental and Social Risk Rating

The World Bank's Environmental and Social Framework (ESF) considers all ten Environmental and Social Standards (ESS1–ESS10) relevant to the CSET Project.

Environmental Risk Rating: Substantial
The environmental risk rating is assessed as Substantial, reflecting potential risks associated with the civil works under Component 1, including construction of 230 kV and 115 kV transmission lines, new substations, and installation of a Battery Energy Storage System (BESS).

The key risk drivers are:

- **Proximity to a Key Biodiversity Area (KBA):** A portion of the proposed transmission alignment traverses or borders the Boeng Veal Samnab KBA, a wetland ecosystem recognized for its biodiversity significance. While the area is already modified by agricultural and peri-urban activities, construction could still affect habitat structure, migratory birds, and wetland ecological functions. A Biodiversity Risk Classification and Critical Habitat Assessment (CHA) will therefore be completed before appraisal in accordance with ESS6 to confirm habitat sensitivity, define avoidance or mitigation zones, and determine whether additional measures—such as realignment, timing restrictions, or offset planning—are required.

- **Cultural heritage sensitivity:** Construction of the underground transmission cable near Wat Phnom requires careful management of vibration, excavation, and construction methods, in line with ESS8. A Chance Finds Procedure and cultural heritage protection measures will be applied due to the proximity of this nationally significant site.

- **Construction-related impacts:** Earthworks, tower installation, and material transport may cause temporary dust, noise, soil erosion, and waste generation. These impacts are site-specific and manageable with good construction practices and supervision.

- **Hazardous and solid waste:** Improper management of construction waste or transformer oils could lead to localized soil and water contamination. The Project will enforce waste-handling protocols and ensure all electrical equipment is PCB-free.

- **BESS-specific risks:** The stand-alone 100–150 MW / 200 MWh BESS may pose fire, explosion, and hazardous-material risks. Mitigation will include adherence to international battery-safety and fire-protection standards, preparation of a Hazard and Operability (HAZOP) assessment, and implementation of an emergency-response plan. The required HZOP assessment and detailed hazard analysis for the BESS will be completed during project implementation once the final technical design and configuration are confirmed.

- **Occupational and community health and safety:** Construction and operation phases will involve typical electrical-infrastructure hazards, heavy-vehicle movements, and community safety risks near work sites.

Environmental risks under Component 2 (Industrial Energy Efficiency Credit Line) are Moderate, as subprojects will be small-scale and implemented within existing facilities under the ESMS of participating financial institutions. Component 3 (Technical Assistance) has negligible direct environmental risk.

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Social Risk Rating: Substantial

The social risk rating is also assessed as Substantial, reflecting potential risks associated with land acquisition, right-of-way restrictions, and impacts on local communities, including Indigenous Peoples and ethnic minorities.

Specific risks include:

- **Land acquisition and resettlement:** Permanent land take for substations and tower footprints and temporary construction access may affect private landowners and informal land users. The Resettlement Policy Framework (RPF) and site-specific Resettlement Plans (RPs) will ensure compensation and livelihood restoration consistent with ESS5 and national law.

- **Presence of Indigenous Peoples / ethnic minorities:** Indigenous Peoples may reside in or near some provinces targeted for distribution improvements. Engagement will follow the Indigenous Peoples Planning Framework (IPPF) and, where required, Free, Prior and Informed Consent (FPIC).

- **Labor and working conditions:** Construction activities will require a large workforce, with risks of unsafe working conditions, non-compliance with labor law, and worker grievances. The Labor Management Procedures (LMP) will guide OHS, fair employment, and worker-GRM implementation.

- **Community health and safety:** Increased traffic and electrical works may pose risks to residents near construction sites. Traffic management, awareness campaigns, and safety barriers will be implemented.

- **SEA/SH and GBV risks:** SEA/SH risks are rated Moderate to Substantial, linked to potential worker–community interactions. The Project will adopt a SEA/SH Action

For Component 2, social risks are linked to financial intermediaries' sub-loans to industries. These will be managed through each FI's ESMS, which will include procedures for screening, due diligence, and monitoring of E&S risks in accordance with ESS9.

Overall Risk Classification: Substantial

Taking into account the scale of civil works, the proximity to sensitive environmental and social receptors, and the capacity of implementing agencies (MME, EDC, and participating FIs), the overall Environmental and Social Risk Rating for the Project is **Substantial.**

This rating reflects that most potential impacts are site-specific, predictable, and can be effectively mitigated through appropriate planning, engineering design, and adherence to the ESMF and related instruments. The rating will be reviewed and updated periodically during project implementation as detailed designs, site locations, and management systems are finalized.

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6. ENVIRONMENTAL AND SOCIAL RISKS AND MANAGEMENT PROCEDURES

This chapter provides guidance to the MME and EDC on managing the environmental and social (E&S) risks and impacts identified in Chapter 5. It defines the procedures and measures to be followed for all relevant project components and outlines the process for preparing future site-specific Environmental and Social Impact Assessments (ESIAs), Environmental and Social Management Plans (ESMPs), Environmental and Social Management Systems (ESMS), and other relevant instruments once the specific locations, scope, and design of subprojects are confirmed.

The procedures described herein are designed to ensure that the CSET Project complies with both Cambodia's national environmental and social legislation, including the Code on Environment and Natural Resources (2023), and the World Bank Environmental and Social Framework (ESF).

Given the range of potential risks, impacts, and opportunities associated with activities under different sub-components, the Project's E&S management strategy will ensure that:

- CSET subprojects and activities take into account environmental, socio-cultural, and gender sensitivities specific to the areas where they are implemented.
- Environmental and social issues, including potential effects on different groups of stakeholders (positively or adversely affected), are identified and addressed early in project design.
- The mitigation hierarchy—avoid, minimize, mitigate, and offset residual impacts—is systematically applied in accordance with ESS1.
- The provisions of the Stakeholder Engagement Plan (SEP), including its Grievance Redress Mechanism (GRM), are applied across all CSET subprojects.
- A screening mechanism is used to determine the E&S risk classification and appropriate level of assessment once subproject locations and technical designs are known.
- The required E&S instruments (e.g., ESIAs, ESMPs, ESMS, Labor Management Procedures, Indigenous Peoples Plans) are prepared in compliance with both national requirements and World Bank ESF standards.
- The roles, procedures, and responsibilities for developing, reviewing, and implementing E&S instruments are clearly defined for all implementing agencies and stakeholders, and

  The implementation arrangements, including institutional responsibilities, capacity-building needs, and indicative budget for the ESMF, SEP, and other E&S instruments, are clearly outlined.

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6.1. Overview of E&S Risks and Impacts Management Process

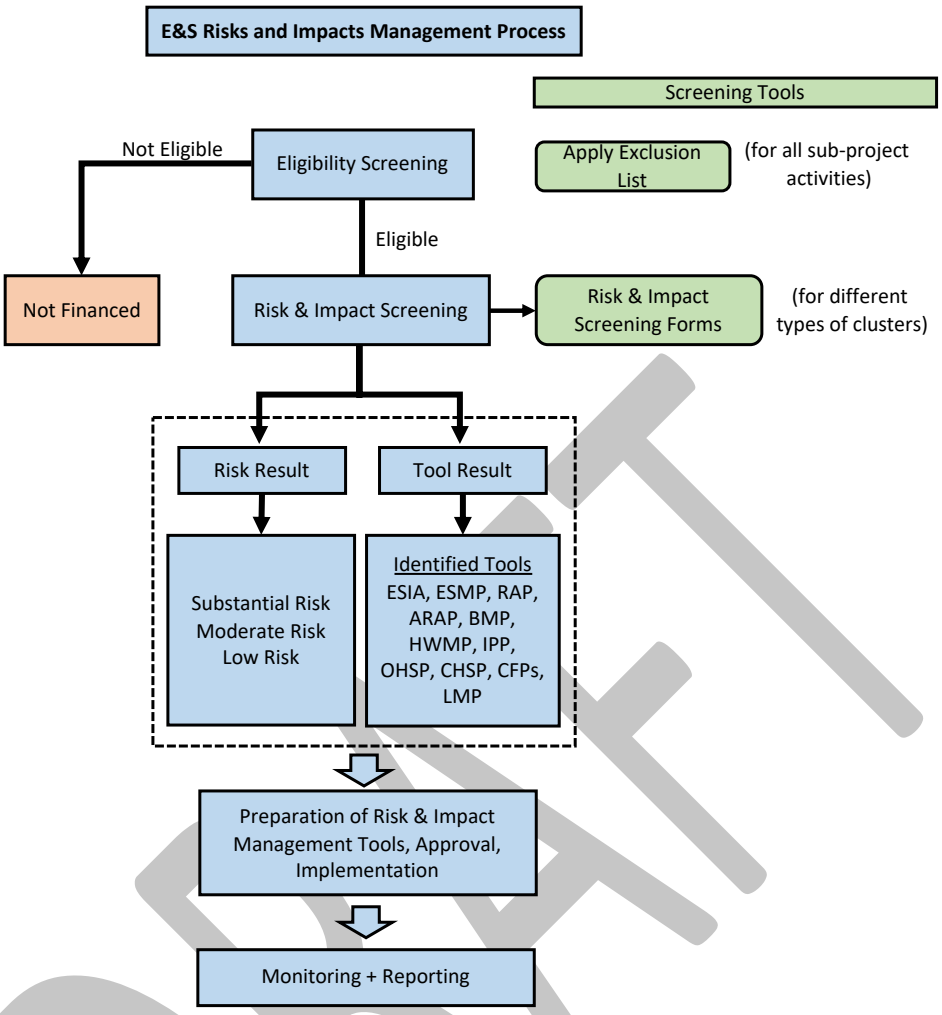

Figure 6-1 Overview E&S Risks and Impacts Management Process for EDC

6.2. Screening

6.2.1. Eligibility Screening

The Eligibility Screening (see Annex 1) is the first step of the environmental and social management process. It is designed to determine whether a proposed subproject or activity is eligible for financing under the CSET Project. This step applies the Exclusion List provided in Annex 1, which defines the types of activities that are not permitted under the Project because of their –

- high environmental or social risks,
- inconsistency with the World Bank's Environmental and Social Framework (ESF), or
- non-compliance with Cambodian laws and regulations.

For Component 1 activities (transmission, substations, and distribution network upgrades), the eligibility screening will also verify that the proposed alignments and site locations—though tentatively identified—do not fall within legally protected areas or zones restricted under national law, such as core zones of protected areas or heritage sites. Where alignments overlap with sensitive areas such as Key Biodiversity Areas (KBAs), additional review and justification will be required before proceeding to the next stage. The BESS under Sub-Component 1.2 will be installed at the GS TKM

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substation, where the location has already been confirmed as technically and environmentally suitable; therefore, no additional eligibility screening is required for this activity.

For Component 2 – Industrial Energy Efficiency Credit Line, each proposed sub-loan or investment financed through participating Fis will be screened under their ESMS, to ensure the activity is not on the Exclusion List, complies with national environmental and labour requirements, and presents only low to moderate, manageable risks.

Only activities that pass eligibility screening will proceed to the Environmental and Social Risk and Impact Screening stage for detailed classification and determination of the required management instruments.

6.2.2. Risks & Impacts Screening

The Environmental and Social Risks and Impacts Screening aim to identify, predict, and document potential environmental and social risks associated with each proposed subproject or cluster of activities. The screening will guide the preparation of appropriate risk management instruments and determine whether additional assessments are required.

The screening process will:

- Evaluate the type, location, sensitivity, and scale of the proposed activity.
- Consider the magnitude and likelihood of potential environmental and social impacts, and
- Recommend suitable mitigation, management, or monitoring measures to avoid, minimize, or mitigate adverse impacts in line with the mitigation hierarchy.

Each subproject or activity will be assigned an overall environmental and social risk level—Low, Moderate, Substantial, or High—based on the screening results. This risk classification will be validated jointly by EDC, MME, and the World Bank during implementation support missions or no-objection review.

6.2.3. Cluster of Activities Subject to Screening

Based on the current project design, several clusters of activities may generate environmental and social risks or impacts. These include:

i. Construction of overhead transmission lines (230 kV) and associated substations in Phnom Penh and Kandal provinces to strengthen grid reliability and expand capacity within the national load centre.
ii. Installation of a stand-alone Battery Energy Storage System (BESS) of approximately 100–150 MW / 200 MWh at the GS TKM substation to enhance grid stability, enable renewable-energy integration, and improve system flexibility.
iii. Grid improvement works implemented through EDC involving replacement or upgrading of existing MV/LV lines, poles, and transformers in multiple provinces.
iv. Energy-efficiency investments in industrial and commercial facilities financed through participating financial institutions (SME Bank and FTB) under the Industrial Energy Efficiency Credit Line. and
v. Technical assistance, training, and institutional-capacity building for MME, EDC, and financial intermediaries to strengthen project implementation, monitoring, and environmental and social risk management.

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Given the range and nature of these activities, environmental and social screening will be conducted for each cluster of activities as described in Table 6-1. The table provides guidance for defining a "subproject or activity" under each component and links to the screening forms in Annex 2, which will be used to document screening results and assign the appropriate risk category in accordance with the World Bank ESF and national environmental regulations.

Although indicative alignments and the locations of proposed substations and facilities have been tentatively identified, they are not yet finalized. Therefore, the screening procedures described in this ESMF are applied to ensure that, once the final locations and technical designs are confirmed, site-specific environmental and social risks can be assessed, classified, and managed appropriately before implementation.

Table 6-1: Screening of Cluster Activities

Sub - Components	Cluster of Project Activities	Definition of a Sub-project or activity	Need for Screening and Relevant Screening Form to be applied in ESMF
1.1	Construction of overhead transmission lines and new substations	- Construction of a new 230 kV overhead transmission line.	Apply E&S Risks and Impacts Management Screening Forms (Annex 2: Form A for transmission lines, Form B for substations). Screening is required to identify location-specific E&S risks and to confirm compliance with national IEIA/EIA thresholds.
1.2	Installation of Battery Energy Storage System in the existing substations	- Installation of a 100–150 MW / 200 MWh BESS within the compound of an existing 230 kV substation (GS TKM – Tentatively Selected).	Screening is not necessary as GS TKM is selected as a target substation for BESS installation. However, other substation is alternatively proposed, screening to verify the risks and impacts related to land constraints, flooding risk, etc. should be conducted. MoE will determine the applicable IEIA/EIA/EPC level.
1.3	Distribution Network Expansion and Strengthening	- Expansion or upgrading of MV/LV lines, poles, and transformers. - Replacing single phase and three phase meters with AMI meters.	Apply the E&S Risks and Impacts Management Screening Form. Screening using Annex 2- Form C is required to verify environmental sensitivity of sites (e.g., proximity to protected areas or wetlands) and social impacts (land acquisition, access restrictions).
2.1	Industrial Energy Efficiency Investments via Financial Intermediaries	Site-specific or industry-specific energy-efficiency improvements financed through SME Bank and FTB under the Credit Line.	Screening will follow each participating FI's Environmental and Social Management System (ESMS), which will be approved by MME and the World Bank. Risk categorization and mitigation measures will be incorporated into sub-loan documentation consistent with ESS9.

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Sub - Components	Cluster of Project Activities	Definition of a Sub-project or activity	Need for Screening and Relevant Screening Form to be applied in ESMF
3.1	Capacity building activities for implementing agencies	- Training, institutional support, studies, or advisory services for MME, EDC, and participating banks.	Screening is not required (no physical works). Activities will adhere to ESF principles (ESS1 & ESS10) for stakeholder inclusion, gender, and information disclosure.

*NA : Not applicable
*TBD : To be determined

Completion of this screening step will result in two key outcomes: (i) the determination of the environmental and social risk level of the proposed subproject or activity, and (ii) the identification of the appropriate risk and impact management instruments required. Project implementation will then proceed with the preparation of these instruments and the obtaining of relevant clearances and approvals in accordance with national regulations and the World Bank's ESF.

6.2.4. Preparation of E&S Risks and Impacts Management Tools, Approval and Implementation

Based on the results of site-specific screening, appropriate environmental and social (E&S) management instruments will be prepared to ensure compliance with both RGC's legislation and the World Bank's Environmental and Social Framework (ESF). The type and depth of each instrument will depend on the risk classification (Low, Moderate, Substantial, or High) and the nature, scale, and location of the proposed activity.

Table 6-2 summarizes the potential risks and corresponding management tools for each type of activity. Construction-related activities will also comply with the Environmental and Social Code of Practice (ESCoPs) and, where relevant, site-specific plans such as contractor ESMPs, waste management plans, occupational health and safety (OHS) plans, resettlement plans, and cultural heritage protection measures.

Table 6-2: List of Risks and Management Tools/Instruments

Instrument	Description
Environmental and Social Impact Assessment (ESIA)	If the construction of 230 kV transmission lines and associated substations in Phnom Penh and Kandal will be commenced at the same period, given that parts of the alignment traverse or border the Boeng Veal Samnab Key Biodiversity Area (KBA), a full ESIA will be prepared in accordance with the World Bank ESSs to assess cumulative impacts and define mitigation measures. The ESIA will assess cumulative, biodiversity, and social impacts, and propose site-specific mitigation and monitoring measures. A draft of Terms of Reference (ToR) for the ESIA is provided in Annex 4.
Initial Environmental Impact Assessment (IEIA)	As per national regulation, EDC will prepare IEIA for construction of 230 kV transmission lines and associated substations in Phnom Penh and Kandal. EDC will submit the project proposal to the Ministry of Environment (MoE) to initiate the process for conducting the IEIA. The IEIA will be prepared in align with the requirement of MoE and in Khamer language.

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Instrument	Description
Environmental and Social Management Plan (ESMP)	A site-specific ESMP will be prepared for activities with localized, manageable impacts—such as upgrading or the existing substations or the Battery Energy Storage System (BESS) at GS TKM. — where impacts are site-specific and readily mitigated. The ESMP will consolidate sub-plans such as a waste-management plan, OHS plan, traffic management plan, and environmental-monitoring plan (template in Annex 5). For the Battery Energy Storage System (BESS) at GS TKM, a site-specific Environmental and Social Management Plan (ESMP) will be prepared in line with ESS1, ESS3, and ESS4, incorporating a Hazard and Risk Assessment (HRA) to evaluate potential fire, explosion, and chemical hazards. The ESMP will also cover waste handling, battery-lifecycle management, and worker/community health and safety. In parallel, EDC will submit a screening form to MoE, which will determine whether an IEIA or EPC is required under the ENR Code (2023).
Environmental and Social Management System (ESMS)	The policy bank (SME Bank) under Component 2 will operate an ESMS consistent with ESS9. The participating financial institution (FTB) will caomply with the SME bank's ESMS. The ESMS enables the banks to identify, assess, and manage sub-project E&S risks, ensure compliance with national and World Bank requirements, monitor E&S performance, and maintain institutional capacity. A template ESMS outline is provided in Annex 6.
Indigenous People Planning Framework (IPPF)	The IPPF will apply only for those activities which there is presence of Indigenous Peoples near the project funded activities. Meaningful consultations will apply in all the cases where there are Indigenous Peoples near the activities. Based on the results of screening and application of the IPPF, a Indigenous People Plan (IPP) shall be prepared in line with ESS 7, including a targeted Social Assessment. The Plan should be prepared when Indigenous Peoples are present in the project area not only when there is a negative/adverse impact, but to also ensure benefits and mitigation measures are culturally appropriate.
Resettlement Policy Framework (RPF)	The RPF has been prepared as part of the ESMF for the Project to ensure that any acquisition of land and the loss of income or private assets due to the implementation of activities funded by the Project would be addressed in line with the World Bank's ESS 5. Although the present projects are not expected to involve any involuntary resettlement or impacts to livelihoods, the RPF has been developed to secure that in case of impact on settlements, negative impacts are avoided, minimized and properly managed. Based on the screening results, RAP or ARAP will be prepared as necessary.
Environmental and Social Code of Practice (ESCoPs)	Environmental and Social Code of Practice (ESCoPs) is the simple E&S tool to apply by the construction contractors (Annex 11). These are basic technical guidelines that inform ES implementers and contractors about practical mitigation actions and measures to be used during activity implementation to avoid, minimize, and mitigate negative environmental and social impacts using the mitigation hierarchy.

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6.2.5. Monitoring and Reporting

The PMUs of EDC and MME will be responsible for monitoring and reporting on the implementation of the developed environmental and social risk management tools and instruments throughout the project implementation phase. The detailed processes are outlined in Chapter 10.

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6.3. Management Measures for Potential Risks and Impacts by each sub-component

This section indicates the overview of management measures for potential environmental and social risks and impacts for each component under CSET project align with ESSs.

6.3.1. Component 1: Grid Strengthening for Facilitation of Energy Transition

Table 6-3 Mitigation Measures for Potential Environmental and Social Risks and Impacts (Component 1)

Sub-Components	Potential E&S Risks and Impacts	Management Measures
Sub-Component 1.1 Grid Strengthening for facilitation The key infrastructure components include: • A new 230kV double circuit overhead transmission line from an existing Lvea Am (LVA) station to Arey Ksat (ARK) station (15 km). • A new ARK 230/115kV substation. • A new CCVIII 115kV substation. • A new 230kV underground cable linking CCVIII substation to the existing Wat Phnom substation (2 km)	**Environmental Risks: Substantial** • Cultural Heritage Sensitivity • Construction Impacts (Air Quality) • Noise and Vibration Impacts • Vegetation and Land Use • Waste Generation • Water Pollution • Wildlife and Habitat Disruption • UXO Risks • Climate Resilience Risks **Social Risks: Substantial** • Land Acquisition and Resettlement • Access Restrictions and Livelihood Impacts • Workers' Health and Safety • Community Health and Safety Risks • Stakeholder Engagement and Consultation • Employment and Labor Issues • Cultural Heritage • Gender and Social Inclusion • Security and Conflict Risks	• Conduct Step 1: Eligibility Screening to ensure that proposed activities align with the exclusion criteria outlined in the ESMF. Once deemed eligible, proceed to Step 2: Environmental and Social Screening to assess site-specific risks and impacts. (ESS 1) • EDC to conduct the required ESIAs (see Annex 4) and site-specific ESMPs (see Annex 5) in line with National Regulations and World Bank's ESF based on the screening results. Ensure that all potential environmental and social risks and impacts—those identified in the ESMF and any additional site-specific concerns—are thoroughly assessed, with appropriate mitigation measures developed and effectively implemented throughout project execution. (ESS1) • Conduct the biodiversity impact assessment/critical habitat assessment along with biodiversity survey for ESIA study for transmission line from an existing Lvea Am (LVA) station to Arey Ksat (ARK) station (15 km) to inform alignment decisions, tower siting, avoidance measures, and required mitigation under (ESS6). • Early identification of land requirements through detailed design and screening to determine the type (temporary vs permanent) and scale of acquisition or restriction. (ESS5)

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Sub-Components	Potential E&S Risks and Impacts	Management Measures
		• Prepare RAPs/ARAPs for any land acquisition or economic displacement as per resettlement policy framework, ensuring meaningful consultation and fair compensation. (ESS 5) • Implement chance finds procedure in areas where excavation may be required and may disturb cultural relics (e.g., near Wat Phnom) and apply vibration-control measures and construction monitoring where works occur near Wat Phnom in accordance with ESS8 (Annex 7). • Coordinate with the Arey Ksat Bridge project (associated facility) to ensure that cumulative risks (e.g., river crossing, traffic, noise) are addressed. (ESS 1) • Contractors are required to develop and adhere to C-ESMPs, including OHS plans, traffic and access safety plans, and emergency response procedures including waste management plans, hazardous materials handling protocols, and spill-prevention measures. (ESS 2 and ESS3) • The Project Implementation Consultant (PIC) from EDC will ensure close supervision and monitoring of Construction Contractors to verify compliance with the approved environmental and social instruments. (ESS 2) • Apply the Labor Management Procedures (LMP) of the ESMF. Contractors are required to maintain labour GRMs and adhere to national labour standards. (ESS 2)

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Sub-Components	Potential E&S Risks and Impacts	Management Measures
		• Establish GRMs align with ESMF and SEP, ensuring accessibility for both urban and rural affected people. Conduct gender-responsive consultations and ensure participation of women and other vulnerable groups. Include multiple channels (commune office, hotline, contractor GRM) for accessibility. (ESS 1 and ESS 10) • Conduct targeted stakeholder engagement as per Stakeholder Engagement Plan (SEP), particularly for households near urban substations and culturally sensitive zones. (ESS 10) • Incorporate climate-resilient design measures in towers, foundations, and substations, including consideration of local flooding patterns, soil conditions, and extreme weather events to reduce vulnerability to storms, floods, and heatwaves. (ESS1)
Sub-Component 1.2 Battery Energy Storage System (BESS) Investment which includes • Deployment of BESS with a capacity of 100–150 MW / 200 MWh in the existing TKM GS substation.	**Environmental Risks: Low to Moderate** • Chemical Handling and Spills • Fire, Explosion, and Thermal Runaway Risks • Wildlife and Habitat Disruption • Water Quality Impacts • Noise and Vibration • Climate Resilience Risks • Waste Disposal **Social Risks: Low to Moderate** • Workers' Health and Safety • Community Health and Safety • Employment and Labour • Inadequate Stakeholder Engagement and Consultation • Security and Conflict Risks • Emergency Response Capacity	• Conduct a site-specific ESMP for the BESS facility, if necessary, as a result of screening, identifying and managing all potential environmental and social risks – including those impacts identified in the ESMF but not limited to – while ensuring alignment with the ESMF, World Bank ESSs, and national regulations. (ESS 1) • As part of the ESMP, conduct a Risk Hazard Assessment during project implementation once the final BESS technical design and system configuration are confirmed. The assessment will evaluate including but not limited to – fire, explosive hazards (explosive gas or battery rupture hazard), exposure to harmful chemicals or substances, toxic gases, electric shock, exposure to extreme heat, acoustic noise, pressure or light, and injury caused by movement of cables / components through electro-

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Sub-Components	Potential E&S Risks and Impacts	Management Measures
		mechanical stresses, and hazards associated with movement, handing, and movement of equipment. Findings will directly inform the final engineering design and the Emergency Response and Fire Safety Plan. (ESS1 and ESS4) • Prepare and implement a Battery Management and Spill Response Plan, including protocols for hazardous waste management, temporary storage, and end-of-life battery disposal in line with international good practice. (ESS 3) • Develop Emergency Response and Fire Safety Plan in coordination with local authorities and emergency services as part of site-specific ESMP, including evacuation procedures, fire response protocols, communication plans, and capacity-building for first responders. (ESS 3) • Engage local communities, authorities, and nearby land users through the SEP to disclose risks, benefits, and address concerns through regular consultation including disclosure of safety features, emergency response arrangements, and contact points for concerns. (ESS 10) • Integrate climate-resilient design measures (e.g., elevated platforms, drainage improvements, flood-proofing, temperature control systems) to ensure safe operation of the BESS during extreme weather events. (ESS1)
Sub-Component 1.3 Distribution Network Expansion and Strengthening That includes:	**Environmental Risks: Moderate** • Vegetation Clearing and Land Disturbance • Soil Erosion and Sedimentation	Apply Step 1 (Eligibility Screening) and Step 2 (E&S Screening) using the ESMF tools to determine if

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Sub-Components	Potential E&S Risks and Impacts	Management Measures
• upgrades and extensions of medium- and low-voltage networks—including lines, poles, transformers, and switchgear • Replacing single phase and three phase meters with AMI meters.	• Waste Management • Hazardous Materials Handling • UXO Risks • Flooding and Climate Vulnerability Risks **Social Risks: Low to Moderate** • Temporary Land and Asset Impacts • Community Health and Safety • Occupational Health and Safety • Limited Accessibility and Emergency Response Challenges • Stakeholder Engagement • Impacts on Indigenous Peoples	proposed distribution network activities are permissible (ESS1). • EDC will include E&S compliance clauses in all funding agreements with the contractors, requiring them to: (ESS1, ESS2, ESS4) ➢ Follow ESMF screening procedures ➢ Fully comply with the relevant Environmental and Social Codes of Practice (ESCOPs) ➢ Implement OHS measures for workers, CHS measures for the community's safety ➢ Ensure proper waste management (including transformer oil and PCB-risk materials) ➢ Carry out community engagement, especially in isolated or minority areas ➢ Establish Contractor Grievance Redress Mechanisms (GRMs) ➢ Submit monitoring reports to REF • Avoid siting new poles or towers within Key Biodiversity Areas (KBAs) or protected areas. Where unavoidable, mitigation measures under ESS6 will be applied. (ESS 6) • Use climate-resilient design, including elevated or reinforced poles and flood-resistant materials in flood-prone or island areas. (ESS 1) • Apply UXO Protocol (Annex 8) for activities involving excavation and construction work (ESS 1) • Culturally appropriate and locally accessible GRMs will be established as indicated in the SEP (ESS 1, ESS 8, ESS 10)

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6.3.2. Component 2: Industrial Energy Efficiency (MME)

Table 6-4 Management Measures for Potential Environmental and Social Risks and Impacts (Component 2)

Sub-Components	Potential E&S Risks and Impacts	Management Measures for Potential Impacts
Sub-Component 2.1 **Industrial Energy Efficiency Financing**	**Environmental Risks: Low to Moderate** • Legacy pollution issues • Hazardous waste generation • Air quality risks • Energy rebound effect • Noise and vibration • Fire and Electric safety • Water quality • Chemical use and storage **Social Risks: Low to Moderate** • Exclusion of MSMEs and Informal Industries • Labor Displacement • Occupational Health and Safety • Gender and Social Inclusion Gaps • Unequal Regional Distribution of Benefits • Community Concerns or Mistrust • Labor Management Issues • Financial Intermediary ESMS Capacity	• Financial Intermediaries (FIs) / Policy Banks will establish targeted outreach and eligibility support mechanisms to improve access for Micro, small, and medium enterprises (MSMEs), women-led enterprises, ethnic minority-owned industries, and rural industrial clusters. • FIs will be required to conduct eligibility screening screen all proposed activities, identify legacy pollution risks, and exclude activities involving significant or unmanageable environmental liabilities. (ESS 1) • Each Financial Intermediary (FI) will be required to develop and implement an Environmental and Social Management System (ESMS) consistent with the World Bank's ESS9 and publicly disclose the ESMS prior to disbursement. (See Annex 6). For SME, an ESMS will be developed in align with WB ESF. For FTB, the existing ESMS will be updated in accordance with the due diligence of FTB's ESMS conducting in the project preparation stage. • The ESMS will include screening procedures, E&S risk categorization, monitoring mechanisms, and internal capacity for managing subproject risks, and must be approved by the Project Management Unit (PMU) of MME and the World Bank prior to fund disbursement. (ESS 9) • Where screening indicates moderate risk, subproject-specific ESMPs, ECOPs, or Corrective Action Plans

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Sub-Components	Potential E&S Risks and Impacts	Management Measures for Potential Impacts
		(CAPs) may be required, addressing issues such as hazardous waste, air pollution, wastewater, noise, and fire safety. These will be integrated into loan appraisal and monitored during implementation. (ESS 1 and ESS 3) • Sub-borrowers (Industrial Enterprises) will be required to follow waste management protocols under the ECOPs and prepare a Hazardous Waste Management Plan where applicable in line with WB EHS Guidelines for General Industry and sector-specific guidelines. (ESS 3) • Sub-borrowers must implement OHS measures aligned with WB EHS Guidelines and national law, including fire protection, electrical safety, ventilation, and worker training. (ESS 2) • PMU (MME), policy banks and participating banks will conduct information campaigns, technical support, and consultation forums to engage underrepresented industrial actors. Materials will be disseminated in Khmer and other relevant languages. (ESS 10) • FIs will track participation by sector, size, region, gender, and ownership type to assess inclusion. Results will inform adaptive support and reallocation if participation gaps persist. (ESS 10) • Participating banks and sub-borrowers will establish or link into the project GRM to ensure concerns related to eligibility, exclusion, or environmental performance can be raised and addressed. Sub-borrowers will also maintain a worker GRM in accordance with ESS2. (ESS 1, ESS 2 and ESS 10)

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Sub-Components	Potential E&S Risks and Impacts	Management Measures for Potential Impacts

6.3.3. Component 3: Implementation Support and Technical Assistance

Table 6-5 Management Measures for Potential Environmental and Social Risks and Impacts (Component 3)

Sub-Component 3.1 and 3.2 Implementation Support to MME and EDC	**Environmental Risks: Low** • These sub-components finance technical assistance, project management, training, and capacity building. Activities involve no civil work or physical interventions and therefore pose negligible environmental risks. Minor risks may relate to resource use (energy, travel, workshops), which can be mitigated through sustainable event management practices. **Social Risks: Low** • Social risks are minimal as activities are limited to capacity building, workshops, and training. There are no direct impacts on land, livelihoods, or communities. Potential risks relate to inclusion and accessibility of training opportunities and ensuring equitable participation across gender and stakeholder groups.	• These sub-components are not subject to ESMF eligibility screening, as they involve no physical works or direct E&S impacts. • Provide technical training to EDC, MME, and participating FIs on environmental and social risk management, including the application of the ESMF, World Bank ESS requirements, ESMP preparation, ESMS implementation, and good international practices relevant to the energy sector. (ESS1, ESS9) • Build the capacity of participating FIs (SME Bank and FTB) to operationalize their Environmental and Social Management Systems (ESMS), including subproject screening, risk categorization, integration of ESMP requirements into loan documentation, monitoring responsibilities, and reporting requirements in line with ESS9. (ESS9) • Include dedicated training sessions on stakeholder engagement, gender inclusion, SEA/SH prevention, and grievance redress mechanisms, ensuring that staff and consultants understand how to implement inclusive engagement approaches and maintain safe, confidential reporting channels. (ESS2, ESS4, ESS10) • Ensure that all PMU, consultant, and training personnel follow fair labor and working conditions, including written contracts, non-discrimination principles, Codes

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		of Conduct with SEA/SH provisions, and worker GRM access. (ESS2) • Ensure that the Monitoring & Evaluation (M&E) framework includes indicators on E&S performance, including participation/inclusion rates, ESMS implementation progress, compliance performance, GRM functionality, and grievance resolution rates, to support adaptive project management. (ESS1) • Integrate E&S data collection and reporting into the Project Management Information System (MIS) to enable consistent tracking of E&S indicators, FI reporting, ESMS implementation progress, and safeguards-related activities. (ESS1, ESS9) • Maintain inclusive outreach in capacity-building events by ensuring that women, youth, vulnerable groups, and provincial-level stakeholders are actively invited and supported to participate. (ESS10)

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7. INSTITUTIONAL ARRANGEMENTS

7.1. Implementing Arrangements

The CSET Project will be implemented jointly by the Ministry of Mines and Energy (MME) and Electricité du Cambodge (EDC), under the strategic oversight of an inter-ministerial Project Steering Committee (PSC). Implementation responsibilities are organized around the functional mandates of each institution and their respective Project Management Units (PMUs), established through ministerial decisions issued in 2025.

7.1.1. Project Steering Committee (PSC)

The PSC provides overall strategic direction, ensures inter-agency coordination, and approves major implementation decisions. The Committee will be chaired by the Permanent Secretary of MME and include senior representatives from MEF, EDC, and relevant public financial institutions. Development partners will participate as observers. The Steering Committee will meet semi-annually to review implementation progress, discuss emerging challenges, and identify mitigating measures.

Table 7-1: Role and Responsibility of Implementing Agencies

Implementing Agencies	Role and Responsibility
MME	MME is the national authority responsible for energy policy, planning, and regulation. It is the lead implementing agency for Component 2 (Industrial Energy Efficiency Credit Line) and technical assistance under Component 3. MME will establish a dedicated PMU, led by an Undersecretary or Permanent Secretary of State, staffed by officials and consultants covering industrial energy efficiency, procurement, financial management, environmental and social safeguards, IT/MIS, monitoring and evaluation, and communications. The MME PMU will: • Supervise SME Bank and the PFI (FTB) in developing, disclosing, and implementing ESMSs that meet ESS9. • Review FI screening, categorization, and monitoring reports and consolidate them into semi-annual E&S reports submitted to the World Bank. • Manage the industrial EE credit line, including eligibility screening, technical assistance to FIs/industrial enterprises, and coordination with the National Committee for Energy Efficiency (NCEE). • Implement Component 3.1 (MME's TA) directly, including awareness-raising, training, MIS procurement, and support for energy auditing programs. • Prepare annual work plans and budgets (AWPBs), manage procurement and FM functions, and report on project progress and ESF compliance. • Serve as Secretariat to the PSC and ensure cross-agency coordination with MEF, EDC, EAC, and MISTI.
EDC	EDC is the vertically integrated public utility responsible for power transmission, substations, distribution, and system operations. EDC is the lead implementing agency for Component 1 (Grid Strengthening for Energy Transition) and implementation support activities under Component 3. EDC will establish a PMU under the Managing Director, supported by: • Project Management Office (PMO2)

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Implementing Agencies	Role and Responsibility
	• Technical Office (TO) • Standardization, Electrical Equipment Inspection & Quality Assurance and Installation Office (SEEIQAIO) • Social, Environment and Public Relations Office (SEPRO) • Project Procurement Office (PPO) • Credit Financing Management Office (CFMO) EDC's responsibilities include: • Implementing Sub-components 1.1, 1.2, and 1.3 (transmission line, substations, BESS, and distribution). • Preparing and implementing ESIA/ESMPs, including the Critical Habitat Assessment for the LVA–ARK segment and the BESS hazard and risk assessment during implementation. • Managing procurement, contract administration, supervision, safeguards, land acquisition, and GRM for Component 1. • Engaging and managing Project Implementation Consultant to support procurement, supervision, technical design review, and ESF compliance monitoring. • Direct supervision of contractors under EDC's technical standards and E&S oversight. • Preparing Annual Work Plans and Budgets (AWPBs) and semi-annual E&S and progress reports for submission to the World Bank and the PSC.
Financial Intermediaries (FIs) (SME Bank and FTB)	SME Bank and FTB will act as participating financial intermediaries responsible for channeling concessional credit to eligible industrial energy-efficiency subprojects under Component 2. They will operate the credit line in accordance with eligibility criteria, negative lists, and environmental and social requirements defined in the Project Operations Manual (POM) and Environmental and Social Management Framework (ESMF). Both FIs are required to develop, adopt, disclose, and operationalize an Environmental and Social Management System (ESMS) consistent with the World Bank's Environmental and Social Standard 9 (ESS9) prior to receiving project funds. The ESMS will include procedures for screening and categorization, E&S due diligence, monitoring of sub-borrowers, grievance handling, and internal capacity arrangements. • SME Bank, as a state-owned policy bank, currently has no existing ESMS and very limited institutional capacity in environmental and social risk management and will require comprehensive technical assistance, staffing, and training to establish an ESMS. • FTB, a commercial bank with prior experience implementing ESMSs for AFD- and ADB-financed operations, has an existing Environmental and Social Risk Management (ESRM) system but will need to strengthen it to meet the requirements of ESS9, including risk categorization, E&S reporting, and integration of ESF requirements into loan documentation. During implementation, FIs will screen all subprojects, apply exclusion criteria, identify environmental and social risks, including legacy pollution, and determine required mitigation instruments. They will integrate E&S requirements into all sub-loan agreements and monitor sub-borrower performance throughout the loan cycle.

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Implementing Agencies	Role and Responsibility
	FIs will report semiannually to the MME PMU on subproject E&S screening results, ESMS implementation status, grievances received, and any incidents or non-compliance. MME will consolidate FI reports for submission to the World Bank and the Project Steering Committee. FIs will also conduct information and awareness activities to promote access to the EE credit line, including outreach to MSMEs, women-led firms, and industrial enterprises, in coordination with MME's Component 3 technical assistance.

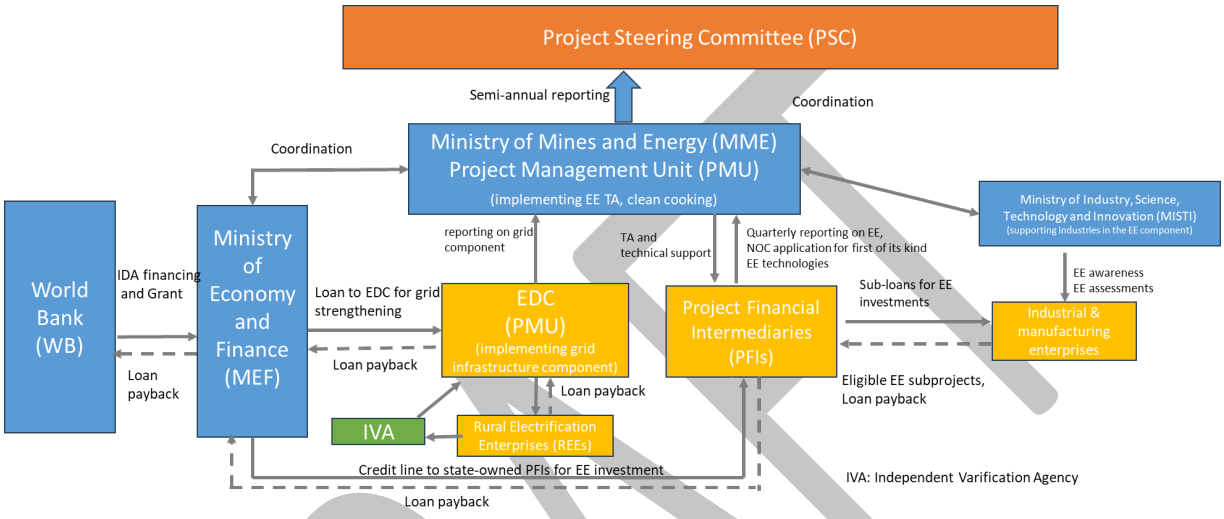

Figure 7-1 Overall Implementation Arrangements

7.1.2. Consultant Support to PMUs

To ensure effective implementation of the ESMF and to meet the World Bank's Environmental and Social Framework (ESF) requirements, both MME and EDC will be supported by dedicated Environmental and Social consultants. These consultants provide technical assistance in preparing, implementing, and monitoring environmental and social instruments, and help strengthen institutional capacity across project agencies.

7.1.2.1. Support to MME PMU (Components 2 and 3):

MME will mobilize one Environmental Specialist and one Social Specialist, financed through the GFPP Grant and Project funds, to support:

- preparation and finalization of E&S instruments relevant to Component 2.
- operationalization and oversight of the Environmental and Social Management System (ESMS) for SME Bank and FTB.
- integration of ESF/ESS requirements into the credit-line Operational Manual.
- screening, review, and monitoring of FI subprojects.
- training and capacity building for PFIs, industrial enterprises, and provincial stakeholders.
- coordination and consolidation of E&S reporting.

7.1.2.2. Support to EDC PMU (Component 1 and 3):

EDC will engage Environmental and Social Consultants to support the preparation of the Government's Initial Environmental Impact Assessment (IEIA) and the World Bank–required

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ESIA/ESMPs for transmission lines, substations, BESS installation, and distribution strengthening works. These consultants will support SEPRO and relevant technical units in:

- environmental and social screening.
- detailed ESIA/ESMP preparation, including biodiversity assessment and BESS hazard and risk assessment.
- supervision of contractor E&S performance
- land acquisition planning and monitoring in accordance with the RPF.
- grievance redress management and stakeholder engagement.

EDC will also be supported by Project Implementation Consultant Firm whose mandate includes technical supervision and E&S compliance oversight for major civil works packages by assigning E&S consultants within the firm.

7.2. Implementing Approach (To be updated)

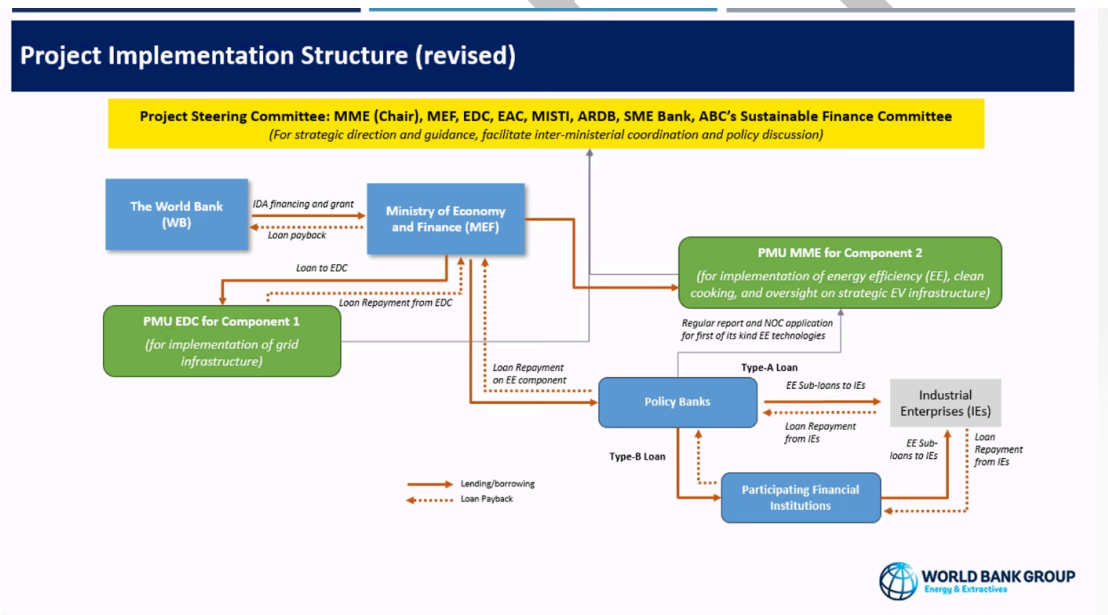

Figure 7-2 Project Implementation Structure

7.3. Capacity Assessment and Capacity Building Plan

7.3.1. Capacity Assessment

A Capacity Needs Assessment (CNA) was undertaken during the preparation of this Environmental and Social Management Framework (ESMF) to evaluate the institutional strengths, gaps, and readiness of the implementing and implementing agencies to manage environmental and social (E&S) risks in line with Cambodian legislation and the World Bank's Environmental and Social Framework (ESF).

During the project preparation, an initial capacity needs assessment was undertaken though questionnaire survey to better understand the WB E&S related knowledge and experience of implementing agencies (EDC, MME) and policy banks and its teams (SEPRO of EDC, PMU of MME) involved in preparation of E&S documents. Moreover, the WB's ESF Introductory Workshop including

potential risks and impacts of CSET project was delivered by the WB's E&S specialists to the relevant government agencies (EDC, MME, EAC) on February 24th at World Bank Office, Phnom Penh, Cambodia. The feedback from the participants (around 16 participants) on WB' ESF indicated the valuable insights into existing institutional strengths, knowledge gaps, and key areas challenging for implying of ESSs' of WB's ESF.

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7.3.1.1. Institutional Capacity Assessments

Based on the assessment, the role and responsibilities of each entity at each project stage are identified and presented.

Table 7-2: Role and Responsibility of Relevant Entities at Each Level and Each Project Stage

Intuition		Role and Responsibility				
Level	**Relevant Division**	**No. of Staff**	**Planning and Design**	**Review, Appraisal, Approval**	**Implementation**	**Operation and Maintenance**
MME	PMU	10	• Leads planning for Component 2 and technical assistance under Component 3. • Develops eligibility criteria, outreach approach, and ESMS oversight arrangements. • Coordinates with MEF, EDC, EAC, MISTI, PFIs, and PSC. • Identifies TA needs, consultant requirements, and capacity-building activities for PFIs and industrial enterprises. • Prepares annual workplans and ensures alignment with the National Energy Efficiency Program.	• Member of PSC; reviews Component 2 arrangements and annual workplans. • Approves ESMSs for SME Bank and FTB. • Manages procurement and consultant selection under Component 2 and Component 3 TA. • Oversees eligibility and appraisal of EE subprojects through PFIs.	• Leads implementation of Component 2 and Component 3.1. • Supervises PFIs for ESMS rollout and ESS9 compliance. • Manages concessional financing through SME Bank & FTB. • Coordinates stakeholder engagement and communication activities.	• Monitors PFI compliance and consolidates reports. • Maintains oversight of ESMS operation and EE credit-line performance. • Continues reporting through PSC and NCEE; supports ongoing TA and supervision.
EDC	PMU/SEPRO	19	• Leads technical planning for transmission line, substations, BESS, and distribution works.	• Ensures procurement follows WB and national standards. • Reviews and approves technical designs for	• Leads implementation of Component 1. • Supervises contractors monitors ESMP and ESCOP compliance.	• Operates and maintains transmission, substations, BESS, and distribution networks.

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Intuition		Role and Responsibility				
Level	**Relevant Division**	**No. of Staff**	**Planning and Design**	**Review, Appraisal, Approval**	**Implementation**	**Operation and Maintenance**
			• Conducts preliminary network analysis, route selection, and site identification. • Prepares E&S screening, ESIA/ESMP ToR, and inputs for Critical Habitat Assessment and BESS hazard assessment. • Coordinates early consultations with affected stakeholders in licensed areas.	transmission, substations, BESS, and distribution. • Employs consultants and the Project Implementation Consultant for design review, safeguards, and contract administration.	• Conducts site audits, land acquisition follow-up, and community engagement. • Oversees CHA and BESS hazard risk assessment.	• Maintains ongoing stakeholder engagement, GRM, and community interface. • Ensures continual ESF compliance during operation.
REE			• Provide network data, access information, and local conditions for distribution planning. • Participate in EDC-led consultations and planning meetings for SC 1.3 in their licensed service areas. • Assist with identification of pole locations, meter zones, and access routes.	• Follow EDC and EAC technical and licensing standards. • Participate in planning and approval processes for distribution works in licensed areas.	• Manage field-level implementation of distribution strengthening (e.g., LV/MV works, AMI installation) under EDC supervision. • Apply ESCOPs, safeguard measures, and contractor OHS practices.	• Operate and maintain electrification infrastructure in licensed areas. • Maintain customer-facing GRM and safety measures.
EAC			• Provide technical and regulatory guidance during early planning.	• Supports review of technical standards.	• Not an implementing entity but provides technical regulatory support as needed.	• Continues regulatory monitoring and enforcement of REE performance.

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Intuition		Role and Responsibility				
Level	**Relevant Division**	**No. of Staff**	**Planning and Design**	**Review, Appraisal, Approval**	**Implementation**	**Operation and Maintenance**
			• Ensure distribution upgrades align with licensing and tariff frameworks. • Review implications for REE licensing and system standards.			
PFIs (SME Bank & FTB)			• Participate in early planning discussions for Component 2. • Identify potential pipeline of EE subprojects and sectors. • Begin development of ESMS framework components (policies, screening tools, staffing). • Coordinate with MME on TA needs, data requirements, and ESMS rollout schedule.	• Member of PSC as relevant; contributes to financing flow decisions. • Develop, adopt, and disclose ESMS; review eligibility and appraisal of EE subprojects. • Apply screening, exclusion list, and E&S due diligence.	• Channel concessional financing to industrial EE subprojects. • Monitor compliance of SMEs and industrial enterprises; integrate E&S clauses into sub-loan agreements. • Maintain FI-level GRM; support financial sustainability.	• Maintain ESMS and long-term monitoring systems. • Manage post-loan grievance mechanisms and follow-up with sub-borrowers.

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Table 7-3 Existing Capacity and Key Gaps and Needs of Capacity Building of Each Implementing Agency

Implementing Agencies	Existing Capacity of E&S Risk and Impact Management	Key Gaps and Needs of Capacity Building	Reference
Key Implementing Agencies			

MME	• Possess prior experience working with International Financial Institutions (IFIs) such as ADB, JICA, and UNDP—particularly in relation to technical studies.
	• Has limited existing capacity in the application of the World Bank's Environmental and Social Framework (ESF).
	• Has lack of experience in E&S risks and impact screening process.
	• Received limited trainings related to E&S management, Cambodian E&S regulations, or occupational health and safety (OHS).
	• Some of the staff have been involved in international financial institutions supported projects.
		• Limited prior training on ESF, environmental and social risk management, Cambodian environmental and social regulations, and occupational health and safety (OHS).
		• Limited experience in projects supported by international financial institutions, , but with lack of experience in E&S risks and impact management.
		• Indicates that the most challenging ESS for MME are ESS 3 (Pollution Prevention), ESS 1 (Assessment and Management of E&S Risks and Impacts), and ESS 7 (Indigenous Peoples).
		• Capacity is particularly limited in areas of project monitoring and compliance, stakeholder engagement, and grievance redress mechanism (GRM) implementation.
		• Lack of training, Limited financial resources, Limited policies or guidelines on ESF risks for energy projects are most frequently said barriers by staff during individual capacity assessment.
		• Most staff lack understanding and practical experience in key areas such as:
		  • Environmental and Social Impact Assessment knowledge and experience such as Cambodian legal procedures and requirements, World Bank ESS
		  • Project monitoring and compliance
		  • Stakeholder engagement
		  • Grievance redress mechanism (GRM) implementation
		• WB's ESF related trainings, trainings related to application of SEP, GRM Set up, LMP, IPPF, RPF, Risks and
			• WB's ESF Introductory Workshop
			• Capacity Needs Assessment

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Implementing Agencies	Existing Capacity of E&S Risk and Impact Management	Key Gaps and Needs of Capacity Building	Reference
		Impact Screening, monitoring and reporting, etc. are required.	
EDC/SEPRO	• Experienced in working with International Financial Institutions (IFIs) such as ADB, JICA, KfW, etc. • Has received multiple training sessions related to E&S from the Project Implementation Consultant (PIC) under ADB, JICA, KfW, etc. • Maintains its own Grievance Redress Mechanism (GRM) committee and has a thorough understanding of grievance redress mechanisms and their role in project implementation. • Received specific training on Cambodian environmental and social regulations as well as training on occupational health and safety (OHS) for both construction and operation stages of projects. • Possesses thorough knowledge of Cambodian legal procedures for Environmental Impact Assessments (EIAs) with solid experience implementing EIAs according to Cambodian legal requirements. • Experienced in screening environmental and social risks and impacts, land acquisition process, and etc. • Have high potential to adopt and implement in the World Bank's Environmental and Social Standards (ESSs).	• Inconsistent training across teams in ESF, OHS and Cambodian environmental and social regulations. • Limited expertise in land acquisition and involuntary resettlement in compliance with WB's ESS 5. • The most challenging ESS for EDC are ESS 5 (Land Acquisition and Resettlement) and ESS 1 (E&S Risk Management). • WB's ESF related trainings, trainings related to application of SEP, GRM Set up, LMP, IPPF, RPF, Risks and Impact Screening, monitoring and reporting, etc. are required.	• WB's ESF Introductory Workshop • Capacity Needs Assessment
REE	• Weak in compliance with occupational health and safety measures • Lack of experience in implementation of environmental and social code of practices	• WB's ESF related trainings, trainings related to application of SEP, GRM Set up, LMP with occupational health and safety measures, and ESCOPs, are required.	• Consultation during site visit

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Implementing Agencies	Existing Capacity of E&S Risk and Impact Management	Key Gaps and Needs of Capacity Building	Reference
	and risks and impacts mitigation measures in align with WB's ESSs.		
Policy Banks			
SME	• Have very limited capacity in E&S risk and impact management. • Although SME Bank currently lacks an E&S policy and has no prior experience with international financial institutions, it has shown its engagement with the ADB-financed project and has initiated discussions around E&S management. • However, its capacity—both in terms of human resources and institutional structure—to manage E&S risks and impacts is expected to be very limited	• No prior technical training on the World Bank's Environmental and Social Framework (ESF) or broader Environmental and Social (E&S) risk management practices. • Absence of institutional safeguards policies or Environmental and Social Management System (ESMS) for loan screening and approval for energy-related investments. • No financial products currently offered that support energy efficiency or clean energy investments. • No previous engagement with international financial institutions or donors in managing E&S aspects of business operation. • No experience in developing and participating in the implementation of an ESMS. • WB's ESF related trainings, trainings related to implementation of ESMS, application of SEP, GRM Set up, LMP, application of ESMS under CSET are required.	• Capacity Needs Assessment
FTB	• A national commercial institution with a corporate credit and infrastructure lending portfolio and demonstrates basic awareness of environmental and social (E&S) issues. • It has prior experience operating as a financial intermediary for projects financed by ADB and AFD, and has complied with the E&S requirements of these international financing institutions. • Has a designated ESRM Coordinator within the Risk Management Department; however,	• No prior experience applying WB ESF or ESMS in lending operations. • Requires institutional training on ESMS design and rollout, risk categorization, and E&S reporting. • Needs guidance on integrating E&S covenants into loan documentation and monitoring borrower performance.	• Interview of Task Team

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Implementing Agencies	Existing Capacity of E&S Risk and Impact Management	Key Gaps and Needs of Capacity Building	Reference
	hands-on experience in implementing E&S accountability measures remains limited. • While a marketing and communications unit exists for external stakeholder interactions, a comprehensive stakeholder engagement plan has not yet been developed. In addition the bank's E&S reporting mechanism should be strengthened.		

A preliminary capacity assessment—based on feedback from the ESF Introductory Workshop held on 24 February 2025 in Phnom Penh and supported by subsequent institutional individual capacity assessments—identified key strengths and gaps. MME was found to have minimal institutional exposure to the WB's ESF, with most staff lacking technical training in environmental and social risk management, Cambodian regulatory requirements, and occupational health and safety (OHS) relevant to infrastructure development. While some personnel had worked on donor-funded projects, the application of ESS remained a significant challenge due to limited practical experience and training.

In contrast, EDC demonstrated a comparatively higher level of preparedness, having received multiple E&S-related trainings under projects financed by ADB, JICA, and KfW. EDC also maintains an internal grievance redress mechanism (GRM) and has experience with environmental impact assessment (EIA) procedures in line with national law. However, training coverage across EDC teams is inconsistent, with capacity gaps particularly evident in ESS5 (Land Acquisition and Involuntary Resettlement), and inter-agency coordination.

The assessment also included financial intermediaries involved in Component 2.. SME Bank currently does not have an Environmental and Social Management System (ESMS) or dedicated E&S staff, relying mainly on a negative list and basic complaint-handling procedures. Although a project ESMS was prepared under an Asian Development Bank (ADB) project, SME Bank demonstrated very limited environmental and social capacity—having no prior ESF training to support sustainable energy investments. FTB has an ESMS developed under the AFD project and dedicated staff for Environmental & Social (E&S) and risk management. However, FTB still requires strengthening their knowledge of WB ESF to integrate into their existing practices on E&S risks management to align with WB ESF.

As a result, capacity-building initiatives and training plan are integrated into the project's ESMF to ensure compliance with World Bank ESSs as presented in following section.

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7.3.2. Capacity Building Plan

7.3.2.1. Institutional Capacity Strengthening Plan

Based on preliminary capacity assessment, targeted training programs are proposed to enhance the environmental and social (E&S) capacity of MME and EDC and key stakeholders. These training courses will equip key personnel with the knowledge and skills necessary for effective implementation and monitoring of E&S risk management tools.

7.3.2.2. Specific Capacity Strengthening Plan for MME

As the lead agency for the CSET project, MME plays a crucial role in ensuring compliance with WB's Environmental and Social Standards (ESS). Strengthening institutional capacity is essential to support effective environmental and social risk management.

Table 7-4: Training Plan for MME and Policy Banks

No.	Training Topic	Target Audience	Number of Training (Per Annual)	Timeline	Trainers
General Training					
1	ESF Training for MME PMU, SME Bank, FTB (Overview of ESF, ESS, ESCP, SEP, ESMF)	MME PMU, SME Bank, FTB	1	After project effectiveness and annually	National E&S Consultant (MME's PMU)
Specialized Training					
1	Stakeholder Engagement and Grievance redress mechanisms (GRM) Implementation and IPPF	MME PMU, SME Bank, FTB	2 (Rollout & Update)	During project implementation	National E&S Consultant (MME's PMU)
2	Social and Environmental Risk Monitoring and Reporting	MME PMU, SME Bank, FTB	1	During project implementation	National E&S Consultant (MME's PMU)
3	Design and Implementation of ESMS for Financial Intermediaries (ESS9)	MME PMU, SME Bank, FTB	2 (Rollout & Update)	Before fund disbursement	National E&S Consultant (MME's PMU)
4	Integrating E&S Considerations into TA	MME PMU, SME Bank, FTB	1	Before first TA Launch	National E&S Consultant (MME's PMU)
5	UXO Awareness, Risk Screening and Protocol Implementation	MME PMU, SME Bank, FTB, Field Engineers, Contractors	1	Before any site work	National E&S Consultant (MME's PMU)
6	Occupational Health and Safety	MME PMU, SME Bank, FTB, Technical staff,	2 (Initial & Refresher)	During project implementation	National E&S Consultant (MME's PMU)

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No.	Training Topic	Target Audience	Number of Training (Per Annual)	Timeline	Trainers
	(OHS) for energy projects	contractors, and field staff			

7.3.2.3. Specific Capacity Strengthening Plan for EDC/SEPRO

EDC is responsible for grid expansion, energy storage investments, and rural electrification. Effective application of WB's environmental and social standards is crucial to ensuring the sustainability and compliance of these initiatives.

Table 7-5: Training Plan for EDC/SEPRO

No.	Training Topic	Target Audience	Number of Training (Per Annual)	Timeline	Trainers
General Training					
1	ESF Training for EDC PMU, SEPRO, (Overview of ESF, ESS, ESCP, SEP, ESMF)	EDC PMU, project teams and relevant staff from SEPRO and REF	1	After project effectiveness	National Environmental Consultant and Social Consultant for EDC
Specialized Training					
1	Stakeholder Engagement and Grievance redress mechanisms (GRM) Implementation and IPPF	EDC PMU, project teams and relevant staff from SEPRO and REF	1	During project implementation	National Environmental Consultant and Social Consultant for EDC
2	Social and Environmental Risk Monitoring and Reporting	EDC PMU, project teams and relevant staff from SEPRO and REF	1	During project implementation	National Environmental Consultant and Social Consultant for EDC
3	Supervision and Monitoring of Contractor C-ESMPs and ECOPs	EDC PMU, project teams and relevant staff from SEPRO and REF	1	During project implementation	National Environmental Consultant and Social Consultant for EDC
4	Battery Management, Spill Response & Fire Safety (BESS-specific)	EDC PMU, Substation / BESS Operators, EDC Engineers from technical teams	1	Before BESS Commissioning	National Environmental Consultant and Social Consultant for EDC
5	UXO Awareness, Risk Screening and Protocol Implementation	EDC PMU, Field Engineers, Contractors	1	Before any site work	National Environmental Consultant and Social Consultant for EDC

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No.	Training Topic	Target Audience	Number of Training (Per Annual)	Timeline	Trainers
6	Biodiversity Risk Management	EDC PMU, technical staff from SEPRO and Contracts	1	Before Construction in Sensitive Area	National Environmental Consultant and Social Consultant for EDC
7	Occupational Health and Safety (OHS) for construction activities	Technical staff, contractors, and field staff	1	During project implementation	National Environmental Consultant and Social Consultant for EDC

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8. CONSULTATION AND STAKEHOLDER ENGAGEMENT

8.1. Stakeholder Engagement Approach

The stakeholder engagement procedures/approaches are designed to promote meaningful stakeholder participation with an emphasis on openness, transparency, accountability, and fairness. In principle, opportunities for meaningful consultation are provided to all stakeholders by providing project information in accessible, understandable, timely and relevant approach and to solicit feedback and suggestions on overall project performance from the preparation stage to the implementation stage.

8.2. Stakeholder Identification and Analysis and Stakeholder Engagement Plan

The overall objective of the Stakeholder Engagement Plan (SEP) developed under CSET is to define a program for stakeholder engagement, including public information disclosure and consultation throughout the entire project cycle. The SEP outlines the ways in which the Ministry of Mines and energy (MME) and Electricité du Cambodge (EDC) will communicate with all involved stakeholders and includes a mechanism by which people can raise concerns, provide feedback, or make complaints about the project and any activities related to the project. The SEP specifically emphasizes the methods to be applied for stakeholder engagement activities including the engagement with the vulnerable groups that are at risk of being left out of project benefits and the responsibilities of the PMUs and different agencies in the implementation of stakeholder engagement activities.

8.3. Disclosure during Project Preparation

During project preparation, the mandatory disclosure of key E&S instruments such as the ESMF, ESCP, SEP will be done by the implementing agencies, EDC and MME. In addition, the Project will disclose relevant E&S information relating to all project activities involving E&S risks and impacts. This includes among others, the RPF, and IPPF which are included as annexes to the ESMF. The draft ESMF (full English version) with Annexes, Executive Summary of ESMF (in Khamer version), SEP, and ESCP (in English and Khamer) will be disclosed on the websites of EDC and MME at least 14 days prior to the consultation meetings for ESMF. Following the incorporation of feedback from consultations, the final versions of the Environmental and Social (E&S) documents will be re-disclosed on both websites.

8.4. Consultations during Project Preparation

During project preparation, the Electricity du Cambodge (EDC) and the Ministry of Mines and Energy (MME) are continuously engaged with different and potential stakeholders to be involved in the proposed project such as other governmental agencies, and local financial institutions to assess their intended roles in project implementation and policy alignment. Moreover, the EDC has been conducting stakeholder consultations and field data collection concurrently to maximize engagement and ensure in-depth community participation while performing preliminary social assessment. During the field visits to the proposed project locations in rural areas under SC 1.5, the consultations with stakeholders such as provincial EDCs, REEs, commune officers, and village community are conducted to gather their perspectives and needs related to the proposed activities of grid extension to the unelectrified villages.

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Table 8-1 List of Consultations During Field Visits

No.	Provinces	Villages	Mode of Consultation	Participants	Dates
1	Kratie	Damre, Kampong Rotes, Koh Dambong	FGD, KII	Representative from provincial EDC, commune chief, villagers and REEs	February 26, 2025
2	Steung Treng	Koh Chrim	FGD, KII	Representative from provincial EDC, village chiefs, villagers, Company representative(s) from REE	February 27, 2025
3.	Steng Traeng	Koh Chheur, Teal Touch, Koh Phnoa	FGD, KII	Villagers, representative from village/ commune chief	June 2, 2025 June 3, 2025
4.	Steng Traeng	Koh Hib	FGD	Villagers,	June 4, 2025
			KII	Representative from village/ commune chief	
5.	Kratie	Ampil Teuk, Kampong, Krobei	FGD	Indigenous people representative	June 5, 2025
			KII	Indigenous people representative	
6.	Pursat	Phnom Preak	FGD	Villagers from floating village	June 6, 2025
			KII	Villagers	
7.	Preu Veng	Koh Peam Raing	FGD	Representative from village/ commune chief	June 7, 2025
			KII	Villagers, Representative from village/ commune chief	

During project preparation, the following public consultation meetings related to the disclosure of ESMF and its associated plans and procedures will be conducted. The indicative example of invitation for virtual and/or in-person consultations is presented in Annex 1. Also, the meeting minutes including the feedbacks to the stakeholders should be properly recorded as indicated in Annex 2.

Table 8-2 List of Planned Public Consultations at Project Preparation

Sub-Component	Level	Target Areas	Mode of Consultation	Target Participants	Responsible Agencies	Timing
SC1.1: Transmission Lines and Substations	National Level		Virtual & In person		EDC	Preparation of ESMF
	Provincial Level	Phnom Penh and Kandal Provinces	In person			Preparation of ESMF/ESIA/ESMP
	District Level		In person			Preparation of ESIA/ESMP
SC1.2: Battery Energy Storage System (BESS)	District/Commune Level	District/ Communes in Target Provinces	In person			Preparation of ESMP
SC1.3: Strategic Investment in EV Infrastructure	Provincial Level	Target Provinces	Virtual & In person			Preparation of ESMF
SC2.1:Credit Line for Industrial Energy Efficiency	National Level		Virtual & In person	MISTI, MoE, EAC, REEs & identified stakeholders in SEP	MME	Preparation of ESMF

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Sub-Component	Level	Target Areas	Mode of Consultation	Target Participants	Responsible Agencies	Timing
			Virtual & In person	Policy banks, PFIs, Industrial enterprises,		Preparation of ESMF particularly for SC-2.1
	Provincial Level	Target Provinces	Virtual & In person	Policy banks, PFIs, Industrial enterprises, and other interested parties		Preparation of ESMS

8.5. Disclosure and Consultations during Project Implementation

During project implementation, disclosure is an essential aspect of overall project transparency and will serve several functions including: (i) provision of on-going record of project progress, status of specific activities, E&S impacts which have occurred and achievements in mitigating and managing such risks; (ii) provision of public documents summarizing the results of public stakeholder engagement events; (iii) provision of access to key project outputs such as energy efficiency strategic plan or other key reports deemed relevant for public disclosure; and (iv) access to monitoring reports prepared for the World Bank.

The PMUs are responsible for disclosure and consultations related to E&S documents. EDC and MME will use digital media including Ministry Website as well as social media like Project Facebook Account to disclose the project related/progress information to the public. Information such as SEP, relevant E&S documents, Grievance Redress Mechanism (GRM) procedures, project orientation materials, and monitoring reports will be disclosed to stakeholders throughout the project's lifecycle. The disclosure will be done through consultation meetings, information leaflets and brochures, and separate focus group meetings with vulnerable groups. Both English and Khmer languages will be used to disclose information following the feedback from stakeholder consultation meeting. Monitoring reports will also be carried out along the consultations with PMUs, WB, Provincial and District Officers, and other interested parties.

8.5.1. Disclosure and Consultation on site specific Environmental and Social documents

During the implementation of the project, all documents on risk management including site-specific documents such as Environmental and Social Impact Assessment (ESIA), Environmental and Social Management Plan (ESMP), Environmental and Social Management System (ESMS) for FIs, and regular risk monitoring reports, will be disseminated on EDC/MME websites as well as websites of policy banks (FIs) and EDC office at relevant site after obtaining clearance by the Bank for disclosure. The ES documents shall be disclosed at least 14 days prior to the consultation meetings. The consultations for the site-specific ES documents such as ESIA, ESMP, RAP, etc. will be conducted to the project nearby communities and relevant stakeholders for receiving opinions, and concerns. The consultations will be conducted in native languages/dialects of the affected/nearby populations. The obtained opinions and concerns should be addressed as much as possible in the revised ES documents.

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9. GRIEVANCE REDRESS MECHANISM

The Grievance Redress Mechanism (GRM) is established to provide project-affected people (PAPs) and stakeholders with a transparent, accessible, and time-bound process to raise concerns or complaints related to the environmental and social performance of the CSET Project. The GRM ensures that grievances are received, recorded, assessed, and resolved promptly and effectively without fear of retribution.

The project will operate two parallel GRM systems, reflecting the implementation responsibilities of EDC (Component 1) and MME/Policy Banks (Component 2). Each system includes multiple tiers for escalation, with clear timeframes as shown in Figures 9-1 and 9-2.

9.1. Grievance Mechanism for EDC (Component 1)

The EDC Grievance Redress Mechanism (GRM) provides project-affected people (PAPs), households, communities, and other stakeholders with a transparent and time-bound process to raise concerns related to land acquisition, environmental impacts, construction disturbances, worker behaviour, and other project-related issues. The GRM follows a tiered escalation process and ensures that grievances are addressed promptly and fairly without cost to complainants.

Grievances can be submitted verbally or in writing through Village Leaders, Commune Chiefs, PMU (SEPRO), PMO, contractors, or district authorities. In addition, the grievance can be submitted through phone, SMS, mail box, and other available media. All grievances must be registered and acknowledged, and complainants shall not face retaliation. Grievances related to workers, Indigenous Peoples, agriculture, and other issues will be handled by the PMO of PMU.

Stage 1 –PMU (SEPRO) – 15 Days

- Affected persons or households may submit written or verbal complaints to the PMU (SEPRO) via the Village Leader or Commune Chief, through phone, letter, email, or in-person visit.
- Grievance cases related to land acquisition, the environment issues will be handled by PMU (SEPRO), while other issues (including workers, Indigenous people, agriculture, or others) will be handled by the PMO of the PMU.
- The Village leader /Commune Chief must register the complaint and provide immediate written acknowledgment to the complainant, copying SEPRO.
- SEPRO has 15 days to review and negotiate a solution with the complainant.
  If unresolved or if the complainant is unsatisfied, the case is elevated to the District Office and report to PMU (EDC).

Stage 2 – PMU (EDC) and District Level – 15 days

- The District Office has 15 days to investigate and mediate the complaint, using approaches suitable for the type of grievance.
- PMU (EDC), through PMU (SEPRO), coordinates with the District Office to support the mediation process.
- All supporting documents are reviewed to determine appropriate actions.
- If a satisfactory resolution cannot be achieved, the case is escalated to the Provincial Grievance Redress Committee (GRC) along with all supporting documents.

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Stage 3 – Provincial Grievance Redress Committee – 30 days

- The Provincial GRC is Deputy Governor as a Chairperson, other members include representative form different ministries, different communes and villages chiefs involved. Also, the representatives from SEPRO, and other stakeholders such as the Project Implementation Consultant (PIC) will be involved.
- The Committee must meet with the complainant within 15 days of receiving the case and make a written decision within 30 days.
- Copies of the decision are shared with PMU (SEPRO) and the complainant.
- If the complainant does not receive a decision or remains unsatisfied, they may take the case to the Provincial Court.

Stage 4 – Provincial Court

- The Provincial Court reviews the complaint and issues a written legal ruling.
- Copies of the ruling are provided to EDC and the complainant.
- If either party disagrees with the decision, the case may be forwarded to the Higher Level Court.

Grievance redress mechanism and information should be well-publicized in the local language (Khmer, via posters or facebook). All grievances will be recorded in a Grievance Register maintained by PMU (SEPRO), with support from the PMO for grievances related to workers, Indigenous Peoples, agriculture, or other non-environmental issues. The PMU (SEPRO) will involve and assist the process of grievance resolution at all stage. The Register will capture key details including the date of receipt, complainant information (if provided), a description of the issue, actions taken, responsible persons or units, and the resolution status. Anonymous complaints will be accepted and handled with equal seriousness, and complainants will not incur any costs for submitting grievances. To ensure transparency and accountability, SEPRO will compile and report regular summaries of grievances received, resolved, and pending as part of EDC's quarterly environmental and social monitoring reports.

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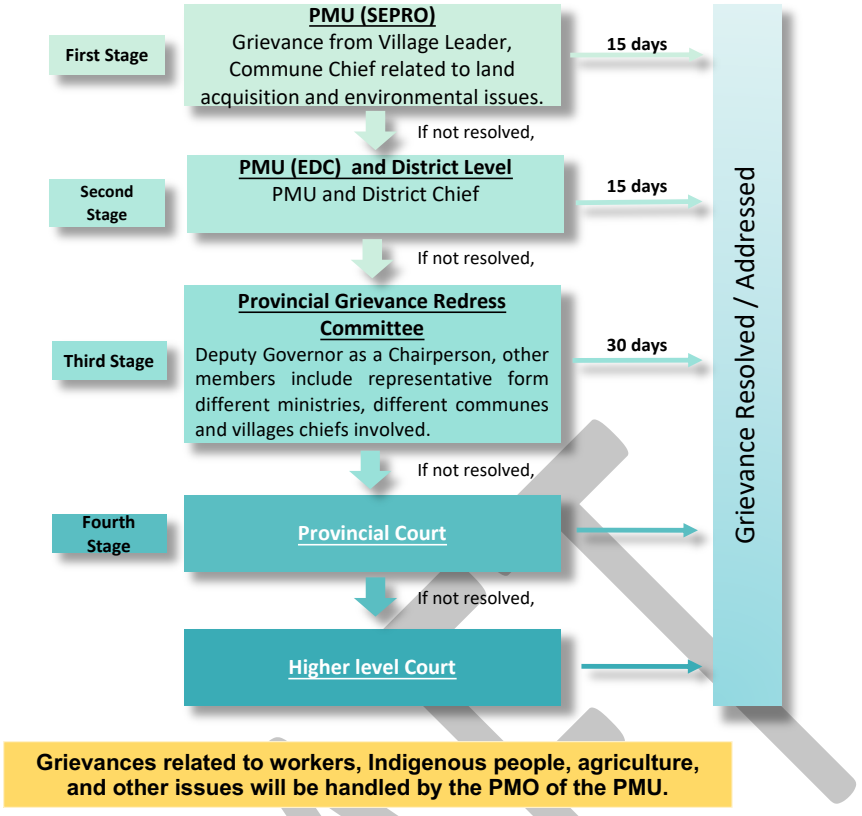

Figure 9-1 GRM Procedures for EDC

9.2. Grievance Mechanism for MME (Component 2)

The grievance process for Component 2 follows a three-stage mechanism reflecting the roles of the Policy Bank/Participating Financial Institutions (PFI) and the MME PMU. Complaints can be submitted verbally or in writing, and all grievances will be handled confidentially and without cost to complainants. This procedure is illustrated in Figure 9-2.

Stage 1 – Policy Bank / PFI GRM (SME Bank, FTB) – 15 days

- Affected industrial enterprises or individuals may submit grievances to the internal grievance mechanism of the Policy Bank or PFI through phone, email, letter, or in-person visit.
- The Policy Bank/PFI must register the complaint and provide immediate written acknowledgment to the complainant.
- The institution has 15 days to review, investigate, and attempt to negotiate a mutually acceptable solution.
- If the complaint is not resolved, or if the complainant is not satisfied with the proposed resolution, the case is elevated to PMU of MME.

Stage 2 – PMU of MME – 15 days

- PMU (MME) reviews the grievance and seeks resolution through consultation and negotiation within 15 days.
- If the issue remains unresolved after this period, PMU (MME) forwards the grievance to the Supreme Court.

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- PMU (MME) also documents and escalates systemic or sensitive issues to the Project Steering Committee and includes them in regular reporting to the World Bank, in accordance with the ESCP.

Stage 3 – Supreme Court

- The Supreme Court reviews the case and issues a written ruling, which is provided to both MME and the complainant.
- If either party disagrees with the ruling, the case may be appealed to the Higher-Level Court, which serves as the final appellate authority.

All grievances will be recorded in a Grievance Register maintained by E&S focal point of the MME PMU capturing key details such as the date of receipt, name of the complainant (if provided), description of the issue, actions taken, persons responsible, and the resolution status. Anonymous complaints will be accepted and treated with equal seriousness, and complainants will not incur any costs in submitting their concerns. To ensure transparency and accountability, the MME PMU will compile and report regular summaries of grievances received, resolved, and pending as part of the quarterly environmental and social monitoring reports.

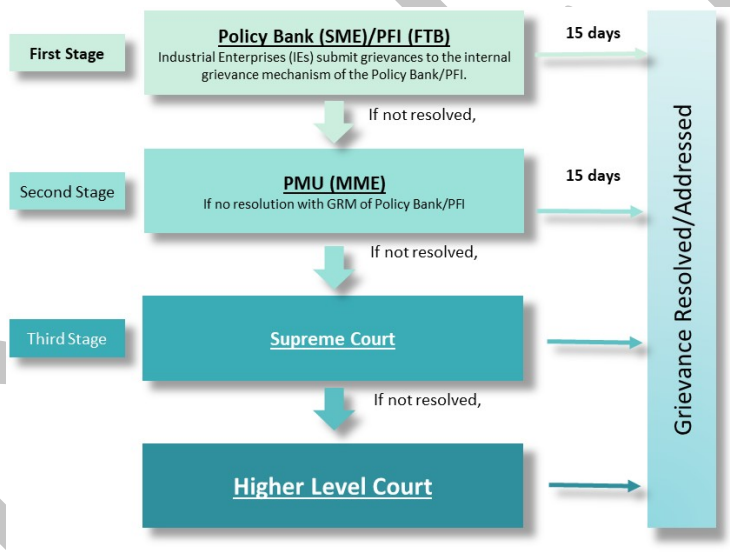

Figure 9-2 GRM Procedures for MME

The GRM of CSET project will be widely disseminated to stakeholders through commune offices, project information boards, and public consultations, as well as local radio, printed leaflets, and social media platforms through project cycle. Information about the GRM will be provided in Khmer and, where necessary, translated into local or indigenous languages to ensure accessibility for all affected communities.

Moreover, communities and individuals who believe that they are adversely affected by a project supported by the World Bank may submit complaints to existing project-level grievance mechanisms or the Bank's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the Bank's independent Accountability Mechanism (AM). The AM houses the Inspection Panel, which determines whether harm occurred, or could occur, as a result of Bank non-compliance with its policies and procedures, and the Dispute Resolution Service, which provides communities and borrowers with the opportunity to address complaints through dispute

resolution. Complaints may be submitted to the AM at any time after concerns have been brought directly to the attention of Bank Management and after Management has been given an opportunity to respond. For information on how to submit complaints to the Bank's Grievance Redress Service (GRS), visit http://www.worldbank.org/GRS. For information on how to submit complaints to the Bank's Accountability Mechanism, visit https://accountability.worldbank.org.

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10. MONITORING AND REPORTING

Effective Monitoring and Reporting (M&R) is essential to ensure that the CSET Project achieves its intended environmental, social, and development objectives. The approach integrates internal monitoring by the implementing agencies (MME and EDC), external monitoring by independent experts, and structured reporting to the World Bank in line with the project's ESCP.

10.1. Internal Monitoring

Internal monitoring is a continuous, systematic process undertaken by the implementing agencies — MME and EDC — through their respective Project Management Units (PMUs) to ensure timely and effective implementation of environmental and social safeguards, and to identify issues early for corrective action.

10.1.1. Internal Monitoring of Component 1

The EDC PMU supported by the Project Management Office (PMO) and Social, Environmental, and Public Relations Office (SEPRO) is responsible for monitoring activities under Subcomponents 1.1–1.3, including transmission works, substations, BESS installation, and distribution network strengthening. Key tasks include:

- **Monitoring ESCOP Implementation**: Checking contractor implementation of OHS measures, waste management, traffic control, sediment control, and hazardous materials handling.
- **Field Supervision and Audits**: Ensure that SEPRO teams conduct periodic site audits, community consultations, and photographic documentation to verify progress and community engagement.
- **Stakeholder Engagement and GRM Tracking**: Assess how effectively project affected people (PAPs) are being informed and engaged, including timely resolution of complaints via the GRM.
- **Monitoring Indicators**: Tracking key metrics such as E&S incidents, implementation of mitigation, number of grievances, and progress on land acquisition.

Internal monitoring will follow a structured checklist system and will rely on tools such as Geographic Information System (GIS) maps, safeguard compliance records and standardized site visit templates to ensure consistency and traceability. EDC's internal monitoring reports, including progress summaries and semi-annual E&S reports, will be submitted to MME PMU as part of the project's integrated monitoring and reporting structure.

10.1.2. Internal Monitoring of Component 2: Industrial Energy Efficiency

The MME PMU will oversee overall monitoring and compliance for Component 2. However, regular internal monitoring will be conducted by Financial Intermediaries (FIs)-Policy Banks, which are responsible for implementing their own Environmental and Social Management System as part of their sub-loan management systems.

Roles and Responsibilities of FIs:

- **Application of ESF Procedures:** Screen sub-projects using the environmental and social management system, consistent with the World Bank's ESS9 (Financial Intermediaries) and national regulations.
- **Sub-Borrower Monitoring:** Conduct regular site visits and audits to ensure sub-borrowers comply with the environmental and social covenants in loan agreements.

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- **E&S Documentation and Records:** Maintain proper records of E&S assessments, risk classifications, mitigation measures, and monitoring outcomes.
- **Grievance Tracking:** Operate borrower-level grievance mechanisms and track resolution of environmental or social complaints.
- **Reporting to MME PMU:** Submit periodic monitoring reports — including summaries of site assessments, incidents, and corrective actions — to the MME PMU for consolidation and onward reporting to the World Bank.

Role of MME PMU:

- **Oversight and Support:** Provide guidance, and supervision to PFIs to ensure ESF implementation is consistent and effective.
- **Consolidation and Quality Review:** Review PFI reports, consolidate data, and conduct selective spot-checks or site verifications.
- **Formal Reporting:** Prepare semi-annual consolidated E&S performance reports for submission to the Project Steering Committee and the World Bank.

10.2. External Monitoring

In alignment with the World Bank's ESF, external monitoring serves as a supplementary mechanism to internal monitoring, providing independent verification of environmental and social (E&S) performance, particularly in areas where risks are higher or where additional oversight is beneficial.

Implementation Approach:

- **Engagement of Independent Experts:** Qualified third-party monitors, such as consultants or specialized firms, may be engaged on an as-needed basis. The number and profile of external monitors remain flexible; however, depending on the specific risks.
- **Coordination with PMUs:** The external monitors will work in coordination with the PMUs of MME and EDC to ensure access to necessary information and sites.
- **Reporting:** Findings from external monitoring activities will be documented in concise reports, highlighting compliance status, gaps or non-conformities, areas of concern, and recommendations for corrective actions. These reports will be submitted to the MME PMU and shared directly with the World Bank as part of the project's compliance with the Environmental and Social Commitment Plan (ESCP).

Frequency and Focus:

- **Periodic Assessments:** External monitoring will be conducted at intervals aligned with project milestones or as deemed necessary based on the risk profile of specific components.
- **Targeted Reviews:** Emphasis will be placed on sub-projects involving significant environmental or social impacts, ensuring that mitigation measures are effectively implemented.

10.3. Reporting

10.3.1. Regular Reporting

All environmental and social monitoring data shall be consolidated by the **EDC and MME Project Management Units (PMUs)**. Regular monitoring reports will be submitted to the **World Bank on a semi-annual basis**, in alignment with the Environmental and Social Commitment Plan (ESCP). Semi-

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annual E&S reports will also be shared with the Project Steering Committee (PSC) to support quarterly oversight and decision-making.

All contractors and implementing partners (including EDC, contractors and Financial Institutions) will be required to prepare **quarterly environmental and social reports** and submit them to the respective PMU. These inputs will feed into the consolidated semi-annual project progress report to the World Bank. For Component 2, monitoring data, including sub-loan progress, risk classification, loan disbursements, energy-efficiency performance, and emissions-reduction metrics will be generated through the Management Information System (MIS). SME Bank and the PFI will submit MIS-generated reports to the MME PMU for consolidation and onward reporting.

Each report will include:

- Project implementation progress
- Status of E&S instrument implementation (ESMPs, RAPs, IPPs, SEP, etc.)
- Summary of stakeholder engagement activities
- Number and types of grievances received and resolved
- Description of any incidents or accidents, and response measures
- Key environmental and social monitoring indicators
- Corrective actions taken and lessons learned

The PMUs will ensure coordination with EDC, contractors, FIs, consultants, and other relevant implementing entities. Reports may also be shared with the Project Steering Committee and disclosed to stakeholders, as appropriate.

10.3.2. Incident Reporting

In the event of any **incident or accident** related to or arising from the CSET Project—particularly those that may cause or have caused **significant adverse effects** on communities, the environment, project workers, or cultural heritage, the following procedures shall apply:

1. **Immediate Notification to the World Bank**
    - The PMUs shall notify the World Bank **within 48 hours** of being informed of the incident.
    - Notification may be via email or other agreed means, and should include basic details: nature, location, date, known consequences, and initial actions taken.
2. **Submission of a Detailed Incident Report**
    - Within **ten (10) working days** of the incident, the PMU shall submit a comprehensive incident report to the World Bank.
    - The report must include:
        - Description of the event
        - Root cause analysis
        - Response and containment measures
        - A **Corrective and Preventive Action Plan (CAPA)** including:

- Immediate safety measures (e.g., fencing, signage, suspension of work)
- Compensation (if applicable)
- Systemic improvements to prevent recurrence
- Follow-up status

3. **Ongoing Monitoring and Follow-up**

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- The PMUs shall track implementation of corrective actions and keep the World Bank informed through regular progress updates.
- Any significant delays or recurring issues will trigger an internal review and, if necessary, escalation to the Project Steering Committee.

4. **Contractor and Field Reporting Responsibilities**
   - All **contractors, consultants, and EDC teams** are required to maintain a site-specific **incident and accident register**.
   - **Supervision consultants** must report any incidents to the PMUs as per their contractual obligations.
   - Incidents involving serious harm, such as **fatalities, forced eviction, Gender-Based Violence/Sexual Exploitation and Abuse (GBV/SEA), or major environmental damage**, must be escalated immediately.

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11. ESTIMATED BUDGET (TO BE UPDATED BY EDC FOR TABLE 11.1)

11.1. Implementation of ESMF and Monitoring

An indicative budget for the implementation of ESMF is estimated with three components: cost of E&S consultants for PMUs, cost for E&S related activities including trainings, operation, monitoring, cost for preparation of additional E&S instruments, and cost of SEP implementation and GRM operation. The estimated budget for ESMF implementation have been included in the overall project budget.

Table 11-1 Indicative Budget for Environmental and Social Management Framework Implementation (EDC)

No.	Description	Input/MMs	Indicative Budget (US$) for 5 years	Responsible Agencies	Notes/Justification
(A) Engagement of E&S Consultants					
1	Full time Environmental Consultant for EDC	60	210,000.00		
2	Full time Social Consultant for EDC	60	210,000.00	EDC	(1 per x 42000US$/year)
(B) Cost for E&S related Activities (Implementation, Monitoring, Training)					
1	Site screening and assessment of environmental and social impact of project/sub-project activities (accommodation, DSA, transportation)	Lump Sum	7,000.00		
2	ESIA/ESMP implementation supervision, monitoring and reporting	Lump Sum	33,000.00		Once per month
3	ESF and ESHS Training to PMU and SEPRO	Lump Sum	25,000.00		Yearly training for 5 years.
4	ESIA/ESMP Orientation to contractor and provincial focal points	Lump Sum	12,500.00		
5	Specialized Training: RP, Biodiversity management plan, GRM	Lump Sum	75,000.00		5 trainings/year (7 topics)
6	Publication/Printing of materials: Project booklet, GRM leaflet, Consultation materials	Lump Sum	6,000.00		
(C) Cost for Preparation of Additional E&S instruments					
1	Cost for Preparation of ESIA/IEE for SC 1.1		70,000.00	EDC	Budget cover in GFPP, 250,000 US$
2	Cost for preparation of IEIAs for SC 1.1				Under PIC to prepare for IEIAs to meet national requirements (for EDC's consideration)

No.	Description	Input/MMs	Indicative Budget (US$) for 5 years	Responsible Agencies	Notes/Justification
(D) Cost for SEP implementation* and GRM operation					
1	**Cost for Stakeholder Engagements**				
	Public Consultations (ESMF) for Component 1 (National Level)		5,000.00	EDC	1 consultation 5,000US$/consultation
	Public Consultations (ESMF) for Component 1 (Provincial Level)		9,000.00	EDC	3 consultations (ESMF, ESIA) 3,000US$/consultation
	Public Consultations (ESMF) for Component 1 (District/Commune Level)		20,000.00	EDC	2,000US$/consultation, 10 numbers in Max for BESS ESMP, etc.
2	**Cost for operation of GRM system**				
	GRM Set up/Investigation/Visits		10,000.00		10000US$
	Cost for SEA/SH GRM		5,000.00		5000 US$
Total for five years			**697,500.00**		

*Note: Refer to Stakeholder Engagement Plan (SEP) for Detailed SEP Implementation. The Project implementation consultant firm will also hire the E&S Consultants to comply with this ESMF requirement.

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Table 11-2 Indicative Budget for Environmental and Social Management Framework Implementation (MME)

No.	Description	Input/MMs	Indicative Budget (US$)	Responsible Agencies	Notes/Justification
(A) Engagement of E&S Consultants					
1	Full-Time National Environmental and Social Consultant (MME's PMU)	60	210,000.00	MME	
(B) Cost for E&S related Activities (Trainings, Implementation, Monitoring)					
1	**Cost for E&S training (yearly)**				
2	**Training Plan for MME**				
	ESF training to MME PMU, SME, FTB		25,000.00	MME	1 trainings/year (1 topic); 5000 per training
	Specialized Training: SEP, ESS9, GRM, GBV/SH		62,500.00	MME	9 trainings/year (6 topics) 3000 (SEP and GRM training) 3000 (GBV training for PMU and policy banks)- 11 trainings per year
3	Cost for preparation of monitoring by PMU, Provincial level, District level		17,500.00	MME	(3500US$/year)
(C) Cost for Preparation of Additional E&S instruments					
1	Cost for Preparation of ESMS				Budget needed for development of ESMS for FI (SME)-under WB preparation support -either GFPP or HEIS
(D) Cost for SEP implementation* and GRM operation					
1	**Cost for Stakeholder Engagements**				
	Public Consultations (ESMF) for Component 2 (National Level)		6,000.00	MME	2 consultations 3000US$/consultation
	Public Consultations (ESMF) for Component 2 (Provincial Level)		3,000.00	MME	1 consultations 3000US$/consultation
	Public Consultation for ESMS		6,000.00	FIs	2 consultations 3000US$/consultation for each FI
	Stakeholder Engagement throughout the project cycle				

No.	Description	Input/MMs	Indicative Budget (US$)	Responsible Agencies	Notes/Justification
2	**Cost for operation of GRM system**				
	GRM Set up/Investigation/Visits		25,000.00	MME/FIs	
	Cost for SEA/SH GRM		15,000.00	MME/FIs	
Total			**370,000.00**		

*Note: Refer to Stakeholder Engagement Plan (SEP) for Detailed SEP Implementation.

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LIST OF ANNEXES

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ANNEX-1: EXCLUSION LIST

To avoid adverse impacts on the environment and people, the following exclusion list helps to identify activities/investments that will not be financially or technically supported by the CSET project.

The project under Component 1 will not finance the activity if an activity/sub project/ Investment:

i	Will require significant involuntary physical displacement of any individuals, families or groups
ii	Will lead to economic displacement that cannot be resolved with a negotiated settlement to the benefit of the effect person, and thus require financial compensation
iii	Will cause or lead to child abuse, use of child labor (children under the age of 18), exploitation or human trafficking, (and/or) encourage the use of forced labor
vi	Will likely cause negative impacts on Indigenous Peoples
v	Will include the purchase or use of equipment which includes the international banned substance such as polychlorinated biphenyls (PCBs)
iv	Will include the purchase or use of environmentally hazardous materials/substances[1], military equipment, other potentially dangerous materials and equipment, including radioactive materials[2], and asbestos (including asbestos-containing materials), and the products including alcoholic beverages, and tobacco products
v	Will include trade in wildlife and wildlife products prohibited under the CITES convention
vi	Is likely to negatively affect critically endangered or endangered plants or animals as listed in the International Union for Conservation of Nature (IUCN) Red List
viii	Will have significant negative effect on key biodiversity areas recognized by international, national, regional or municipal governments (or buffer zones thereof)
ix	Will include significant land clearance and leveling (when affecting critical natural habitats and natural habitats)
x	Is located in areas with high risk of Unexploded Ordnance (UXO) (Explosive Remnants of War (ERW)) Landmine or with known UXO (ERW) / landmine locations
xi	Will require Voluntary Land Donation (VLD) and any land acquisition without a Resettlement Action Plan (RAP/ARAP)

Note:

[1] Environmentally hazardous material are deemed to be those that are illegal under host country laws or regulations or international conventions and agreements, or subject to international bans, such as pharmaceuticals, pesticides/herbicides, and ozone depleting substances.

[2] This does not apply to the purchase of medical equipment, quality control (measurement) equipment and
any equipment where the radioactive source is trivial and/or adequately shielded.

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The project under Component 2 will not finance the activity if an activity/sub project/investment:

i	Will not implement within the proximity of the existing facilities/factory/industry
ii	Will support to the existing facilities/factory/industry with legacy pollution
iii	Will cause or lead to child abuse, use of child labor (children under the age of 18), exploitation or human trafficking, (and/or) encourage the use of forced labor
iv	Will likely cause negative impacts on Indigenous Peoples
v	Will include the purchase or use of environmentally hazardous materials/substances[1], military equipment, other potentially dangerous materials and equipment, including radioactive materials[2], and asbestos (including asbestos-containing materials), and the products including alcoholic beverages, and tobacco products
vi	Will include trade in wildlife and wildlife products prohibited under the CITES convention
vii	Will be under the restrict list of the sub-decree 370 on the Implementation of the New List of Prohibited and Restricted Commodities (applicable to activities under SC 2.1)
viii	Do not contribute to improving energy efficiency in Cambodia's industrial sector

Note:

[1] Environmentally hazardous material are deemed to be those that are illegal under host country laws or regulations or international conventions and agreements, or subject to international bans, such as pharmaceuticals, pesticides/herbicides, polychlorinated biphenyls, and ozone depleting substances.

[2] This does not apply to the purchase of medical equipment, quality control (measurement) equipment and
any equipment where the radioactive source is trivial and/or adequately shielded.

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ANNEX-2: RISK AND IMPACT SCREENING FORM

Use of Screening Forms for Specific Activities

To ensure that the screening process is proportionate to the type and scale of works, three separate forms are provided under this annex. Each form corresponds to a specific category of physical activity under the sub-component 1 of the CSET Project:

- **Form A – Construction of Transmission Lines:**
  To be used for activities involving the construction of new 115 kV or 230 kV transmission lines, including tower foundations, right-of-way establishment, and associated stringing works.

- **Form B – Construction or Expansion of Substations:**
  To be used for new substation construction or major upgrades within existing facilities.

- **Form C – Upgrading or Rehabilitation of Medium and Low Voltage (MV/LV) Distribution Networks:**
  To be used for improvement or extension of MV and LV lines, transformer replacement, and rural electrification works. These activities are generally Low to Moderate risk, and screening ensures avoidance of impacts on private assets, vegetation, and community access routes while confirming compliance with standard Environmental and Social Codes of Practice (ESCOPs).

Each Screening Template – consists of four parts:

I. Description of project activity
II. Initial screening against the Cambodia's IEIA/EIA Requirements
III. Project Specific-Screening Checklist
IV. Overall Risk assessment and determination of required E&S Safeguard Instrument

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Form A: Construction of Transmission Lines

I. Description of Project Activity

Name of Project Activity:	
Relevant Project Component and Sub-Component:	
Activities Related to:	□ Construction of new transmission lines (115 kV) □ Construction of new transmission lines (230 kV)
Project Location (province / district / commune / village):	
Coordinates of the project location:	
Name of Implementing Agency and its associated implementing partners/companies/enterprises:	
Brief Description of Proposed Project Activity (incl. type and scope of activities, footprint area, size and scale, resources required, etc.): Please attach relevant map / drawing as necessary and if applicable.	
Estimated Construction/Activity Period: (If applicable)	
Additional Information	

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II. Screening against the Cambodia's IEIA/EIA Requirements

All proposed project activities shall undergo screening in accordance with Cambodia's Environmental Impact Assessment (EIA) Sub-Decree and relevant regulations issued by the Ministry of Environment (MoE).

Is the project activity	**Yes**	**No**
Included in the relevant Cambodian legal instruments that identify activities requiring an Environmental Protection Contract (EPC), **Initial Environmental Impact Assessment (IEIA) or Full Environmental Impact Assessment (EIA)**? These include: Prakas No. 3591/0525 (2025) on the Classification of Environmental Impact Assessments for Development Projects		
If the answer is Yes, the relevant Full EIA or IEIA or EPC shall be conducted in accordance with Cambodia's EIA regulations and submitted to the Ministry of Environment for approval.		
Screening Results	☐ **Initial Environmental Impact Assessment (IEIA)** ☐ **Full Environmental Impact Assessment (EIA)** ☐ **Environmental Protection Contract (EPC)**	
Justifications for Screening		
If the answer is either Yes or No, proceed to Step III: project-specific screening to assess whether the activity triggers additional environmental or social risks under the World Bank ESF.		

III. Activity Specific Screening Checklist

The following screening checklist is designed to identify potential environmental and social risks associated with specific project activities. It supports the classification of environmental and social impacts in line with the World Bank's Environmental and Social Framework (ESF). This screening will help determine the applicable Environmental and Social Standards (ESS) and guide the preparation of appropriate safeguard instruments such as Environmental and Social Management Plans (ESMPs), Resettlement Action Plans (RAPs), Indigenous Peoples Plans (IPPs), and others.

No	Screening Questions	Yes / No / TBD	Comments / Justification	Action Required	Relevant ESS	Required E&S Instrument(s)
1.	Will the project activity create cumulative impacts when combined with other existing or planned infrastructure (e.g., transmission lines, roads)?				ESS1	Cumulative Impact Assessment (If impacts are High/ Substantial) or integrate into ESMP
2.	Will the project activity involve significant land/vegetation				ESS1	ESMP

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No	Screening Questions	Yes / No / TBD	Comments / Justification	Action Required	Relevant ESS	Required E&S Instrument(s)
	clearing, earthworks, or construction work that may cause land use changes, or environmental degradation or social disturbance?					
3.	Will the project activity engage direct workers, contracted workers, or community workers under the project?				ESS2	LMP
4.	Will the project activity expose workers to health and safety risks, such as working at heights, heavy equipment uses, or chemical handling?				ESS2	ESMP / OHS Plan
5.	Will the project activity require worker camps or temporary accommodation for workers?				ESS3	ESMP / OHS Plan
6.	Will the project activity significantly release air pollutants such as dust, Sulphur dioxides (SO_2), particulate matter (PM) and generate excessive noise and vibration that can cause disturbance to nearby people and the sensitive habitats?				ESS3	ESMP
7.	Will the project activity significantly risk contamination of soil, and water bodies through improper material handling or waste disposal or construction activities?				ESS3	ESMP / Waste Management Plan

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No	Screening Questions	Yes / No / TBD	Comments / Justification	Action Required	Relevant ESS	Required E&S Instrument(s)
8.	Will the project activity significantly generate hazardous waste (e.g. used oil, solvents) or electronic waste?				ESS4	ESMP / Hazardous Waste Management Plan
9.	Will the project activity include the installation of transformers that use other hazardous substances such as PCB?				ESS4	ESMP / Hazardous Waste Management Plan
10.	Will the project activity result in adverse risks or impact (e.g. traffic and road safety risks, construction hazards) on community health and safety due to machineries transportation, blasting, or civil work?				ESS4	ESMP / Community Health and Safety (CHS) Plan
11.	Is there history or potential risk of unexploded ordinance or land mines in or near project site?				ESS5	RAP / Abbreviated Resettlement Action Plan (ARAP)
12.	Will the project activity involve temporary or permanent use of land owned or utilized by the local communities causing restrictions on the access to farmland or business operation or public areas (e.g. school)?				ESS5	RAP / ARAP
13.	Will the project activity require land acquisition, or cause displacement of any structures, people, houses, crops, or livelihoods?				ESS5	RAP / ARAP

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No	Screening Questions	Yes / No / TBD	Comments / Justification	Action Required	Relevant ESS	Required E&S Instrument(s)
14.	Will the implementation of project activities affect livelihoods or income generation of any individuals, families or groups (e.g. loss of land use, assets or access to assets, including those that lead to loss of income sources or other means of livelihood, temporary or permanent)?				ESS5	RAP / ARAP
15.	Will the project be located in or near (within 2 km) of a protected area (e.g. National Parks, Wildlife Sanctuaries, Protected Landscapes, Protection Forests and Fish Sanctuaries, Key Biodiversity Areas, Important Bird Areas, etc.?)				ESS6	ESMP / Biodiversity Management Plan
16.	Will the activity involve significant vegetation clearance or impact on natural habitats?				ESS6	ESMP
17.	Will the project activity impact traditional livelihoods, cultural practices, or community governance of Indigenous Peoples or vulnerable ethnic minorities present in the project area?				ESS7	IPP
18.	Will the construction activities be performed in or near the areas of cultural heritage sites, religious				ESS8	Chance Find Procedures

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No	Screening Questions	Yes / No / TBD	Comments / Justification	Action Required	Relevant ESS	Required E&S Instrument(s)
	structures, or historical landmarks?					

IV. Overall Risk assessment and determination of required E&S Safeguard Instrument

Level of Risk (Overall)	Required E&S Instruments
☐ High ☐ Substantial ☐ Moderate ☐ Low	☐ Environmental and Social Impact Assessment (ESIA) ☐ Environmental and Social Management Plan (ESMP) ☐ Resettlement Action Plan (RAP) ☐ Abbreviated Resettlement Action Plan (ARAP) ☐ Biodiversity Management Plan (BMP) ☐ Hazardous Waste Management Plan (HWMP) ☐ Indigenous People Plan (IPP) ☐ Occupational Health and Safety Plan (OHSP) ☐ Community Health and Safety Plan (CHSP) ☐ Chance Find Procedures ☐ Labor Management Plan (LMP) ☐ ----------
Justifications / Comments	

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Form B: Construction of a new substation

I. Description of Project Activity

Name of Project Activity:	
Relevant Project Component and Sub-Component:	
Activities Related to:	□ Construction of a new substation
Project Location (province / district / commune / village):	
Coordinates of the project location:	
Name of Implementing Agency and its associated implementing partners/companies/enterprises:	
Brief Description of Proposed Project Activity (incl. type and scope of activities, footprint area, size and scale, resources required, etc.): Please attach relevant map / drawing as necessary and if applicable.	
Estimated Construction/Activity Period: (If applicable)	
Additional Information	

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II. Screening against the Cambodia's IEIA/EIA Requirements

All proposed project activities shall undergo screening in accordance with Cambodia's Environmental Impact Assessment (EIA) Sub-Decree and relevant regulations issued by the Ministry of Environment (MoE).

Is the project activity	**Yes**	**No**
Included in the relevant Cambodian legal instruments that identify activities requiring an Environmental Protection Contract (EPC), **Initial Environmental Impact Assessment (IEIA) or Full Environmental Impact Assessment (EIA)**? These include: Prakas No. 3591/0525 (2025) on the Classification of Environmental Impact Assessments for Development Projects		
If the answer is Yes, the relevant Full EIA or IEIA or EPC shall be conducted in accordance with Cambodia's EIA regulations and submitted to the Ministry of Environment for approval.		

Screening Results	☐ **Initial Environmental Impact Assessment (IEIA)** ☐ **Full Environmental Impact Assessment (EIA)** ☐ **Environmental Protection Contract (EPC)**
Justifications for Screening	
If the answer is either Yes or No, proceed to Step III: project-specific screening to assess whether the activity triggers additional environmental or social risks under the World Bank ESF.	

Activity Specific Screening Checklist

The following screening checklist is designed to identify potential environmental and social risks associated with specific project activities. It supports the classification of environmental and social impacts in line with the World Bank's Environmental and Social Framework (ESF). This screening will help determine the applicable Environmental and Social Standards (ESS) and guide the preparation of appropriate safeguard instruments such as Environmental and Social Management Plans (ESMPs), Resettlement Action Plans (RAPs), Indigenous Peoples Plans (IPPs), and others.

No	Screening Questions	Yes / No / TBD	Comments / Justification	Action Required	Relevant ESS	Required E&S Instrument(s)
1.	Will the project activity create cumulative impacts when combined with other existing or planned infrastructure (e.g., transmission lines, roads)?				ESS1	Cumulative Impact Assessment (if impacts are substantial) or integrated into ESMP

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No	Screening Questions	Yes / No / TBD	Comments / Justification	Action Required	Relevant ESS	Required E&S Instrument(s)
2.	Will the project activity involve significant land/vegetation clearing, earthworks, or construction work that may cause land use changes, or environmental degradation or social disturbance?				ESS1	ESMP
3.	Will the project activity engage direct workers, contracted workers, or community workers under the project?				ESS2	LMP
4.	Will the project activity expose workers to health and safety risks, such as working at heights, heavy equipment use, or chemical handling?				ESS2	ESMP/OHS Plan
5.	Will the project activity require worker camps or temporary accommodation for workers?				ESS2	ESMP/OHS Plan
6.	Will the project activity significantly release air pollutants such as dust, Sulphur dioxides (SO_2), particulate matter (PM) and generate excessive noise and vibration that can cause disturbance to nearby people and the sensitive habitats?				ESS3	ESMP
7.	Will the project activity significantly risk contamination of soil, and water bodies through improper material				ESS3	ESMP / Spill Response / Management Plan

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No	Screening Questions	Yes / No / TBD	Comments / Justification	Action Required	Relevant ESS	Required E&S Instrument(s)
	handling or waste disposal or construction activities?					
8.	Will the project activity significantly generate hazardous waste (e.g. used oil, solvents) or electronic waste?				ESS3	Hazardous waste management plan
9.	Will the project activity include the installation of transformers that use other hazardous substances such as PCB?				ESS3	Hazardous waste management Plan
10.	Will the project activity result in adverse risks or impact (e.g. traffic and road safety risks, construction hazards) on community health and safety due to machineries transportation, blasting, or civil work?				ESS4	Community Health and Safety (CHS) Plan
11.	Is there history or potential risk of unexploded ordinance or land mines in or near project site?				ESS4	UXO Risk assessment and Clearance
12.	Will the project activity involve temporary or permanent use of land owned or utilized by the local communities causing the restriction on the access to farm lands or business operation or public areas (e.g. school)?				ESS5	RAP/Abbreviated Resettlement Action Plan (ARAP)
13.	Will the project activity require land acquisition, or cause displacement of				ESS5	RAP/ARAP

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No	Screening Questions	Yes / No / TBD	Comments / Justification	Action Required	Relevant ESS	Required E&S Instrument(s)
	people, houses, crops, or livelihoods?					
14.	Will the implementation of project activities affect livelihoods or income generation of any individuals, families or groups (e.g. loss of land use, assets or access to assets, including those that lead to loss of income sources or other means of livelihood, temporary or permanent)?				ESS5	RAP/ARAP
15.	Will the project activity cause the removal of trees or disturb wildlife habitats?				ESS6	ESMF/ Biodiversity Management Plan
16.	Will the project activity impact traditional livelihoods, cultural practices, or community governance of Indigenous Peoples or vulnerable ethnic minorities present in the project area?				ESS7	IPP
17.	Will the construction activities be performed in or near the areas of cultural heritage sites, religious structures, or historical landmarks?				ESS-8	Chance Find procedures / Culture Heritage

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IV. Overall Risk assessment and determination of required E&S Safeguard Instrument

Level of Risk (Overall)	Required E&S Instruments
☐ High ☐ Substantial ☐ Moderate ☐ Low	☐ Environmental and Social Impact Assessment (ESIA) ☐ Environmental and Social Management Plan (ESMP) ☐ Resettlement Action Plan (RAP) ☐ Abbreviated Resettlement Action Plan (AARAP) ☐ Biodiversity Management Plan (BMP) ☐ Hazardous Waste Management Plan (HWMP) ☐ Indigenous People Plan (IPP) ☐ Occupational Health and Safety Plan (OHSP) ☐ Community Health and Safety Plan (CHSP) ☐ Chance Find Procedures ☐ Labor Management Plan (LMP) ☐ ----------
Justifications / Comments	

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Form C: Building, upgrading, and network strengthening distribution lines (MV, LV) and transformers

I. Description of Project Activity

Name of Project Activity:	
Relevant Project Component and Sub-Component:	
Activities Related to:	□ Building/Construction of MV or LV lines □ Upgrading/Replacing of distribution lines □ Upgrading/Replacing transformers
Project Location (province / district / commune / village):	
Coordinates of the project location:	
Name of Implementing Agency and its associated implementing partners/companies/enterprises:	
Brief Description of Proposed Project Activity (incl. type and scope of activities, footprint area, size and scale, resources required, etc.): Please attach relevant map / drawing as necessary and if applicable.	
Estimated Construction/Activity Period: (If applicable)	
Additional Information	

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II. Screening against the Cambodia's IEIA/EIA Requirements

All proposed project activities shall undergo screening in accordance with Cambodia's Environmental Impact Assessment (EIA) Sub-Decree and relevant regulations issued by the Ministry of Environment (MoE).

Is the project activity	**Yes**	**No**
Included in the relevant Cambodian legal instruments that identify activities requiring an Environmental Protection Contract (EPC), **Initial Environmental Impact Assessment (IEIA) or Full Environmental Impact Assessment (EIA)**? These include: Prakas No. 3591/0525 (2025) on the Classification of Environmental Impact Assessments for Development Projects		
If the answer is Yes, the relevant Full EIA or IEIA or EPC shall be conducted in accordance with Cambodia's EIA regulations and submitted to the Ministry of Environment for approval.		

Screening Results	☐ **Initial Environmental Impact Assessment (IEIA)** ☐ **Full Environmental Impact Assessment (EIA)** ☐ **Environmental Protection Contract (EPC)**
Justifications for Screening	
If the answer is either Yes or No, proceed to Step III: project-specific screening to assess whether the activity triggers additional environmental or social risks under the World Bank ESF.	

III. Activity Specific Screening Checklist

The following screening checklist is designed to identify potential environmental and social risks associated with specific project activities. It supports the classification of environmental and social impacts in line with the World Bank's Environmental and Social Framework (ESF). This screening will help determine the applicable Environmental and Social Standards (ESS), and guide the preparation of appropriate safeguard instruments such as Environmental and Social Management Plans (ESMPs), Resettlement Action Plans (RAPs), Indigenous Peoples Plans (IPPs), and others.

No	Screening Questions	Yes / No / TBD	Comments / Justification	Action Required	Relevant ESS	Required E&S Instrument(s)
1.	Will the project activity create cumulative impacts when combined with other existing or planned developments near project area?				ESS1	Cumulative Impact Assessment (If impacts are High/ Substantial) or integrate into ESMP

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No	Screening Questions	Yes / No / TBD	Comments / Justification	Action Required	Relevant ESS	Required E&S Instrument(s)
2.	Will the project be located in protected areas where there is no road access?				ESS1	ESMP
3.	Will the project activity engage direct workers, contracted workers, or community workers under the project?				ESS2	LMP
4.	Will the project activity expose workers to health and safety risks, such as working at heights, electrical hazards, or exposure to chemicals?				ESS2	ESMP / OHS Plan
5.	Will the project activity significantly release air pollutants such as dust, Sulphur dioxides (SO_2), particulate matter (PM) and generate excessive noise and vibration that can cause disturbance to nearby people and the sensitive habitats or wildlife?				ESS3	ESMP
6.	Will the project activity require significant clearing of natural vegetation, beyond what is necessary for the RoW (right-of-way), increasing the risk of soil erosion or biodiversity loss or natural habitat?				ESS3	ESMP
7.	Will the project activity significantly risk contamination of soil, water sources, wetlands, or rivers through improper material				ESS3	ESMP / Waste Management Plan

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No	Screening Questions	Yes / No / TBD	Comments / Justification	Action Required	Relevant ESS	Required E&S Instrument(s)
	handling or disposal or construction activities?					
8.	Will the project activity likely expose residents to increased electromagnetic fields (EMF) due to proximity of MV/LV lines to homes or schools?				ESS4	EMF Risk Assessment and Mitigation Measures
9.	Will the project activity result in adverse risks or impact (e.g. traffic and road safety risks, construction hazards such as live wires, community health issues) on community health and safety?				ESS4	ESMP / Community Health and Safety (CHS) Plan
10.	Is there history or potential risk of unexploded ordinance or land mines in or near project sites (for construction of tower or pole) and/or the target village?				ESS4	UXO Risk Assessment and Clearance Plan
11.	Will the project activity involve temporary or permanent use of land owned or utilized by the local communities causing the restriction on the access to agricultural land, or fishing areas?				ESS5	RAP / Abbreviated Resettlement Action Plan (ARAP)
12.	Will the project activity require land acquisition, or cause displacement of people, houses, crops, or livelihoods?				ESS5	RAP / ARAP

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No	Screening Questions	Yes / No / TBD	Comments / Justification	Action Required	Relevant ESS	Required E&S Instrument(s)
13.	Will the implementation of project activities affect livelihoods or income generation of any individuals, families or groups (e.g. loss of land use, assets or access to assets, including those that lead to loss of income sources or other means of livelihood, temporary or permanent)?				ESS5	RAP / ARAP
14.	Are there any areas on or around project area that are used by protected, important or sensitive species of fauna (e.g., migratory birds, dolphins) or flora (e.g. for breeding, nesting, foraging, resting, overwintering, migration) which could be affected by the construction activities or installation of MV/LV lines ?				ESS6	ESMP / Biodiversity Management Plan
15.	Will the project activity enable increased human access into sensitive or protected natural areas, resulting in indirect biodiversity threats (e.g., poaching, logging)?				ESS6	
16.	Will the project activity impact traditional livelihoods, cultural practices, or community governance of Indigenous Peoples or vulnerable ethnic				ESS7	IPP

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No	Screening Questions	Yes / No / TBD	Comments / Justification	Action Required	Relevant ESS	Required E&S Instrument(s)
	minorities present in the project area/village?					
17.	Will the construction activities be performed in or near the areas of unique historic, archaeological, includes national historical landmarks, geological monuments, and paleontological and anthropological reservations as may be designated or determined by relevant governmental institutions or recognized as intangible cultural heritages for local or ethnic minority populations?				ESS-8	Chance Find Procedures

III. Overall Risk assessment and determination of required E&S Safeguard Instrument

Level of Risk (Overall)	Required E&S Instruments
☐ High ☐ Substantial ☐ Moderate ☐ Low	☐ Environmental and Social Impact Assessment (ESIA) ☐ Environmental and Social Management Plan (ESMP) ☐ Resettlement Action Plan (RAP) ☐ Abbreviated Resettlement Action Plan (ARAP) ☐ Biodiversity Management Plan (BMP) ☐ Hazardous Waste Management Plan (HWMP) ☐ Indigenous People Plan (IPP) ☐ Occupational Health and Safety Plan (OHSP) ☐ Community Health and Safety Plan (CHSP) ☐ Chance Find Procedures ☐ ---------- ☐ ----------
Justifications / Comments	

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ANNEX-3: SITE-SPECIFIC ENVIRONMENTAL, SOCIAL, AND BIODIVERSITY BASELINE AND GUIDANCE FOR FIELD STUDY

Purpose and Scope

This annex provides a comprehensive site-specific environmental, social, and biodiversity baseline for subprojects under Sub-component 1.1 (Grid Strengthening for Energy Transition) and related physical investments (e.g., transmission lines, substations, and associated Battery Energy Storage System sites). It also serves as a technical reference for conducting field verification and detailed environmental and social assessments during project implementation.

The purpose of this annex is to:

1. Establish site-specific baseline conditions: physical, biological, and socio-economic – to inform environmental and social risk classification and management.
2. Identify sensitive receptors and ecological features that require specific management or mitigation measures, including protected areas, Key Biodiversity Areas (KBAs), and critical habitats.
3. Support the preparation of Environmental and Social Instruments, including Environmental and Social Impact Assessments (ESIA), Environmental and Social Management Plans (ESMP), and Biodiversity Management Plans (BMPs), where required.

Baseline information was developed through a combination of desktop studies, field reconnaissance, and consultations with relevant institutions and communities. This consolidated annex is composed of two complementary components:

- Part A - Site-Specific Environmental and Social Baseline Conditions (Sub-component 1.1): Presents the generic information about the physical, environmental, and social characteristics of the project's key sites—particularly the transmission line corridor between Lvea Am, Arey Ksat, Chroy Changvar III, and Wat Phnom, and associated substations. It provides information on topography, land use, climate, water resources, and socio-economic context.

- Part B - Preliminary Biodiversity and Habitat Assessment and Guidance for Field Study. Focuses on the ecological context, summarizing existing biodiversity data, key species and habitats, and the results of rapid screening using IBAT and national databases. It also provides methodological guidance for conducting detailed field biodiversity studies and critical habitat assessments during the ESIA phase.

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A: Site-specific Environmental Baseline Conditions (Sub-component 1.1)

Figure 1 Land with marking near the plan transmission line route from the LVA substation

(a) Locations of Substations

Table 1 Location and Map of Substations

Substations	Location Descriptions	Map Figures
GS 47 Lvea Am (LVA) 230kV Substation	The location of the LVA substation is as shown in Figure. It was built in 2020 and equipped with three transformers. It is located adjacent to a 400 MW power plant, operated by EDC, which runs on heavy fuel oil and draws water from the river. It shows an expanded view of the location. A switchyard can be seen to the upper right of the diesel power plant (grey area).	 
Arey Sat (ARK) 230kV / 115kV / 22kV Substation	The proposed location of the ARK substation is in Kandal Province as shown in Figure. The location of the substation has ready access via a main road. The area is also paddy fields surrounded by residential area. Land acquisition is required. The estimated land area required for the substation is approximately 4800 m2 (60 m x 80 m). Although there is a plantation on the opposite side of the designated plot as seen in the photo, the proposed substation site itself is located on vacant land.	

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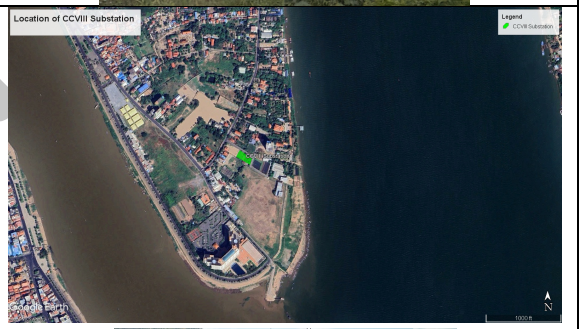
Substations	Location Descriptions	Map Figures
		
Chroy Changvar III (CCVIII) 115kV / 22kV Substation	The proposed location of the CCVIII substation is located in Phnom Penh. The estimated land area required for the substation is approximately 1800 m2 (30 m x 60 m). Thus, the land acquisition is required. A school is located near the designated plot.	 

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Substations	Location Descriptions	Map Figures
GS 57 Wat Phnom 115kV Substation	The location of the Wat Phnom substation is as shown in Figure. The underground substation is built under the building. It shows that there is vacant land in the switchyard to the north of the substation.	 

Source of Map: Google Earth

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Site Specific Environmental and Social Baseline Conditions

Table 2 Site Specific Baseline Conditions

Sub-project Activity	Description of sub projects	Environmental Conditions	Social Conditions
Transmission Line: Lvea Am to Arey Ksat (15 km)	Transmission Lines GS Lvea Am to GS Arey Ksat (15 Km): 230 kV Overhead Transmission Line (630sq.mm, single conductors per phase, double circuit).	- Flat terrain, primarily agricultural and peri-urban land near the Mekong floodplain - Located outside protected areas; however, local streams and seasonal wetlands may be crossed - Low erosion risk; potential flood exposure during rainy season - Wetlands and banana farms were observed near the planned route. -Markings indicating private landownership were present along the route. - A recreation area was reportedly nearby/along the route	- Semi-rural setting with scattered residential and agricultural plots - Potential loss of productive land due to tower foundations and right-of-way clearance - Minor economic displacement possible (e.g., crops) - Likely to involve negotiated land use or minor resettlement
Transmission Line: Arey Ksat – Chroy Changvar III – Wat Phnom (4.5 km	Transmission Lines from GS Arey Ksat to GS Chroy Chang Va III to GS Wat Phnom (4.5km): This segment will consist of (i) 115kV Overhead Transmission Line (Steel Pole) (630sq.mm, single conductors per phase, double circuit); (ii) 115kV Underground Transmission Line (800sq.mm, single cable per phase, double circuit); (iii) 115kV Underground Transmission Line (800sq.mm, single cable per phase, double circuit), (install under river crossing bridge).	- Mekong crossing adjacent to aquatic biodiversity zones (Irrawaddy dolphin habitat) - Urban/peri-urban zones; air and noise issues expected during work - Sediment and water quality risks at riverbank sections	- Dense urban context in Phnom Penh - Temporary disruption to roads, walkways, and utilities likely - Located near Wat Phnom, a nationally significant cultural landmark, the works require cultural heritage consideration in line with ESS8, including the application of a chance find procedure during underground works. - High stakeholder interaction; potential informal land uses affected
GS Arey Ksat (ARK) Substation	New 115 KV Substation: GS Arey Ksat Substation (ARK): 230/115/22kV; 1 x 240	- Located on flat land currently used for paddy farming	- Land acquisition required; privately used land surrounded by residences

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Sub-project Activity	Description of sub projects	Environmental Conditions	Social Conditions
	MVA; GIS indoor switchgear; 1 x 230kV Transformer Bay, 1 x 115kV, Transformer Bay, 2 x 230kV Line Bay, 2 x 115kV Line Bay, Double Busbars.	- Possible seasonal waterlogging/flooding risk - May require vegetation clearance and noise control during construction	- Engagement with nearby households needed for access and resettlement compensation
GS Chroy Changvar III (CCVIII) Substation	New 115 KV Substation: GS Chroy Chang Va III Substation (CCV III): 115/22kV; 1 x 75 MVA; GIS indoor switchgear; 6 Line Bay, Double Busbars; (iii) 2 x 230kV Line Bay Extension at Lvea Am Substation.	- Urban plot with minimal environmental constraints - May affect local stormwater drainage patterns during construction	- Sited on unused portion of a private commercial property (hotel-owned) - Land acquisition required - High-density surroundings; construction may affect nearby businesses or residents - Risk of temporary disruption during construction stage
GS Lvea Am (LVA) Extension	2 x 230kV Line Bay Extension at Lvea Am Substation.	- Inside existing operational substation - No new land required - No ecological risks anticipated - Adequate health & safety measures are in place, including fire hazard prevention equipment. -The substation is fairly new, well-managed, and operating efficiently. -No major incidents/accidents were reported by SS management.	- No land acquisition or resettlement required - Construction impacts contained within secure, fenced EDC compound

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Site Specific Preliminary Environmental Sensitivity Level

Preliminary biodiversity screening was conducted using the Integrated Biodiversity Assessment Tool (IBAT) to assess potential overlaps between project sites and areas of recognized ecological value. The screening confirmed that the proposed substations at Lvea Am (LVA), Arey Ksat (ARK), Chroy Changvar III (CCVIII), and the existing Wat Phnom (GS-57) substation are not located within any Key Biodiversity Areas (KBAs), protected areas, or critical habitats.

Figure 2 IBAT Screening Map – Substation Locations and Proximity to Key Biodiversity Areas

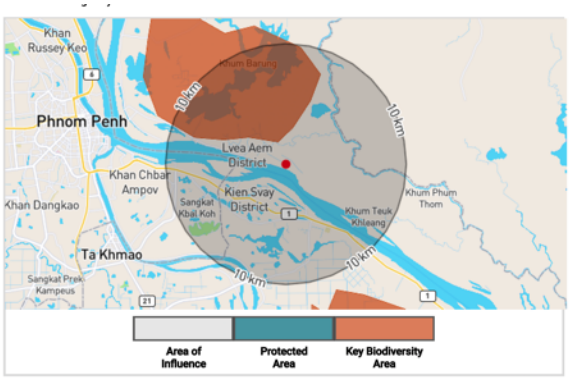

Figure 4. Location of Existing GS (GS-47) (LVA). Buffered area shown in light grey. Protected areas (data from the World Database on Protected Areas) are shown in teal, KBAs (data from the World Database of KBAs) are shown in dark orange, areas where protected areas and KBAs overlap are shown as the mix of both colours.

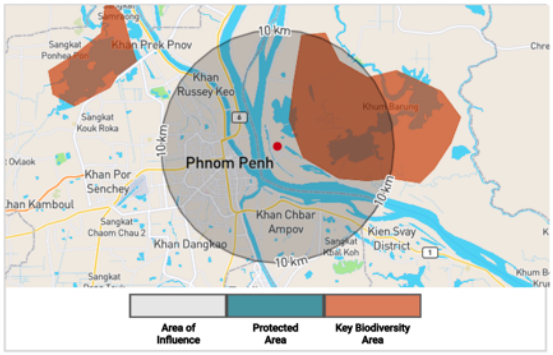

Figure 4. Location of Potential Location for New GS (ARK). Buffered area shown in light grey. Protected areas (data from the World Database on Protected Areas) are shown in teal, KBAs (data from the World Database of KBAs) are shown in dark orange, areas where protected areas and KBAs overlap are shown as the mix of both colours.

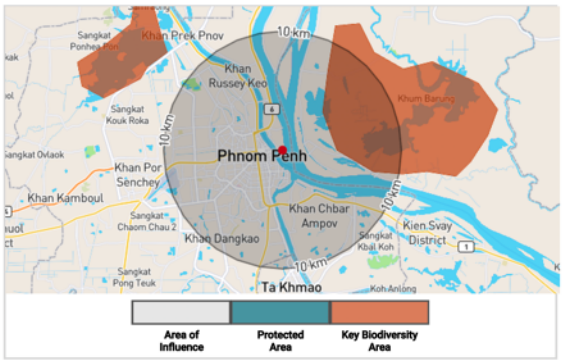

Figure 4. Location of Potential Location for New GS (CCVIII). Buffered area shown in light grey. Protected areas (data from the World Database on Protected Areas) are shown in teal, KBAs (data from the World Database of KBAs) are shown in dark orange, areas where protected areas and KBAs overlap are shown as the mix of both colours.

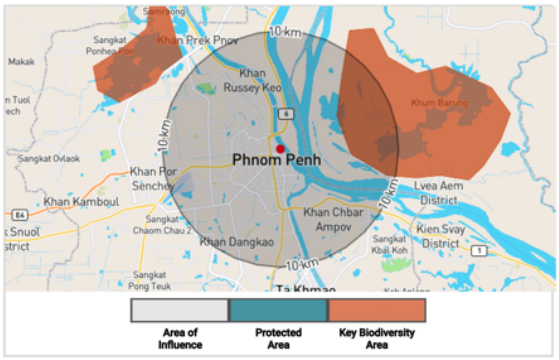

Figure 4. Location of Existing GS (Wat Phnom- GS 57). Buffered area shown in light grey. Protected areas (data from the World Database on Protected Areas) are shown in teal, KBAs (data from the World Database of KBAs) are shown in dark orange, areas where protected areas and KBAs overlap are shown as the mix of both colours.

However, several proposed transmission tower locations — a total of 33 towers (except Except for T-1,2,3,37, and 38) — appear to fall inside and along the edges of Boeng Veal Samnab Lake, a wetland ecosystem that may be partially associated with KBA boundaries. This area may support aquatic or migratory species and is considered environmentally sensitive. As such, these tower segments will require further biodiversity assessment, habitat classification, and mitigation planning in line with ESS6.

Figure 3 IBAT Screening Map – Transmission Tower Alignment and Overlap with Boeng Veal Samnab Wetland/KBA

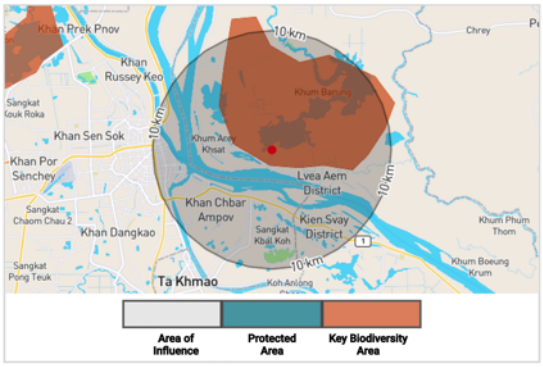

Figure 13. Location of T-24. The Area of Influence (site and buffer) is shown in light grey. Protected areas (data from the World Database on Protected Areas) are shown in teal, KBAs (data from the World Database of KBAs) are shown in dark orange, and areas where protected area and KBAs overlap are shown as the mix of both colours.

T-24 is identified as in or near an ecologically sensitive location in relation to protected areas and KBAs. Overall, there are a total of 0 protected areas and 1 KBA within the Area of Influence (site and buffer).

T-24 is identified as a sensitive site in relation to the species present due to the higher potential of species' extinction risk. The maximum $STAR_T$ and $STAR_R$ scores in the Area of Influence exceed the global median values of 0.01 and 0.003 respectively.

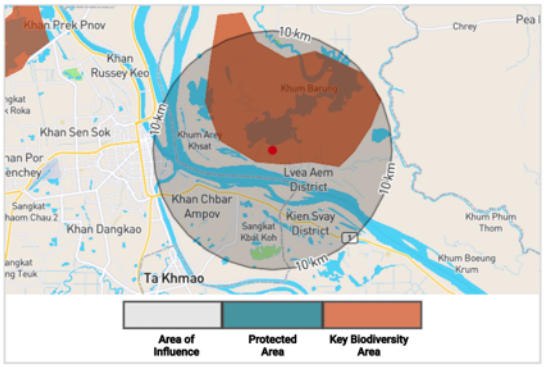

Figure 16. Location of T-21. The Area of Influence (site and buffer) is shown in light grey. Protected areas (data from the World Database on Protected Areas) are shown in teal, KBAs (data from the World Database of KBAs) are shown in dark orange, and areas where protected area and KBAs overlap are shown as the mix of both colours.

T-21 is identified as in or near an ecologically sensitive location in relation to protected areas and KBAs. Overall, there are a total of 0 protected areas and 1 KBA within the Area of Influence (site and buffer).

T-21 is identified as a sensitive site in relation to the species present due to the higher potential of species' extinction risk. The maximum $STAR_T$ and $STAR_R$ scores in the Area of Influence exceed the global median values of 0.01 and 0.003 respectively.

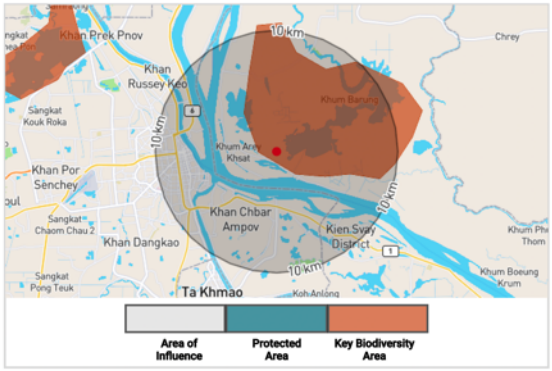

Figure 8. Location of T-29. The Area of Influence (site and buffer) is shown in light grey. Protected areas (data from the World Database on Protected Areas) are shown in teal, KBAs (data from the World Database of KBAs) are shown in dark orange, and areas where protected area and KBAs overlap are shown as the mix of both colours.

T-29 is identified as in or near an ecologically sensitive location in relation to protected areas and KBAs. Overall, there are a total of 0 protected areas and 1 KBA within the Area of Influence (site and buffer).

T-29 is identified as a sensitive site in relation to the species present due to the higher potential of species' extinction risk. The maximum $STAR_T$ and $STAR_R$ scores in the Area of Influence exceed the global median values of 0.01 and 0.003 respectively.

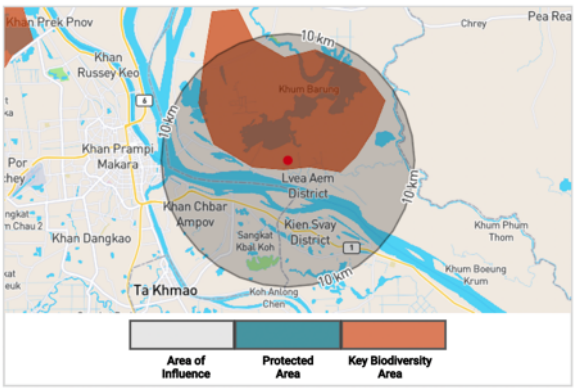

Figure 20. Location of T-17. The Area of Influence (site and buffer) is shown in light grey. Protected areas (data from the World Database on Protected Areas) are shown in teal, KBAs (data from the World Database of KBAs) are shown in dark orange, and areas where protected area and KBAs overlap are shown as the mix of both colours.

T-17 is identified as in or near an ecologically sensitive location in relation to protected areas and KBAs. Overall, there are a total of 0 protected areas and 1 KBA within the Area of Influence (site and buffer).

T-17 is identified as a sensitive site in relation to the species present due to the higher potential of species' extinction risk. The maximum $STAR_T$ and $STAR_R$ scores in the Area of Influence exceed the global median values of 0.01 and 0.003 respectively.

Table 3 Tower inside and outside of KBA

Inside of KBA	Outside of KBA
Tower No. 6-34	Tower No. 35-38 and 1-5
Tower No. 24-27; 19-14 (likely inside part of the Boeng Veal Samnab lake)	

B: Preliminary Biodiversity and Habitat Assessment and Guidance for Field Study

1. INTRODUCTION

Construction of a large Transmission Line (TL), with length of 18.7 km is proposed in Kandal Province, Cambodia, within the lower Mekong floodplain east of Phnom Penh. This TL will comprise a combination of 230 kv and 115 kv capacity.

The proposed route starts at a new substation at Lvea Aem in Kendal Province and intersects the southern edge of theBoeung Veal Samnap Key Biodiversity Area and Important Bird Area. The route then passes around Tuol Meas Village, crosses the Mekong River and ends in Phnom Penh City.

1.1 Purpose of this Report

The project for construction of the above TL is still in inception stage and little data is currently available regarding project impacts. A task has been commissioned to guide the assessment of biodiversity risk associated with the Project. This report is an interim deliverable under the risk assessment and is prepared to guide a field study to for onsite assessment of important biodiversity features, to support an assessment of biodiversity risk associated with the project.

2. RIEF PROJECT DESCRIPTION

This project involves construction of a 230 kv TL with a 115 kv extension across the Mekong River and within Phnom Penh city (Figure). A new substation covering 38 ha will be built at the start of the TL.

The TL will have a total length of 18.7 km, with the 230 kv component extending for 14.4 km. Coordinates of proposed tower locations are provided in Table and Table .

Table 1 Tower coordinates of Towers along the 115 kv Transmission Line

Tower	Latitude; Longitude
1	11.580465; 104.959286
2	11.577317; 104.955302

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Figure 1 Layout of the Transmission Line and towers showing boundaries of the Boeung Veal Samnap Important Bird Area (IBA)

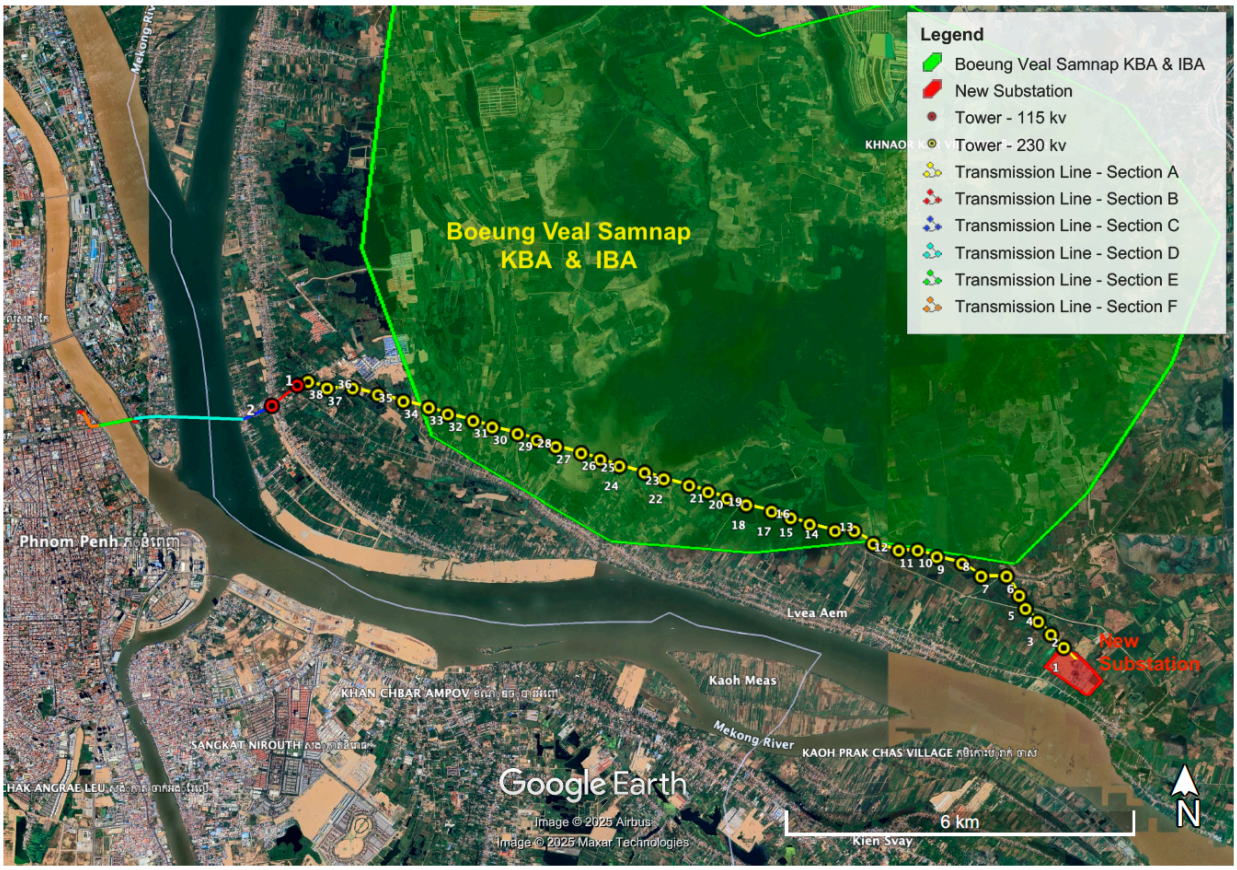

Table 2 Coordinates of Towers along the 230 kv Transmission Line

Tower	Latitude; Longitude	Tower	Latitude; Longitude	Tower	Latitude; Longitude
1	11.540; 105.080	14	11.558; 105.044	27	11.571; 105.000
2	11.542; 105.078	15	11.559; 105.040	28	11.572; 104.997
3	11.544; 105.076	16	11.560; 105.037	29	11.573; 104.994
4	11.546; 105.074	17	11.561; 105.034	30	11.574; 104.990
5	11.548; 105.073	18	11.562; 105.030	31	11.575; 104.987
6	11.551; 105.071	19	11.563; 105.027	32	11.576; 104.983
7	11.551; 105.067	20	11.564; 105.024	33	11.577; 104.980
8	11.553; 105.064	21	11.565; 105.021	34	11.578; 104.976
9	11.554; 105.060	22	11.566; 105.017	35	11.579; 104.972
10	11.555; 105.057	23	11.567; 105.014	36	11.580; 104.968
11	11.555; 105.054	24	11.568; 105.010	37	11.580; 104.964
12	11.556; 105.050	25	11.569; 105.007	38	11.581; 104.961
13	11.558; 105.047	26	11.570; 105.004		

3. BIODIVERSITY SENSITIVITIES

3.1 Modified and Natural Habitat

A core requirement of ESS6 is the classification of modified and natural habitats, whereby all habitats must be categorized as either one or the other. This classification is necessary to establish and address the ESS6 requirement for No Net Loss of biodiversity (NNL)[30] in response to impacts to natural habitat. ESS6 provides clear definitions of modified and natural habitats (Table), which guide the approach to classification of habitats.

Table 3 ESS6 Definitions of Modified and Natural Habitat

• **Modified Habitat**	• **Natural Habitat**
• *ESS6 paragraph 19*: Modified habitats are areas that may contain a large proportion of plant and/or animal species of non-native origin, and/or where human activity has substantially modified an area's primary ecological functions and species composition.	• *ESS6 paragraph 21*: Natural habitats are areas composed of viable assemblages of plant and/or animal species of largely native origin, and/or where human activity has not essentially modified an area's primary ecological functions and species composition.

A Review of Google Earth imagery along the TL route reveals a dense patchwork of agricultural fields, with many appearing to be rice paddies. This pattern suggests the area is dominated by modified habitat. Some uncertainty exists in the deeper wetland areas associated with Tower numbers 13 to 19. A field survey to assess the level of anthropogenic transformation to habitats (Section 4) will clarify the status as modified or natural habitat.

3.1.1 Summary of Modified and Natural Habitat

The classification between modified and natural habitat is a key component of ESS6. This project appears unlikely to impact natural habitats, although this needs to be confirmed through field surveys. The field survey must focus on the proposed footprint of the TL. The following habitats are recommended for assessment based on a review of Google Earth imagery (not in order of priority):

- Permanent wetlands within the Boeung Veal Samnap
- Seasonal wetlands
- Remaining modified habitats
- Mekong River and its river banks
- Urban area

3.2 Protected Areas

ESS6 recognizes both legally protected and internationally recognized areas of high biodiversity value. The CHA approach (Section 3.3) requires an understanding of protected areas and the reasons for which they are designated. These protected areas are defined as:

- **Legally protected areas:** "A clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with

[30] NNL is defined by ESS6 (footnote 8) as the point at which project-related impacts on biodiversity are balanced by measures taken to avoid and minimize the project's impacts, to undertake on-site restoration and finally to offset significant residual impacts, if any, on an appropriate geographic scale (e.g., local, landscape-level, national, regional).

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associated ecosystem services and cultural values." This includes areas proposed by governments for such designation. IUCN management categories are used to define the level of protection applied to legally protected areas.

- **Internationally recognized areas of high biodiversity value:** These areas are recognized by international conservation organizations and include Natural World Heritage Sites, Biosphere Reserves, Ramsar Wetlands of International Importance, Key Biodiversity Areas (KBA), Important Bird Areas (IBA), and Alliance for Zero Extinction (AZE) Sites, among others.

An IBAT report generated for the transmission line route reveals there are no legally protected areas within a 50 km buffer of the project, but identifies three internationally recognized areas of biodiversity importance in the vicinity (Table , Figure 11-1). These three protected areas are described below.

Figure 11-1 IBAT map showing the layout of internationally recognized protected areas in the vicinity of the Transmission Line (red line)

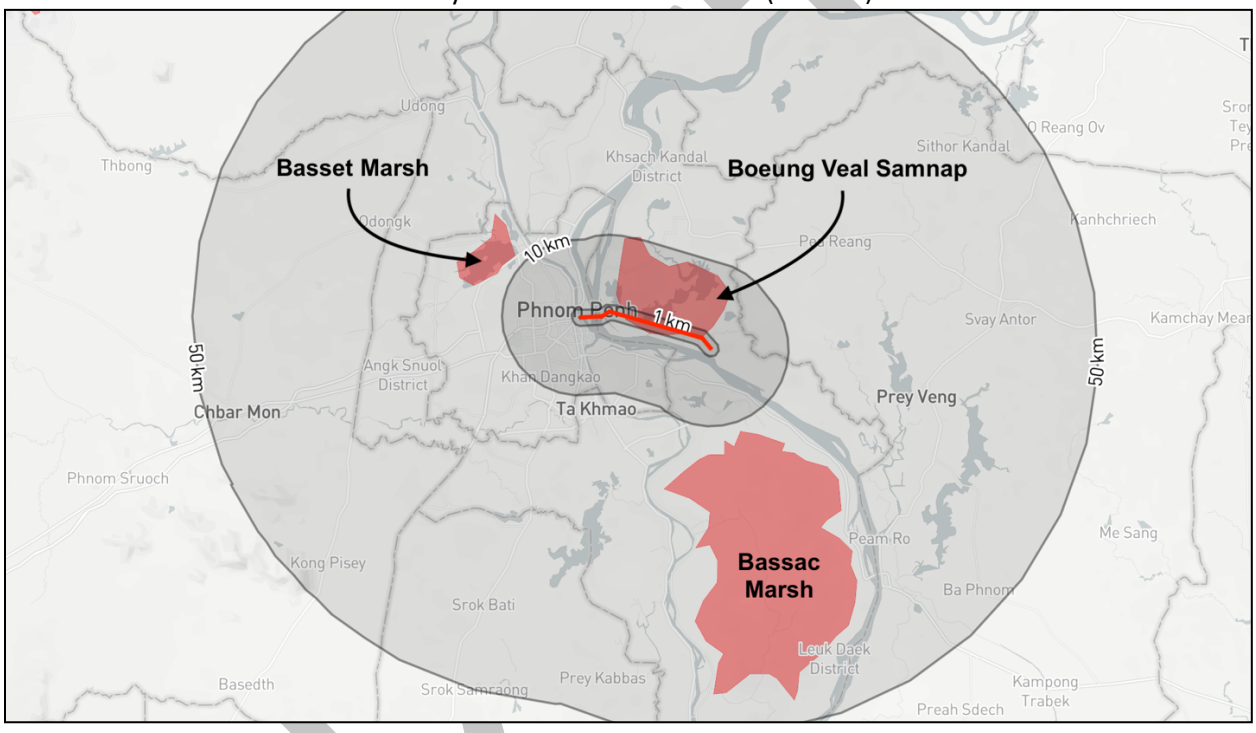

Table 4 Internationally recognized protected areas in the vicinity of the Project

Protected Area	Type of Area	Proximity to Project
Boeung Veal Samnap	KBA and IBA	TL route intersects. More than 8 km of the route is within
Basset Marsh	KBA and IBA	11.4 km northwest of TL
Bassac Marsh	KBA and IBA	10.8 km south of TL

3.2.1 Boeung Veal Samnap

Boeung Veal Samnap Key Biodiversity Area (KBA) is an inland wetland of national and regional conservation importance. It is recognized by IUCN as a Key Biodiversity Area (KBA, ID 16688) and by Birdlife International as an Important Bird Area (IBA). The wetland forms part of a broader network of significant floodplain habitats in the Mekong Delta region, which together support globally important

populations of migratory and resident waterbirds, but lacks formal legal protection under Cambodian conservation legislation.

The Boeung Veal Samnap covers approx. 11,286 hectares, consists primarily of freshwater marshes and shallow seasonal lakes that are hydrologically connected to the Mekong River system. During the wet season (typically from May to October), extensive flooding expands the wetland, supporting a mosaic of aquatic and semi-aquatic habitats, while in the dry season surrounding areas are used for rice cultivation and small-scale agriculture.

The area is particularly important for wetland-dependent bird species (waterbirds), providing essential feeding, breeding, and roosting grounds. Notable species include the Spot-billed Pelican (*Pelecanus philippensis*), which meets IBA qualifying criteria, and the Cambodian Tailorbird (*Orthotomus chaktomuk*). The wetland also supports a variety of herons, egrets, and other waterbirds that depend on seasonal wetlands for foraging and reproduction. Available data is focused on birds, biodiversity data on other taxa is lacking although the Boeung Veal Samnap is thought to contribute to regional fish migration and support diverse aquatic invertebrates, amphibians, and plants typical of floodplain ecosystems.

The Boeung Veal Samnap faces multiple environmental pressures, such as habitat loss and degradation due to agricultural encroachment, drainage, and infrastructure development. The recent Environmental and Social Impact Assessments (ESIAs) for the new Phnom Penh airport estimates that up to 778 hectares of wetland could be disturbed, although the new airport is 20 km south of this site. Hydrological management of the Mekong River poses another concern. Changes in flooding regimes, water abstraction for irrigation, and drainage for urban or agricultural expansion could disrupt the delicate seasonal water balance that sustains the wetland ecosystem. Additional threats include pollution from agricultural runoff, hunting and trapping of birds, and general human disturbance, all of which degrade habitat quality and reduce wildlife resilience.

Various conservation measures have been proposed, including establishing part of Boeung Veal Samnap as a formally protected wetland conservation area, developing habitat restoration programs such as replanting native wetland vegetation, and implementing (unspecified) offset measures equivalent to the area of habitat lost. Monitoring programs, including vegetation assessments and invasive species control, have also been recommended to ensure long-term ecological integrity. The ecological health of Boeung Veal Samnap depends on maintaining connectivity within the wider Mekong floodplain, making landscape-level management essential.

3.2.2 Basset Marsh

Basset Marsh, known in some sources as Lac Samroung or Oudong marsh, is also recognized by both IUCN and Birdlife International as a KBA (ID 16687) and IBA respectively. This site also lies within Cambodia's lower Mekong floodplain complex, and its hydrology is influenced by seasonal flooding associated with the Mekong and its tributaries.

The area is comprised of marshes, shallow open water, and seasonally inundated peripheral floodplain zones that historically extended over several square kilometers. Flooding during the wet season connects marsh patches and supports rich wetland habitat, while in drier months surrounding lands are under cultivation or settlement influence. Its proximity to urban expansion and agriculture means the marsh is often interwoven with human land use and settlements.

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Basset Marsh supports a variety of waterbird species, although only the Spot-billed Pelican (*Pelecanus philippensis*) meets IBA criteria, although Oriental Darter (*Anhinga melanogaster*) is an important species there. Both are fish-eating birds suggesting a source of fish there. Data for the marsh is focused on bird diversity, while baseline data on fish, amphibians, plants, and invertebrates is sparse in publicly available literature.

The marsh faces considerable threats. It is heavily disturbed by human activities, including settlement, land conversion, drainage, and the pressures of urban expansion from Phnom Penh. The area is considered heavily altered and likely qualifies as modified habitat.

Given these constraints, formal conservation measures remain minimal. Some proposed mitigation planning emphasizes working with governmental bodies to try to establish legal protection for parts of the marsh, alongside ongoing monitoring, enforcement, and habitat management support. However, because of the degree of human alteration and proximity to dense development, the marsh presents challenges in balancing biodiversity conservation with existing land pressures.

3.2.3 Bassac Marsh

The Bassac Marsh (KBA ID 16689) is a significant wetland complex south of the Project located between the Bassac River (Tonle Bassac) and Mekong River systems. It forms part of the lower Mekong floodplain region, and its hydrology is shaped by seasonal flooding, backwater effects, and interactions between the major river channels.

The site covers about 521 km² and lies at a low elevation of just 4 to 5 m above sea level. Its habitats include a mosaic of inland wetlands, shrublands, and modified terrestrial areas, each constituting roughly one-third of the area in published habitat classifications. The wetlands expand during the wet season and connect across floodplains, while during the dry season wetlands shrink and become fragmented.

The Bassac Marsh is recognized for supporting diverse shorebird and waterbird species, although the Spot-billed Pelican and Whiskered Tern are the only qualifying species (Table). The Lesser Adjutant is cited by the IUCN KBA description as an important bird but not a qualifying species. Some of the notable bird species recorded include Black-tailed Godwit, Marsh Sandpiper, Wood Sandpiper, Common Sandpiper, Common Greenshank, and Asiatic Golden Plover. The site supports significant numbers of migratory shorebirds for feeding and stopover habitat.

The primary threats to the Bassac Marsh are conversion to agriculture, smallholder farming expansion, and aquaculture. Pollution from agricultural runoff (nutrient loads) is also cited as a concern. There is ongoing hunting / collecting of terrestrial species and fishing pressure in aquatic zones. Residential and commercial development poses a risk of encroachment or infrastructure disturbance.

3.2.4 Summary of Important Birds based on review of Protected Areas

Three bird species are important for qualifying the above protected areas, as summarized in Table . Project impacts are largely restricted to the Boeung Veal Samnap, which is recognized for one species, the Spot-billed Pelican. This Pelican similarly qualifies all three IBAs in the area against IBA criterion A1 which signifies the sites are known to regularly hold significant numbers of a globally threatened species. The Spot-billed Pelican used to be classified as Vulnerable (VU) on the IUCN Red List but was downgraded to Near Threatened (NT) in 2007, meaning that A1 criterion is not outdated. Pelicans are large-bodied birds with limited maneuverability during flight making them vulnerable to collision with TL wires, and its IBA listing has particular relevance for the Project.

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Whiskered Tern is listed for the Bassac Marsh meeting IBA criterion A4i. This is an old IBA criterion, now listed as Criterion B3A referring to a biogeographically important population. Terns are small and highly agile flyers which reduce their vulnerability of flight hazards such as TLs.

Lesser Adjutant (a type of stork) is an important bird species for the Bassac Marsh but does not meet any IBA criteria, although it has similar vulnerability to transmission line collisions as described for Pelicans. IBAT and BirdLife DataZone data state this species is not migratory although the Birds of the World factsheet for this species presents a distribution map with a non-breeding range, indicating this species is migratory.

These birds need to be considered for critical habitat in Section 3.3.

Table 5 Qualifying bird species for which the three KBA/IBAs are recognized

Waterbird Species	**Red List Status**	**Important Bird Areas**			**Migratory Behavior (Birdlife DataZone)**
		Boeung Veal Samnap	**Basset Marsh**	**Bassac Marsh**	
Spot-billed Pelican (*Pelecanus philippensis*)	NT	A1 & KBA	A1 & KBA	A1 & KBA	Full migrant
Whiskered Tern (*Chlidonias hybrida*)	LC	-	-	A4i & KBA	Full migrant
Lesser Adjutant (*Leptoptilos javanicus*)	NT	-	-	KBA	Not migratory although distribution maps show non-breeding range (i.e. migratory behavior).

3.3 Critical Habitat

ESS6 recognizes areas supporting biodiversity of exceptional value as critical habitat. Critical habitat is defined by any of the following five criteria provided in ESS6 (paragraph 23):

(a) Habitat of significant importance to Critically Endangered or Endangered species, as listed in the IUCN Red List of Threatened Species or equivalent national approaches;
(b) Habitat of significant importance to endemic or restricted-range species;
(c) Habitat supporting globally or nationally significant concentrations of migratory or congregatory species;
(d) Highly threatened or unique ecosystems;
(e) Ecological functions or characteristics that are needed to maintain the viability of the biodiversity values described above in (a) to (d).

3.3.1 Approach to Critical Habitat Assessment

The approach used for interpretation of the above criteria (Critical Habitat Assessment, or CHA) follows an ESS6-specific method developed in 2022 and has been applied in South Asia, East Asia, the Pacific and various Africa Regions. The CHA is applied to an area, which for this assessment will be the Area of Analysis (AoA) applied by IBAT, namely a 50 km radius around the site (Figure 11-1). The CHA approach is presented as the following four steps:

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Step 1 - Generate a List of Threatened and Range-restricted Species

Criteria (a) and (c) require at least two key data sources, namely the global IUCN Red List and a national red list, which are supplemented from other sources as appropriate. Lists of species classified as CR or EN has been compiled primarily from the IUCN Red List of Threatened Species (provided by IBAT).

Step 2 - Screening based on Likelihood of Occurrence

The list of species generated by Step 1 were screened for Likelihood of Occurrence (LoO) based on primary data quoted in the ESIA and its documented ecological state of habitats within the AoA. Species are classified into LoO categories, namely Likely, Possible, Unlikely and Not Present. Species present or with a possible presence are assessed in Step 3 below.

Step 3 - Determination of Critical Habitat Status

Reliable secondary data on a species' population size, extent of occurrence, other relevant information and expert opinion will be used to assess species retained after Step 2. The following six guidelines are used for the interpretation and analysis of critical habitat:

i. Recognized areas of high biodiversity value (such as legally protected and internationally recognized areas), and importantly the reasons for which they are designated can provide useful indicators of potential critical habitat. The review of protected areas is therefore included as a preparatory step for the assessment of critical habitat.
ii. ESS6 Criterion (a) requires an assessment against both global (IUCN) and national red list ratings. ESS6 footnote 13 states that where the threatened status of a species is listed differently on the (global) IUCN Red List and national/regional lists, assessment of the impact of net reduction should be based on the national/regional population. This is interpreted as a requirement to follow a precautionary approach and to prioritize assessment of species reduction (project impact) to the lesser population of a species (i.e. the national assessment) over the global assessment.
iii. By definition, Critically Endangered (CR) species face an extremely high risk of extinction and their continued survival in the wild is in a critical state. Therefore, if a surviving population of a CR species is present in the AoA, the habitat should be considered to have significant importance for the species under ESS6 Criterion (a).
iv. Where a significant proportion of the national, regional or global population of a species is present or has a likely presence within the AoA, the habitat is considered to have significant importance for the species under ESS6 Criterion (a), (b) or (c). Each project is encouraged to develop its own measurement of significance. For this CHA, the presence (or likely presence) of ±1% of the global or national population within the AoA is considered an appropriate level of significance considering the extent of the Project AoA.
v. ESS6 Criterion (b) can additionally be achieved for range-restricted species where the full extent of the AoA overlaps a significant proportion of a species' distribution range (±1% is considered an appropriate level of significance for this CHA). For terrestrial species, restricted range status is recognized for an Extent of Occurrence (EoO) of approx. 50,000 km².
vi. ESS6 Criteria (d) and (e) must be assessed on a case-by-case basis using reliable data sources with consideration given to the presence of conservation initiatives, legally protected areas and internationally recognized areas of high biodiversity value and the reasons for which they are designated.

Step 4 - Identify Critical Habitat Features of Relevance to the Project

This final step of the CHA assesses the relevance of critical habitat features to the Project. ESS6 requires the project's mitigation strategy to achieve net gains of the biodiversity values for which a critical habitat

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is designated. Those features that are not impacted by a project do not present a risk that the project will fail to meet ESS6 requirements. For critical habitat features that are potentially impacted, the CHA needs to demonstrate how net gain requirements will be addressed, and feasibility thereof needs to be investigated. ESS6 also requires an appropriately designed, long-term biodiversity monitoring and evaluation program aimed at assessing the status of the critical habitat, and effectiveness of mitigation to conserve those species. The emphasis of a CHA must therefore be on Step 4.

3.3.2 Assessment of Critical Habitat Steps 1, 2 and 3

A provisional assessment of critical habitat features is presented below based on the criteria provided by ESS6. The purpose of this provisional assessment is to guide a field confirmation of potential critical habitat features.

Criterion (a) Habitat of significant importance to Critically Endangered or Endangered species, as listed in the IUCN Red List of Threatened Species or equivalent national approaches

An IBAT report has been generated for the TL, which identifies 1,305 plant and animal species potentially occurring within a 50 km radius of the project. These include 49 CR and EN species. Criterion (a) promotes consideration of nationally red listed species however there is no national red list of threatened species developed for Cambodia.

Appendix 1 presents the list of CR and EN species with an assessment of their LoO, which have been categorized as Likely, Possible, Unlikely or Not Present. These LoO assessments are based on habitat requirements compared to known status of habitats, and distribution data provided by the Global Biodiversity Information Facility (GBIF, displayed by iNaturalist species factsheets). The GBIF represents a consolidation of data across multiple platforms and represents the World's most comprehensive database of species distribution.

Analysis of LoO in Appendix 1 reveals nine Cr and EN species with a possible or likely occurrence within the Project area (Table). There LoO results are provisional and need further review based on a field survey and local knowledge.

Table 6 Critically Endangered and Endangered species with potential Likelihood of Occurrence in the Project area

Name	IUCN Red List Status	LoO	Comment to support LoO assessment
Mammals			
Common Long-tailed Macaque (*Macaca fascicularis*)	EN	Likely	A generalist and opportunist, anthropogenic ecologies are an important aspect of their natural ecology. Many GBIF & iNaturalist records nearby.
Birds			
Green Peafowl (*Pavo muticus*)	EN	Likely	eBird records in the Boeung Veal Samnap, iNaturalist records in Basset Marsh IBA, various GBIF and records nearby. eBird data describes birds in the Project area are escapees.
Yellow-breasted Bunting (*Emberiza aureola*)	CR	Likely	Winters in large flocks in cultivated areas, rice fields and grasslands. eBird records show presence within the Boeung Veal Samnap.
Fish			

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Name	IUCN Red List Status	LoO	Comment to support LoO assessment
Striped Catfish (*Pangasianodon hypophthalmus*)	EN	Possible	Inhabits main channels and floodplains of large rivers and seasonally moves up to floodplains and wetlands. GBIF records nearby.
Plants (trees)			
Burma Padauk (*Pterocarpus macrocarpus*)	EN	Likely	A large tree species, growing up to 30 m height in lowland, moist to dry deciduous forests. iNaturalist records occur nearby.
Lithocarpus cambodiensis	EN	Possible	A small to medium-sized tree growing in lowland evergreen rain forest. GBIF data indicates it occurs near project area.
Lithocarpus leiophyllus	EN	Possible	A small tree in dense evergreen forest. GBIF data indicates it occurs near project area.
Teak (*Tectona grandis*)	EN	Possible	Described as "Extant and assisted colonization". Possible as planted specimens in landscaped areas.
Anisoptera costata	EN	Possible	A large tree reaching 65 m in height. Recorded in Phnom Penh. Occurs in lowland evergreen forests.

Most of the species listed in Table would not be significantly impacted by construction of a transmission line. No significant residual impacts are expected to the following species:

- **Common Long-tailed Macaque** – these monkeys are expected in areas with tree cover, and in South East Asia are frequently associated human activity and are not expected in the wetland habitats associated with the TL. TL towers can be fitted with monkey guards and no significant impact to these monkeys is expected.
- **Striped Catfish** – this fish lives in the Tonle Sap lake and migrates within the Mekong River to breed. This fish should not be impacted within the wetlands of the Boeung Veal Samnap, while the TL crossing the Mekong River is not expected to significantly impact fish.
- **Five tree species** - The TL route is dominated by wetlands and is associated with minimal tree cover. The trees listed in Table are typical of forests and are not expected along the TL route.

CR and EN species potentially impacted

Yellow-breasted Bunting: These small birds breed in Russia and Mongolia and migrate south to avoid the harsh winter. eBird bar charts show there are present in the greater project area from late September to December, but are uncommon and seldom encountered. Small birds can be impacted by transmission line collisions, although larger, less maneuverable birds are generally considered the most vulnerable.

Green Peafowl: These large birds have been recorded in the Project area based on eBird and iNaturalist data, and are potentially vulnerable to collisions with the TL. However, eBird data reveals the birds present around Phnom Penh are escapees or introduced (Figure 11-2), suggesting these birds might have an altered genetic structure from captive breeding and do not have high conservation significance. Their presence does need to be investigated through field surveys and consultation.

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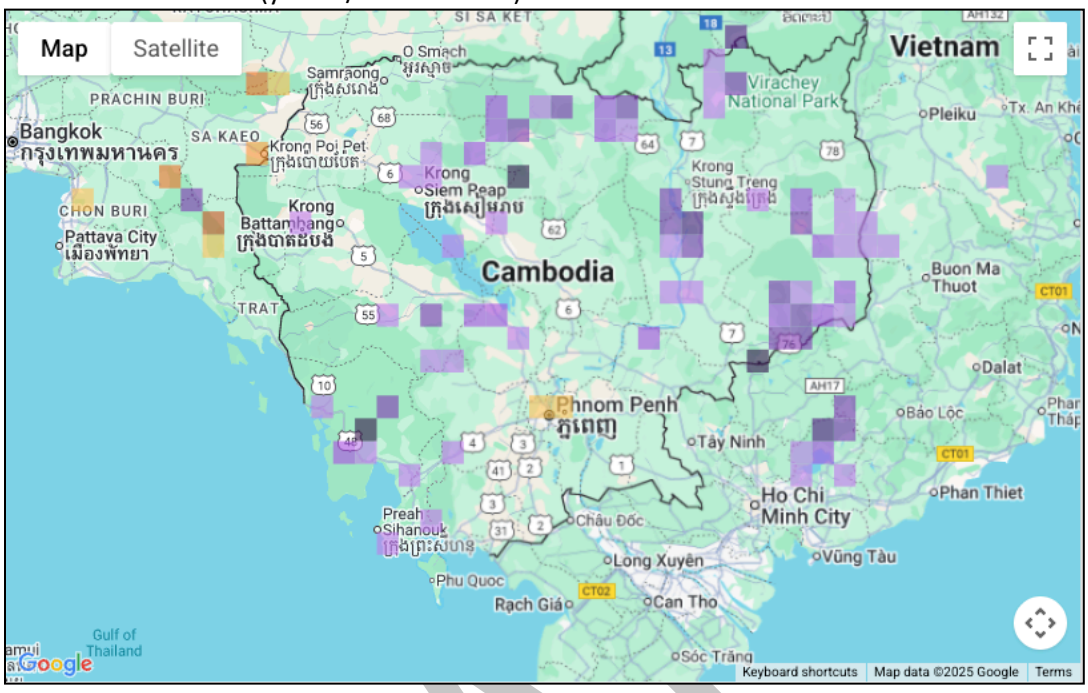
Figure 11-2 Bird range map for Green Peafowl in Cambodia, showing escapee population (yellow/brown colors) indicated at Phnom Penh



Criterion (b) Habitat of significant importance to endemic or restricted-range species

IBAT flags 10 species as range restricted, but after cross-checking against GBIF data, those species have distributions extending far beyond the 50,000 km² threshold and are not considered range restricted. No critical habitat features are therefore expected under this criterion.

Criterion (c) Habitat supporting globally or nationally significant concentrations of migratory or congregatory species

The assessment of protected areas reveals three bird species potentially present as significant populations (Table), namely Spot-billed Pelican, Whiskered Tern and Lesser Adjutant.

eBird data reveals the abundance of these birds, with the following observations:

- **Spot-billed Pelican** - Numerous eBird records exist around Phom Penh, including the Boeung Veal Samnap, with flocks numbering up to 20 birds. Their main season of presence is from mid-June to mid-October, and the latest records are from 2021.
- **Whiskered Tern** – eBird data shows these terns as abundant throughout the greater area, particularly from September to mid-June.
- **Lesser Adjutant** - Relatively few records exist in the Project area and their occurrence is sporadic. These storks appear to be prominent at the Phnom Tamao Wildlife Rescue Center south of Phnom Penh, but not in the project area.

iNaturalist presents many bird observations for the three IBAs, but Pelicans and Adjutant storks are not represented in those records. Whiskered Terns are observed in all three IBAs.

The presence of these birds, and other birds needs to be investigated based on field surveys before further review of their critical habitat status.

Criterion (d) Highly threatened or unique ecosystems, and Criterion (e) Ecological functions or characteristics that are needed to maintain the viability of the biodiversity values described above in (a) to (d).

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Currently there is no evidence to suggest that criteria (d) and (e) are likely to be met in the Project area, although this will be reviewed based on further data from a field survey.

3.3.3 Critical Habitat Conclusion

Assessments of the above criteria suggest that only birds have the potential to qualify critical habitats for the Project area, although desktop data provides no strong arguments currently exist for recognizing critical habitats. The following five birds are important (in order of priority) and the field assessment needs to focus on birds with some emphasis on these species:

- Spot-billed Pelicans
- Lesser Adjutant
- Yellow-breasted Bunting
- Whiskered Terns
- Green Peafowl

4 PROPOSED APPROACH TO FIELD ASSESSMENT

A field assessment will be conducted during late 2025 to gather primary data to support the above assessments.

4.1 Modified and Natural Habitat

Assessment of habitats should focus along the transmission line route. Habitats have been provisionally separated into five units as shown in Figure 11-3 and Table , and the following assessments need to be applied:

- Review this habitat structure and revise the structure and/or boundaries if necessary to better reflect conditions onsite.
- Conduct the tasks outlined in Table to the extent possible.
- Provide an assessment whether each habitat should be classified as Modified or Natural based on the definitions in Table .

Table 7 Tasks recommended for habitat investigation during the field assessment

Habitat	Aspects to investigate
(a) Permanent wetland habitat in Boeung Veal Samnap IBA (4 to 5 sites)	Visit approx. four to five Tower locations (14 to 18 and 24 to 26) if a boat is available. Conduct following rapid assessments for each site: • Record photographs and GPS location of site • Rapidly assess the hydrological conditions, such as water depth, water clarity, water quality (based on available means), evidence of waste or pollution. • Identify plant species and record diversity and approx. abundance per species. • Record presence, diversity and approx. abundance of invasive alien species. • Rapid survey of any fauna present – mammals, birds, reptiles, amphibians, invertebrates. • Record any evidence of resource use (e.g. fishing) and/or disturbance.
(b) Seasonal wetland habitat (4 to 5 sites)	Visit approx. four to five Tower locations in different parts of this habitat. Conduct following rapid assessments for each site: • Record photographs and GPS location of site • Rapid assessment of water availability and/or frequency of flooding.

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Habitat	Aspects to investigate
	• Identify plant species and record diversity and approx. abundance per species. Include an emphasis on larger trees and if these provide roosting habitat for waterbirds • Record presence, diversity and approx. abundance of invasive alien species. • Rapid survey of any fauna present – mammals, birds, reptiles, amphibians, invertebrates. • Record any evidence of resource use and/or human disturbance.
(c) (2 sites)	Visit one site in the eastern and one site on the western end. Include site within the proposed New Substation if this area is accessible. Conduct similar assessments as described for seasonal wetlands habitat
(d) Mekong River and Tonle Sap River and riverbanks (2 sites)	Visit both river crossings (2 sites) • Record photographs and GPS location of site • Record notes on water quality, water flow, evidence of waste or pollution. • Identify plant species – record diversity and approx. abundance • Record presence in invasive species – diversity and approx. abundance • Rapid survey of fauna present – mammals, birds, reptiles, amphibians and invertebrates.
(e) Urban area of Phnom Penh (1 site)	Visit one or two sites • Record photographs and GPS location of site • Rapid survey of any fauna present. • Record evidence of fishing activity
Total : 13 to 15 sites	

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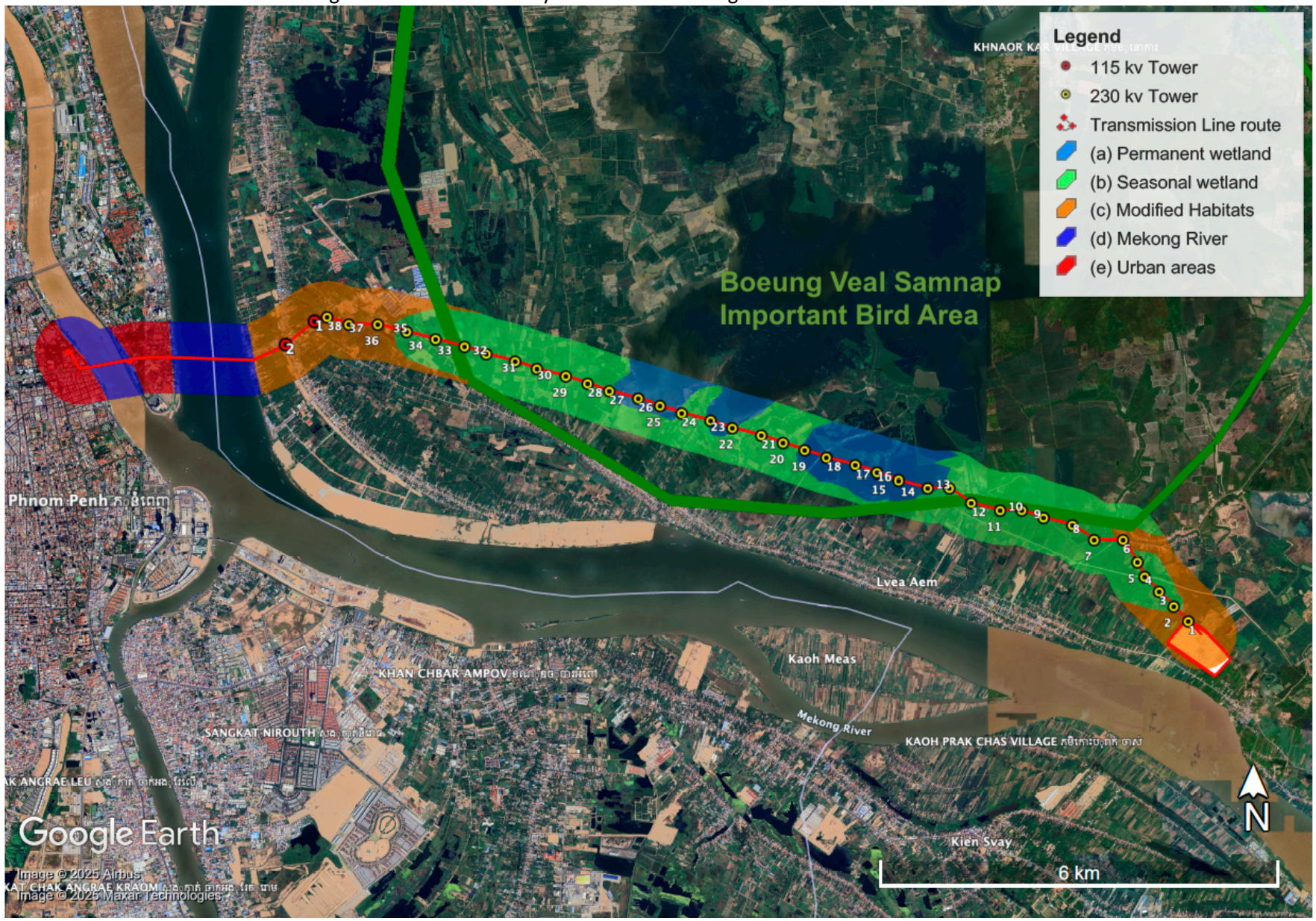
Figure 11-3 Provisional Layout of Habitats along the transmission line route



4.2 **Species Assessments**

Bird Observations
Observe birds within the Boeng Veal Samnap IBA and surrounding areas. Record all birds seen, but greater emphasis must be placed on birds listed in Section 3.3.3, also all large and medium-bodied birds such as ducks, storks, herons & egrets, ibis, cormorants, raptors, etc.
Recording birds should follow eBird protocols with sightings submitted as complete eBird checklists. eBird provide an easy-to-use app that can be downloaded but the user needs to have a free Cornell BirdLab account.
In addition to eBird protocols, record sightings or large birds in flight, including numbers, approx. height and direction.
For reference purposes, an eBird Bar Chart for Phnum Penh and surrounding areas (displays seasonal occurrence) and an overview of iNaturalist records (Appendix 2) are provided.

Background data on Spot-billed Pelicans is provided in *Appendix 3*. These pelicans are not expected to nest in the area but watch for large trees potentially serving as nesting sites and establish if they have regular foraging areas (see Consultation below).

Review potential critical habitat assessment
Review the Likelihood of Occurrence ratings for CR and EN species in Appendix 1, and amend as relevant, and/or add text to the associated comments, and/or the provision analysis in this report. Add any fauna or flora species to Appendix 1 that is considered sensitive or important from a biodiversity perspective.

4.3 **Other Transmission Lines nearby**
Record locations of other transmission lines with large towers (230+ kv). Record (and photograph if possible) evidence of measures to protect birds, such as bird flight diverters fitted to wires, anti-perching devices on towers or other measures.
In the unlikely event of finding bird carcasses below transmission lines, record the GPS location, photograph, and if possible try to identify the bird species.

4.4 **Consultation**
Consult with stakeholders and people with knowledge of the area whenever possible. Below are some proposed topics, but consultation should not be limited to these topics.

Hydrology
- Discuss any hydrological issues of the wetlands, including issues such as stability of water levels and causes of changing water levels (current and historical), how are people affected by water levels, water quality or any other topics relating to water.

Birds
- Discuss the diversity of birds and how the abundance and diversity have changed over time, seasonal patterns and their thoughts on migration patterns.
- Where possible, obtain additional information and any details on the presence of Pelicans and other birds listed in Section 3.3.3.
- Discuss the status of Green Peafowl in the area and if the birds around Phon Penh are correctly classified by eBird as escapees.

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Other Fauna

- Discuss with fisherfolk to establish what fish they catch, changes in numbers and size of fish, seasonal patterns relating to fish, their observations on fish-eating birds (pelicans, cormorants, etc.)
- Does illegal harvest or poaching occur and how does this affect the presence of fauna.

The Proposed Project

- What impact could occur if a transmission line is constructed?
- Known bird impacts of transmission lines in the area

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5 REFERENCES

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ResearchGate. The Status of Wetland Habitats in the Cambodia Lower Mekong Delta. (2023) In: Cambodia Lower Mekong Wetlands Assessment. Online Link.

eBird. Phnum Penh Bar Chart. eBird is a global, citizen science database managed by the Cornell Lab of Ornithology that collects bird observations from birdwatchers to support research, conservation, and biodiversity monitoring. Online Link.

iNaturalist. A global citizen science platform and mobile app where users record and share observations of plants and animals, contributing to biodiversity data used by researchers and conservationists. Online Link.

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6 APPENDICES

The following links provide shortcuts to the Appendices on subsequent pages:

Appendix 1 IBAT listed Critically Endangered and Endangered species within a 50 km radius of the Transmission Line route, with assessment of their Likelihood of Occurrence

Appendix 2 Consolidation of bird observations from iNaturalist for three Important Bird Areas in the vicinity of the Project

Appendix 3 Background Data on Spot-billed Pelican

6.1 Additional Resources provided with this Report

- **Spatial Data** – Full TL route, Project design, Habitat layer (kmz format).
- **Excel Data** – An Excel workbook includes worksheets for IBAT data, CR, EN and RR species LoO assessment, List of IBA sites, eBird Bar Chart for greater Phnom Penh, iNaturalist data for thee IBA sites, Tower Coordinates (xlsx format).
- **IBAT Report** – Report generated by IBAT based on the kmz file for the full TL route (pdf format).

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Appendix 1 IBAT listed Critically Endangered and Endangered species within a 50 km radius of the Transmission Line route, with assessment of their Likelihood of Occurrence

English Name (*Species Name*)	**IUCN Red List Status**	**Likelihood of Occurrence**	**Comment**
Mammals (9 species)			
Dhole (*Cuon alpinus*)	EN	Not Present	No recent records nearby
Indochinese Leopard (*Panthera pardus ssp. delacouri*)	CR	Unlikely	Habitat generalist, but unlikely due to widespread settlement
Hairy-nosed Otter (*Lutra sumatrana*)	EN	Unlikely	No recent records in Cambodia. Seems to favor peat swamps.
Large-spotted Civet (*Viverra megaspila*)	EN	Unlikely	No recent GBIF records nearby. Habitat generalist but only in focal areas.
Large Flying-fox (*Pteropus vampyrus*)	EN	Unlikely	Roosts in primary and secondary forest in range of habitats, but prefers undisturbed forest
Sunda Pangolin (*Manis javanica*)	CR	Unlikely	Found in primary and secondary forest. No recent GBIF records nearby.
Common Long-tailed Macaque (*Macaca fascicularis ssp. fascicularis*)	EN	Likely	A generalist and opportunist, anthropogenic ecologies are an important aspect of their natural ecology. Many iNaturalist records nearby.
Indochinese Silvered Langur (*Trachypithecus germaini*)	EN	Unlikely	Habitat not suitable. Occurs in lowland, semi-evergreen and evergreen forests. No GBIF records nearby.
Bengal Slow Loris (*Nycticebus bengalensis*)	EN	Unlikely	Habitat not suitable. Inhabits tropical evergreen rainforest, semi-evergreen forest, and mixed deciduous forest. No GBIF records nearby.
Birds (10 species)			
White-rumped Vulture (*Gyps bengalensis*)	CR	Not Present	IUCN Red list indicates possibly extinct in the area
Slender-billed Vulture (*Gyps tenuirostris*)	CR	Not Present	IUCN Red list indicates possibly extinct in the area
Red-headed Vulture (*Sarcogyps calvus*)	CR	Not Present	IUCN Red list indicates possibly extinct in the area
White-winged Duck (*Asarcornis scutulata*)	CR	Not Present	IUCN Red list indicates possibly extinct in the area
Black-bellied Tern (*Sterna acuticauda*)	EN	Not Present	IUCN Red list indicates possibly extinct in the area
Far Eastern Curlew (*Numenius madagascariensis*)	EN	Not Present	Breeds in northern Siberia. Restricted to coastal habitats during non-breeding season.

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English Name (*Species Name*)	IUCN Red List Status	Likelihood of Occurrence	Comment
Coral-billed Ground-cuckoo (*Carpococcyx renauldi*)	EN	Unlikely	Habitat not suitable, inhabits semi-evergreen and hill evergreen forest.
Green Peafowl (*Pavo muticus*)	EN	Likely	eBird records in the Boeung Veal Samnap, iNaturalist records in Basset Marsh IBA, various GBIF and records nearby. eBird data describes birds in the Project area are escapees.
Masked Finfoot (*Heliopais personatus*)	CR	Not Present	No recent records in Cambodia. Primarily in rivers, also wetlands.
Yellow-breasted Bunting (*Emberiza aureola*)	CR	Possible	Winters in large flocks in cultivated areas, rice fields and grasslands. eBird records show presence within the Boeung Veal Samnap.
Reptiles (7 species)			
Siamese Crocodile (*Crocodylus siamensis*)	CR	Unlikely	Occurs in a wide range of lowland freshwater habitats, but no GBIF records nearby.
Southern River Terrapin (*Batagur affinis*)	CR	Unlikely	Inhabits estuaries, mangrove creeks, lower river sections, and coastal lagoons. No recent GBIF records nearby.
Southeast Asian Box Turtle (*Cuora amboinensis*)	EN	Unlikely	Largely restricted to standing water bodies, but opportunistically inhabits most types of water bodies except large rivers and reservoirs. No recent GBIF records nearby.
Yellow-headed Temple Turtle (*Heosemys annandalii*)	CR	Unlikely	Inhabits wetlands, inundated fields, wet forests, and swamps
Giant Asian Pond Turtle (*Heosemys grandis*)	CR	Unlikely	Inhabits flooded forests, slow moving rivers and swamps and wetlands. Long-lived species.
Black Marsh Turtle (*Siebenrockiella crassicollis*)	EN	Unlikely	Inhabits wetland areas, swamps, peat swamps, and secondary forests. No recent GBIF records nearby.
Asian Giant Softshell Turtle (*Pelochelys cantorii*)	CR	Unlikely	Inhabits large lowland rivers, lakes, reservoirs and estuarine areas. No recent GBIF records nearby.
Fish (10 species)			
Giant Carp (*Catlocarpio siamensis*)	CR	Unlikely	Distribution is uncertain, not recorded nearby.
Jullien's Golden Carp (*Probarbus jullieni*)	CR	Unlikely	In mainly large rivers with sand or gravel substrates and abundant mollusc populations. No recent GBIF records nearby.
Flying Minnow (*Laubuka caeruleostigmata*)	EN	Not Present	Marginal to uncertain distribution. No GBIF records nearby.

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English Name (*Species Name*)	IUCN Red List Status	Likelihood of Occurrence	Comment
Marbled Whipray (*Fluvitrygon oxyrhynchus)*	EN	Not Present	Obligate freshwater species. No GBIF records from Cambodia.
Giant Freshwater Whipray (*Urogymnus polylepis*)	EN	Not Present	In freshwater, estuarine, and inshore marine habitats. No GBIF records from Cambodia.
Scleropages formosus	EN	Unlikely	Occurs in lakes, deep swamps and flooded forests. Scattered GBIF records with none in nearby.
Siamese Tiger Perch (*Datnioides pulcher*)	CR	Not Present	Prefers habitats with submerged woods and rocky crevices. No GBIF records from Cambodia.
Mekong Giant Catfish (*Pangasianodon gigas*)	CR	Unlikely	One of the world's largest freshwater fish and has been artificially bred. IUCN Red list states "probably extant" but migrates along Mekong River.
Striped Catfish (*Pangasianodon hypophthalmus*)	EN	Possible	Inhabits main channels and floodplains of large rivers and seasonally moves up to floodplains and wetlands. GBIF records nearby.
Giant Pangasius (*Pangasius sanitwongsei*)	CR	Unlikely	IUCN Red list states "probably extant". Inhabits large rivers surrounded by rainforest
Plants (12 species & 1 fungus)			
Microtropis fallax	EN	Not Present	Out of range
Madhuca bejaudii	EN	Unlikely	A tree between 8–15 m tall and grows in secondary lowland forests. Minimal data available.
Burma Padauk (*Pterocarpus macrocarpus*)	EN	Likely	A large tree species, growing up to 30 m height in lowland, moist to dry deciduous forests. iNaturalist records nearby.
Lithocarpus cambodiensis	EN	Possible	A small to medium-sized tree growing in lowland evergreen rain forest. GBIF data indicates it occurs near project area.
Lithocarpus leiophyllus	EN	Possible	A small tree in dense evergreen forest. GBIF data indicates it occurs near project area.
Teak (*Tectona grandis*)	EN	Possible	Described as "Extant and assisted colonization". Possible as planted specimens, with limited conservation value.
Anisoptera costata	EN	Possible	A large tree reaching 65 m in height. Recorded in Phnom Penh. Occurs in lowland evergreen forests.
Dipterocarpus intricatus	EN	Unlikely	A large tree restricted to dry deciduous forest. No GBIF records nearby.

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English Name (*Species Name*)	IUCN Red List Status	Likelihood of Occurrence	Comment
Hopea ferrea	EN	Unlikely	A tree up to 30 meters height, in seasonally dry tropical rain forests on rocky soils.
Hopea helferi	EN	Unlikely	A tree up to 40 m in height in mixed dipterocarp forests. No GBIF records nearby.
Shorea hypochra	EN	Unlikely	A tree up to 60 m in height in dry to moist evergreen lowland forest. No GBIF records nearby.
Tha lok (*Vatica philastreana*)	EN	Not Present	Up to 30 m height, in lowland, dry evergreen forest usually along rivers. But no GBIF records in Cambodia.
Calostoma insigne	EN	Not Present	Fungus that grows in association with Dipterocarpus trees. But no GBIF records in Cambodia.

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Appendix 2 Consolidation of bird observations from iNaturalist for three Important Bird Areas in the vicinity of the Project

IUCN TaxonID	Family	Species Name	Common Name	IUCN Red List Status	iNaturalist Observations		
					Boeung Veal Samnap	Bassac Marsh	Basset Marsh
22736541	ANATIDAE	*Anas poecilorhyncha*	Indian Spot-billed Duck	LC	3	2	2
22679758	ANATIDAE	*Dendrocygna javanica*	Lesser Whistling-duck	LC			1
22680090	ANATIDAE	*Nettapus coromandelianus*	Cotton Pygmy-Goose	LC	1		1
22696712	ANHINGIDAE	*Anhinga melanogaster*	Oriental Darter	LC			5
22696740	PHALACROCORACIDAE	*Microcarbo niger*	Little Cormorant	LC	2	1	3
22696792	PHALACROCORACIDAE	*Phalacrocorax carbo*	Great Cormorant	LC			1
22696779	PHALACROCORACIDAE	*Phalacrocorax fuscicollis*	Indian Cormorant	LC	1		
22697043	ARDEIDAE	*Ardea alba*	Great Egret	LC	1		
22696993	ARDEIDAE	*Ardea cinerea*	Grey Heron	LC			1
22697109	ARDEIDAE	*Ardea coromanda*	Eastern Cattle-Egret	LC	1	1	
22727668	ARDEIDAE	*Ardea intermedia*	Medium Egret	LC		1	
22697031	ARDEIDAE	*Ardea purpurea*	Purple Heron	LC			1
22697133	ARDEIDAE	*Ardeola bacchus*	Chinese Pond-Heron	LC	1	1	
22697138	ARDEIDAE	*Ardeola speciosa*	Javan Pond-Heron	LC	2		2
22697323	ARDEIDAE	*Botaurus cinnamomeus*	Cinnamon Bittern	LC	1	1	
22697303	ARDEIDAE	*Botaurus sinensis*	Yellow Bittern	LC	3		4
62774969	ARDEIDAE	*Egretta garzetta*	Little Egret	LC	1		2
45111544	BURHINIDAE	*Burhinus indicus*	Indian Thick-knee (Stone-Curlew)	LC			1
22693770	CHARADRIIDAE	*Thinornis dubius*	Little Ringed Plover	LC	1		6
22694013	CHARADRIIDAE	*Vanellus indicus*	Red-wattled Lapwing	LC			1
22697516	THRESKIORNITHIDAE	*Threskiornis melanocephalus*	Black-headed Ibis	LC		1	
22692640	RALLIDAE	*Amaurornis phoenicurus*	White-breasted Waterhen	LC			1
62120190	RALLIDAE	*Gallinula chloropus*	Common Moorhen	LC	1		1
22692723	RALLIDAE	*Poliolimnas cinereus*	White-browed Crake	LC	2		1
22692792	RALLIDAE	*Porphyrio poliocephalus / porphyrio*	Grey-headed Swamphen	LC	1		

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IUCN TaxonID	Family	Species Name	Common Name	IUCN Red List Status	iNaturalist Observations		
					Boeung Veal Samnap	Bassac Marsh	Basset Marsh
22727969	RECURVIROSTRIDAE	*Himantopus himantopus*	Black-winged Stilt	LC	3		
22696545	PODICIPEDIDAE	*Tachybaptus ruficollis*	Little Grebe	LC	2		1
22735810	ROSTRATULIDAE	*Rostratula benghalensis*	Greater Painted-Snipe	LC	1		
22693543	JACANIDAE	*Hydrophasianus chirurgus*	Pheasant-tailed Jacana	LC	2		2
22693547	JACANIDAE	*Metopidius indicus*	Bronze-winged Jacana	LC			1
22693264	SCOLOPACIDAE	*Actitis hypoleucos*	Common Sandpiper	LC			3
22693085	SCOLOPACIDAE	*Gallinago stenura*	Pin-tailed Snipe	LC	1		
22693150	SCOLOPACIDAE	*Limosa limosa*	Black-tailed Godwit	NT	1		
22693247	SCOLOPACIDAE	*Tringa glareola*	Wood Sandpiper	LC	3	1	1
22693220	SCOLOPACIDAE	*Tringa nebularia*	Common Greenshank	LC	2		
22694764	LARIDAE	*Chlidonias hybrida*	Whiskered Tern	LC	2	1	1
22694152	GLAREOLIDAE	*Glareola lactea*	Small Pratincole	LC			5
22694132	GLAREOLIDAE	*Glareola maldivarum*	Oriental Pratincole	LC	3		3
22694956	ACCIPITRIDAE	*Aviceda jerdoni*	Jerdon's Baza	LC	1		
22695490	ACCIPITRIDAE	*Tachyspiza badia*	Shikra	LC	2		
22695585	ACCIPITRIDAE	*Tachyspiza gularis*	Japanese Sparrowhawk	LC	1		
22694938	PANDIONIDAE	*Pandion haliaetus*	Osprey	LC			1
45354964	FALCONIDAE	*Falco peregrinus*	Peregrine Falcon	LC			1
22695028	ELANIDAE	*Elanus caeruleus*	Black-winged Kite	LC	4	1	3
22680549	TURNICIDAE	*Turnix suscitator*	Barred Buttonquail	LC	1		1
22679440	PHASIANIDAE	*Pavo muticus*	Green Peafowl	EN			1
22714709	ACROCEPHALIDAE	*Acrocephalus bistrigiceps*	Black-browed Reed-warbler	LC			1
22734033	ACROCEPHALIDAE	*Acrocephalus orientalis*	Oriental Reed-warbler	LC			2
22707433	AEGITHINIDAE	*Aegithina tiphia*	Common Iora	LC	4		1
22683027	ALCEDINIDAE	*Alcedo atthis*	Common Kingfisher	LC	1		
22683645	ALCEDINIDAE	*Ceryle rudis*	Pied Kingfisher	LC	3		3
22683135	ALCEDINIDAE	*Ceyx erithaca*	Black-backed Dwarf Kingfisher	NT	1		
22725846	ALCEDINIDAE	*Halcyon smyrnensis*	White-throated Kingfisher	LC	1		
22683399	ALCEDINIDAE	*Todiramphus chloris*	Collared Kingfisher	LC	4		1
60847684	APODIDAE	*Aerodramus fuciphagus*	White-nest Swiftlet	LC	1		1

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IUCN TaxonID	Family	Species Name	Common Name	IUCN Red List Status	iNaturalist Observations		
					Boeung Veal Samnap	Bassac Marsh	Basset Marsh
22682437	BUCEROTIDAE	*Anthracoceros albirostris*	Oriental Pied Hornbill	LC	1		
22682453	BUCEROTIDAE	*Buceros bicornis*	Great Hornbill	VU	2		
22682528	BUCEROTIDAE	*Rhyticeros undulatus*	Wreathed Hornbill	VU	9		
22706636	CAMPEPHAGIDAE	*Lalage melaschistos*	Black-winged Cuckooshrike	LC	3		
22706731	CAMPEPHAGIDAE	*Pericrocotus cantonensis*	Brown-rumped Minivet	LC	1		
22706735	CAMPEPHAGIDAE	*Pericrocotus divaricatus*	Ashy Minivet	LC	1		
22713491	CISTICOLIDAE	*Cisticola juncidis*	Zitting Cisticola	LC	2		
103778254	CISTICOLIDAE	*Orthotomus chaktomuk*	Cambodian Tailorbird	NT	2		3
22714982	CISTICOLIDAE	*Orthotomus sutorius*	Common Tailorbird	LC	3		3
22713615	CISTICOLIDAE	*Prinia inornata*	Plain Prinia	LC	8		9
22690708	COLUMBIDAE	*Geopelia striata*	Zebra Dove	LC	3	1	5
60482887	COLUMBIDAE	*Spilopelia chinensis*	Spotted Dove	LC	2		1
22690493	COLUMBIDAE	*Streptopelia tranquebarica*	Red Collared-Dove	LC	2	1	3
22691160	COLUMBIDAE	*Treron curvirostra*	Thick-billed Green-Pigeon	LC	1		
22725924	CORACIIDAE	*Coracias affinis*	Indochinese Roller	LC	2		1
103727590	CORVIDAE	*Corvus macrorhynchos*	Large-billed Crow	LC		1	3
22705855	CORVIDAE	*Crypsirina temia*	Racket-tailed Treepie	LC	1		
22683923	CUCULIDAE	*Cacomantis merulinus*	Plaintive Cuckoo	LC	3		2
22684254	CUCULIDAE	*Centropus bengalensis*	Lesser Coucal	LC			3
22684229	CUCULIDAE	*Centropus sinensis*	Greater Coucal	LC	2		1
22684098	CUCULIDAE	*Phaenicophaeus tristis*	Green-billed Malkoha	LC	3		
22728167	CUCULIDAE	*Surniculus lugubris*	Square-tailed Drongo-Cuckoo	LC	1		
22717584	DICAEIDAE	*Dicaeum cruentatum*	Scarlet-backed Flowerpecker	LC	4		
232589675	DICRURIDAE	*Dicrurus hottentottus*	Hair-crested Drongo	LC	1		
22706964	DICRURIDAE	*Dicrurus leucophaeus*	Ashy Drongo	LC	1		
22729138	ESTRILDIDAE	*Lonchura atricapilla*	Chestnut Munia	LC			1
22719821	ESTRILDIDAE	*Lonchura punctulata*	Scaly-breasted Munia	LC	7		2
22719806	ESTRILDIDAE	*Lonchura striata*	White-rumped Munia	LC	1		
22705011	LANIIDAE	*Lanius cristatus*	Brown Shrike	LC	1		2
22681681	MEGALAIMIDAE	*Psilopogon haemacephalus*	Coppersmith Barbet	LC	8		

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IUCN TaxonID	Family	Species Name	Common Name	IUCN Red List Status	iNaturalist Observations		
					Boeung Veal Samnap	Bassac Marsh	Basset Marsh
22725876	MEROPIDAE	*Merops orientalis*	Asian Green Bee-Eater	LC	1		3
22683750	MEROPIDAE	*Merops philippinus*	Blue-tailed Bee-Eater	LC	1		4
22709325	MONARCHIDAE	*Ficedula zanthopygia*	Yellow-rumped Flycatcher	LC	2		
103715755	MONARCHIDAE	*Hypothymis azurea*	Black-naped Monarch	LC	3		
103716095	MONARCHIDAE	*Terpsiphone affinis*	Blyth's Paradise-Flycatcher	LC	2		
22718477	MOTACILLIDAE	*Anthus rufulus*	Paddyfield Pipit	LC	1	1	9
22718345	MOTACILLIDAE	*Dendronanthus indicus*	Forest Wagtail	LC	4		
103894856	MUSCICAPIDAE	*Copsychus malabaricus*	White-rumped Shama	LC	3		
103893432	MUSCICAPIDAE	*Copsychus saularis*	Oriental Magpie-Robin	LC	2		
22709514	MUSCICAPIDAE	*Cyornis hainanus*	Hainan Blue Flycatcher	LC	2		
22709426	MUSCICAPIDAE	*Eumyias thalassinus*	Verditer Flycatcher	LC	1		
22708276	MUSCICAPIDAE	*Monticola gularis*	White-throated Rock-Thrush	LC	5		
22709207	MUSCICAPIDAE	*Muscicapa dauurica*	Asian Brown Flycatcher	LC	3		1
22709223	MUSCICAPIDAE	*Muscicapa ferruginea*	Ferruginous Flycatcher	LC	1		
22709204	MUSCICAPIDAE	*Muscicapa sibirica*	Dark-sided Flycatcher	LC	3		
22710209	MUSCICAPIDAE	*Saxicola caprata*	Pied Bushchat	LC	2		3
22710184	MUSCICAPIDAE	*Saxicola torquatus*	Common Stonechat	LC			1
103792612	NECTARINIIDAE	*Anthreptes malacensis*	Brown-throated Sunbird	LC	6		
103804139	NECTARINIIDAE	*Cinnyris ornatus / jugularis*	Ornate Sunbird	LC	7		
22706394	ORIOLIDAE	*Oriolus chinensis*	Black-naped Oriole	LC	1		
103818789	PASSERIDAE	*Passer domesticus*	House Sparrow	LC	2		2
22718194	PASSERIDAE	*Passer flaveolus*	Plain-backed Sparrow	LC			2
22718270	PASSERIDAE	*Passer montanus*	Eurasian Tree Sparrow	LC	3		2
103845882	PHYLLOSCOPIDAE	*Phylloscopus borealis*	Arctic Warbler	LC	1		
103845868	PHYLLOSCOPIDAE	*Phylloscopus examinandus*	Kamchatka Leaf Warbler	LC	1		
22715310	PHYLLOSCOPIDAE	*Phylloscopus inornatus*	Yellow-browed Warbler	LC	1		
103845702	PHYLLOSCOPIDAE	*Phylloscopus plumbeitarsus*	Two-barred Warbler	LC	1		
22715284	PHYLLOSCOPIDAE	*Phylloscopus schwarzi*	Radde's Warbler	LC	1		
22698688	PITTIDAE	*Pitta moluccensis*	Blue-winged Pitta	LC	1		
22719008	PLOCEIDAE	*Ploceus hypoxanthus*	Asian Golden Weaver	NT	1		1

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IUCN TaxonID	Family	Species Name	Common Name	IUCN Red List Status	iNaturalist Observations		
					Boeung Veal Samnap	Bassac Marsh	Basset Marsh
22719002	PLOCEIDAE	*Ploceus manyar*	Streaked Weaver	LC	1		2
22719005	PLOCEIDAE	*Ploceus philippinus*	Baya Weaver	LC	1		3
22712737	PYCNONOTIDAE	*Pycnonotus conradi*	Streak-eared Bulbul	LC	3		1
22712731	PYCNONOTIDAE	*Pycnonotus goiavier*	Yellow-vented Bulbul	LC	4		5
103709500	RHIPIDURIDAE	*Rhipidura javanica*	Malaysian Pied-Fantail	LC	6		2
22709596	STENOSTIRIDAE	*Culicicapa ceylonensis*	Grey-headed Canary-Flycatcher	LC	1		
22689332	STRIGIDAE	*Athene brama*	Spotted Owlet	LC	1		1
22710921	STURNIDAE	*Acridotheres tristis*	Common Myna	LC	3		1
216913021	STURNIDAE	*Gracupica floweri*	Thai Pied Starling	LC			1
22710858	STURNIDAE	*Sturnia malabarica*	Chestnut-tailed Starling	LC	2		
22715811	TIMALIIDAE	*Malacocincla abbotti*	Abbott's Babbler	LC	2		
22682655	UPUPIDAE	*Upupa epops*	Common Hoopoe	LC	1		

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Spot-billed Pelican
Pelecanus philippensis

This account summarizes the life history of the Spot-billed Pelican, including information relating to its identification, systematics, distribution, habitat, diet, vocalizations, breeding ecology, and conservation status.

Identification

127–152 cm; 5100–5700 g; bill 285–355 mm; wingspan 213–250 cm. Breeding adult has dull white head and neck, can be grizzled or somewhat peppered, the curly feathers on hindneck have dark bases forming brown-grey mane on hindneck, feathers longest on nape creating dull white shaggy crest, rest of upperparts including scapulars dull white, back and side of rump strongly tinged with dull pink or salmon pink; upperwing has elongated dull white coverts slightly tinged pinkish or pale cream-yellow, more strongly pinkish-toned on lesser coverts at wing-base, tertials and rearmost scapulars whitish with narrow blackish shafts and often diffuse grey centres, exposed outer greater coverts greyer with blackish shafts, primary coverts (except some marginal ones) blackish like remiges, secondaries with variable silvery-grey fringes; underwing has grey remiges, dull white greater coverts forming pale band on central wing, rest of coverts and axillaries dull pink to cinnamon-pink, but variable, many secondary and primary coverts can be dull white; tail silvery grey with narrow blackish shafts, variably tinged dull brown with whitish fringes, looks dull overall and contrasts with whitish uppertail-coverts (may look fairly white if seen from below in flight under strong sunlight); underparts dull white with pale yellowish tinge to base of foreneck and central upper breast, posterior underparts (behind legs) washed dull pink to cinnamon; non-breeding adult looks dirtier, has peppered head and greyer neck, the face more contrasting with pale cream-yellow skin around eye, while nape and most of neck may be dark greyish brown, the nape feathers hardly longer than those on hindneck, the rest of body and wings usually tinged dull buff, tertials often largely brownish (similar to tail), parts of back tinged brownish (rather than pinkish), and some may appear ochraceous over most of abdomen; iris whitish to orange, being redder outside iris, the iris often browner in non-breeders; broad naked ring around eye cream-yellow to pink (more usually pink to dark orange in females, deep yellow or paler in males), the lower half can be whiter, surrounded by slate-grey to blackish skin except above, broadly on lores, but in non-breeders dark areas usually paler grey, not contrasting with greyish face; bill flesh to orange-flesh with diagnostic dark spots on side of upper mandible, often with dark spot at very base of lower mandible too, and reddish on distal half of cutting edges, while base of lower mandible may be paler, nail orange to fleshy yellow, gular pouch purplish red or more magenta distally with blackish spots throughout, or pale fleshy cream, pinker distally, with dark bluish-grey spotting, and may look largely greyish at distance, bill and gular pouch similar but duller in non-breeder, the gular pouch often paler; legs grey to blackish grey, may have pinkish flesh on soles and rear tarsus. Sexes similar in plumage, but female slightly smaller. Juvenile has greyish head and neck peppered dark dull brown, curly feathers with visible dull brown bases forming mane on hindneck, longest at nape, base of hindneck often broadly dark brownish, dull brown over mantle, scapulars and upperwing-coverts, each feather with pale tip when fresh, the coverts not elongated, lesser coverts at base of wing mostly whitish, remiges browner than adult, back to uppertail coverts dull white with narrow brownish shafts, tail brown-grey, underparts dull whitish; transitional plumage has grey-brown feathers of dorsum and upperwing-coverts merging with whitish ones, the latter elongated on upperwing; at first has very dull, unspotted bill and pouch (flesh-grey, pouch can be more creamy), iris dull brownish, pale naked area around eye narrower than in adult, legs pale flesh, but bare parts soon become similar to those of non-breeding adult. Breeding adult may look rather dull, and non-breeding adult has dirtiest plumage of all “white” pelicans in same plumage, resembling immature of other species; fairly like similar-sized

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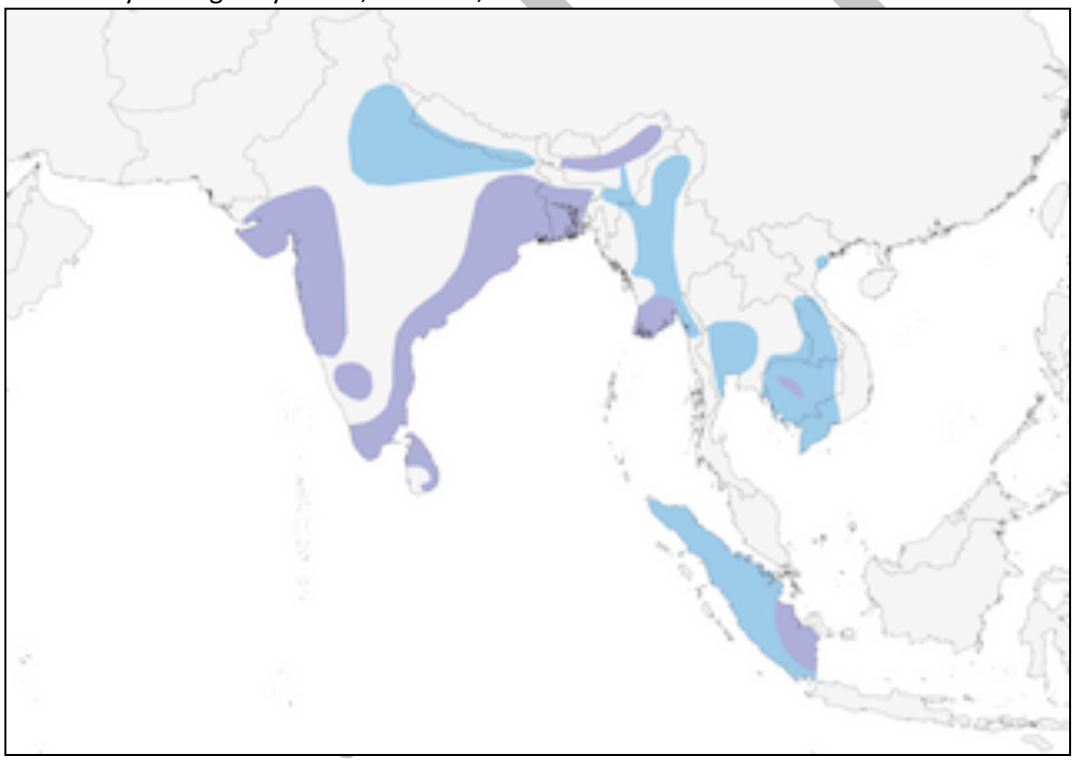
but wholly allopatric *P. rufescens*, from which separable using bare-parts colors, darker tail, usually more peppered head and other details, while juvenile differs in longer and more conspicuously dark mane; in flight could be confused with noticeably larger *P. crispus*, but underside of remiges slightly darker, and bill color different.

Systematics History
Part of a clade that includes also *P. crispus*, *P. rufescens* and *P. conspicillatus*. Formerly considered conspecific with P. crispus, but now universally accepted as separate species. In the past was often referred to by older name of P. roseus, causing some confusion with *P. onocrotalus roseus*; name roseus now invalid. Monotypic.

Subspecies
Monotypic.

Distribution
Once widespread in S Asia, range now much reduced. Breeding apparently now limited to W, S & E India, Sri Lanka and Cambodia, and possibly breeding in small numbers in Sumatra; probably no longer in Myanmar; in Philippines last claimed record from 1972. In non-breeding season recorded in Nepal, and more widely through Myanmar, Thailand, Laos and Vietnam.



General Habitat
Watery tracts, including marshes, jheels, rivers, estuaries, reservoirs, tanks, flooded fields, large lakes , brackish lagoons, tidal creeks and along coast; often feeds in quiet backwaters. Requires large trees for nesting, normally in swamp forest or swampy savanna, but sometimes along margins of paddyfields, where undisturbed; trees also used for roosting, with certain preference for bare or dead trees.

Movements and Migration
Poorly known. Some local movements, other populations sedentary. In S India, birds reported to arrive at colony shortly before breeding in Oct/Nov or Jan/Feb, most leaving site around May. Recent records

of migrants in Nepal, in Maldives and in SE Asia; numbers recorded in Thailand have increased since end of 20th century, probably as a result of better protection of breeding colonies in Cambodia. Recorded as vagrant or even regular non-breeding species in SE China, as well as Sumatra and Java, but taxonomic confusion with both *P. onocrotalus* and *P. crispus* invalidates many of the older records. Juvenile, presumably a vagrant, recently recorded in 2006 on Amami-Oshima I, in Japan. No recent records from Philippines.

Diet and Foraging
Mostly fish, but poorly documented. Daily requirement reckoned to be around 1000 g. Normally feeds alone, though sometimes in groups.

Sounds and Vocal Behavior
Little known. Grunts and groaning sounds at breeding colony.

Breeding
Oct–Mar, usually on traditional sites. Nov–Apr in Tamil Nadu, India, after the onset of monsoon. Tree nester, normally 3–15 nests per tree, often in mixed colonies with storks, egrets or cormorants; large stick nest. Clutch 1–4 eggs, usually 3 (4 rare); incubation 29–31 days; chicks hatch naked, grow snow-white down; fledging period 90–102 days. Fledging success c. 54–68%, young fledged per pair a little less than two; nest success c. 90% at Karaivetti L, Tamil Nadu. First breeding probably at c. 3 years of age.

Conservation Status
Conservation status on Birdlife NT (Near Threatened)
Not globally threatened. Currently considered Near Threatened. Locally fairly common. Known to breed only in parts of Indian Subcontinent and in Cambodia. Formerly common across much of Asia, but suffered substantial and widespread decline to the point at which it was rare; following protection measures and better knowledge of its identification and behaviour, this species' population, estimated at only 5500–10,000 individuals in 2002, was revised to 13,000–18,000 individuals in 2006. According to BirdLife, Indian population believed to be in excess of 5000 individuals in S (increased as a result of improved protection), with a further c. 3000 in Assam; in S India, states of Andhra Pradesh, Karnataka and Tamil Nadu together hold 21 known breeding colonies, one of which (at Kokkare Bellur, in Karnataka) has doubled in size in recent years, whereas another (at Uppalapadu, in Andhra Pradesh) has declined from historical high of 12,000 individuals to just 1500 in recent count, human encroachment at latter site being a probable cause of the decline; surveys of nesting colonies and feeding aggregations during 2000–2004 produced combined total of c. 2800–3700 birds in Andhra Pradesh, Karnataka, Tamil Nadu and Kerala. In Sri Lanka, had been thought that c. 5000 birds bred, possibly overlapping with S Indian populations, but recent evidence suggests breeding population of fewer than 1000 pairs, counts from the three known colonies totalling no more than 400 pairs. In Cambodia, estimated 1000–1500 breeding pairs at Prek Toal, on L Tonle Sap, and numbers there thought to be increasing following protection of breeders since 2002; in 1990s only very few observed on Mekong floodplain during Jun–Oct wet season. Small numbers possibly breed in E Sumatra, but very few details available. Formerly a common to abundant breeder in Myanmar, where now almost certainly extinct; major factor in this decline was extirpation of Sittang Valley breeding colony following deforestation and loss of feeding sites. According to BirdLife, other significant threats to this species are human disturbance at colonies and wetlands, extensive felling of nesting trees, adverse impact of invasive plants on wetland habitat, hunting and the taking of eggs and chicks; additional threats include loss of important foraging sites through siltation, agricultural intensification, aquaculture, building of power stations, drainage and conversion of wetlands, and declines in wetland productivity as a result of pesticide use, as well as human over-exploitation of fisheries, and some local persecution resulting from competition between pelicans and fishermen.

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ANNEX-4: TERMS OF REFERENCE (TOR) FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)

1. Background of the Project

Under Cambodia Sustainable Energy Transition (CSET) Project, the Electricité du Cambodge is planning to construct 230 kV transmission Lines GS Lvea Am to GS Arey Ksat (15 Km) and 115 kV transmission Lines from GS Arey Ksat to GS Chroy Chang Va III to GS Wat Phnom (4.5km) in Phnom Penh and may run adjacent to key biodiversity areas (KBAs). Moreover, construction of two new substations: New 115 KV Substations which will include (i) GS Arey Ksat Substation (ARK) (ii) GS Chroy Chang Va III Substation (CCV III) and extension in the existing substation: 2 x 230kV Line Bay Extension at Lvea Am Substation will be included. The project aims to improve electricity reliability and capacity for urban and peri-urban areas and will be funded by world Bank. Given the potential environmental and social implications, an Environmental and Social Impact Assessment (ESIA) is required in accordance with international financing standards, particularly the World Bank's ESF and Environmental and Social Standards (ESSs).

In accordance with Cambodian national regulations, the following environmental assessment requirements apply:

Sub-components and its Sub projects	Justification for National Requirements
SC1.1: 230 kV Transmission Line (GS Lvea Am to GS Arey Ksat, 15 km)	High-voltage line exceeding 10 km in length and falls under the 115–230 kV category, which, according to **Prakas No. 3591/0525**, requires an **Initial Environmental Impact Assessment (IEIA)**.
SC1.1: 115 kV Transmission Line (GS Arey Ksat to GS Chroy Chang Va III to GS Wat Phnom, 4.5 km)	Requires an IEIA (115 kV), according to **Prakas No. 3591/0525**, requires an **Initial Environmental Impact Assessment (IEIA).**
SC1.1: New 115 kV Substations (ARK, CCV III) and 2 × 230 kV Line Bay Extension	According to **Prakas No. 3591/0525**, new substations at or above 115 kV, and extensions at 230 kV, require an **IEIA**.

In line with the national regulatory framework, the Initial Environmental Impact Assessment (IEIA) will be prepared and submitted separately by consultants engaged by EDC to meet the requirements of the Royal Government of Cambodia through the Ministry of Environment (MoE).

At the same time, a broader Environmental and Social Impact Assessment (ESIA) will be carried out in accordance with the World Bank Environmental and Social Framework (ESF) to meet international standards and ensure alignment with applicable Environmental and Social Standards (ESSs).

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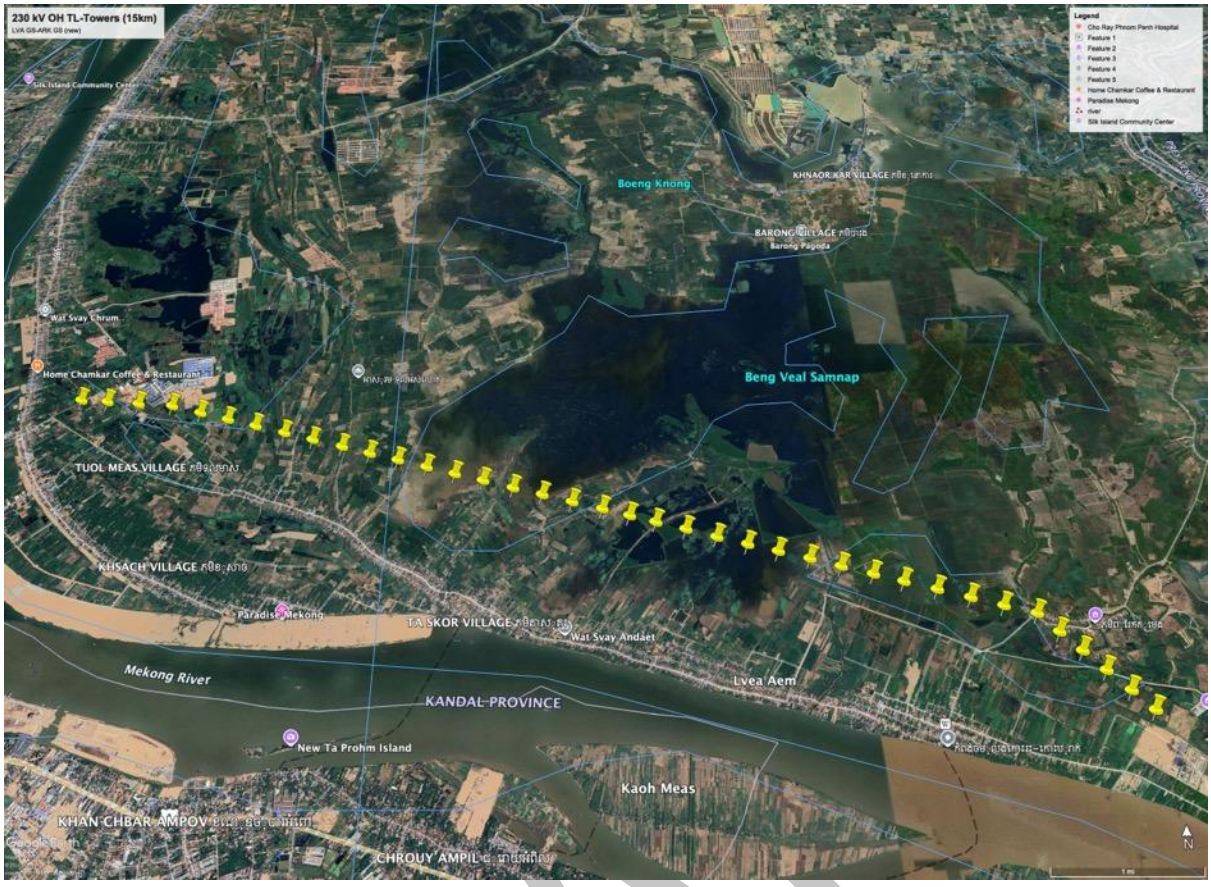

Note: as of 12 May 2025

Note: as of 12 May 2025

Note: as of 12 May 2025

2. Objective of ESIA

- Assess potential environmental and social risks and impacts associated with the transmission line project.
- Identify mitigation measures to avoid, minimize, or compensate for adverse impacts.
- Engage relevant stakeholders in a meaningful manner.
- Develop an Environmental and Social Management Plan (ESMP) with appropriate monitoring and reporting measures.

3. Scope of Work for ESIA Study

The Consultant shall undertake the following tasks:

3.1 Baseline Studies

3.1.1 Environmental Baseline Survey

Key areas of data collection will include:

3.1.1.1 Primary Data Collection (One Season)

- **Ambient Air Quality** – baseline measurements of key pollutants (e.g., $PM_{2.5}$, PM_{10}, SO_2, NO_x) (Note: AQ Monitoring results described in the previous EIA report is from secondary data which do not represent the AOI of the proposed activities)
- **Ambient Noise** – baseline measurement of ambient noise in potentially affected communities and near sensitive receptors.
- **Hydrology and Water Resources** – location and quality of surface and groundwater (biological, physical, and chemical parameters), seasonal variations and flood risk in the AOI of the project.
- **Flora and Fauna Field Survey** – Field survey of potentially affected flora and fauna in the project area.

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3.1.1.2 Secondary Data Collection

- **Topography and Geology** – slope, erosion potential, soil types, seismic conditions.
- **Climate and Meteorology** – rainfall, temperature, humidity, wind patterns.
- **Biodiversity**– presence of critical habitats, rare or protected species; vegetation types and migratory routes of birds
- **Protected Areas and Sensitive Ecosystems** – proximity to key biodiversity areas (KBAs) including national parks, protected forests, dolphin conservation zones, wetlands, or Important Bird Areas.

3.1.2 Social Baseline Survey

Areas to be covered include:

3.1.2.1 Primary Data Collection

- **Socio-economic Survey: If the project activities require relocation, resettlement or impact on livelihoods,** a **detailed socio-economic survey** will be conducted to identify and assess project-affected persons (PAPs), including their assets, livelihoods, and vulnerabilities, to design appropriate mitigation and compensation measures. Based on the current route of transmission lines, the tower locations are far from the residential areas but mostly on agricultural land and key biodiversity area. This requirement should be justified with final route of transmission lines.

3.1.2.2 Secondary Data Collection

- **Demographics Profiles**: population size, structure, education levels, gender roles in the project influence area.
- **Livelihoods:** Key Income sources, employment levels, access to land.
- **Land Use and Tenure:** Types of land tenure, customary land use, land ownership and potential for displacement or restriction.
- **Vulnerable Groups:** Identification of Indigenous Peoples, women-headed households, persons with disabilities, and poor or marginalized groups.
- **Health and Education Services:** Access to hospitals, health posts, schools, and clinics.
- **Cultural Heritage:** Sites of historical, archaeological, religious, or spiritual significance, including both tangible and intangible heritage.
- **Community Infrastructure:** Existing roads, water supply, electrification, markets, and public services in or near the project influence area.

4. Impact Assessment

- Identify and assess direct, indirect, cumulative, and induced environmental and social impacts during construction, operation, and decommissioning phases.
- Special attention to:
    - Impacts on biodiversity, especially if KBAs are Ramsar Sites or Critical Habitats (ESS6).
    - Community health and safety (ESS4), particularly in urban densely populated areas.
    - Land acquisition and economic displacement (ESS5).
    - Impacts on Indigenous Peoples or ethnic minorities, if relevant (ESS7).
    - Labor and working conditions (ESS2).
    - Risks related to electromagnetic fields (EMF) and construction noise.

4.1 Methodology

- Desk review of relevant reports, maps, policies, and plans
- Field visits for environmental and social surveys, including:
    - Ambient Air Quality Survey
    - Ambient Noise Survey
    - Water Quality Survey

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    - Biodiversity surveys (flora/fauna, seasonal consideration)
    - Household-level socioeconomic surveys
    - Key informant interviews and focus group discussions
    - Land uses mapping and photo documentation
- GIS-based route alignment and impact zone mapping
- Risk and impact ranking (high, medium, low)
- Cumulative impact assessment if other projects exist in the area

5. Stakeholder Engagement

- Conduct stakeholder mapping and analysis.
- Prepare and implement a Stakeholder Engagement Plan (SEP) aligned with ESS10.
- Carry out consultations with:
    - Urban communities
    - Biodiversity conservation authorities
    - Local governments
    - Environmental NGOs
    - Indigenous and vulnerable groups (if applicable)

6. Environmental and Social Management Plan (ESMP)

- Develop a detailed ESMP including:
    - Mitigation measures
    - Monitoring indicators and frequency
    - Institutional roles and responsibilities
    - Capacity building needs
    - Budget for implementation

7. Deliverables

1. **Inception Report** – work plan, methodology, team composition (within 2 weeks)
2. **Scoping Report & Draft Terms of Reference** for stakeholder validation
3. **Draft ESIA Report** including ESMP and SEP
4. **Non-Technical Summary (NTS)** for public disclosure
5. **Final ESIA Report** after public consultation
6. **Presentation to stakeholders and EDC**

8. Duration and Timeline

The ESIA is expected to be completed within **[5–6 months]**, depending on field accessibility and stakeholder availability. One season data collection for environmental surveys.

9. Team Composition

The Consultant team should include:

Team Leader / Senior Environmental Specialist

Responsible for overall coordination of the ESIA; must have extensive experience leading environmental assessments for transmission or energy infrastructure projects and demonstrated familiarity with WB ESF and Cambodian EIA procedures.

Social Development Specialist / Stakeholder Engagement Specialist

Leads the social impact assessment and preparation of social baseline, including stakeholder engagement and identification of project-affected persons. Should have strong experience with resettlement and relocation, gender analysis, and vulnerable groups, including Indigenous Peoples.

Biodiversity / Ecological Specialist

conducts field assessments on flora, fauna, and sensitive habitats, with experience assessing impacts in protected areas or Key Biodiversity Areas (KBAs).

GIS and Mapping Expert

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Supports mapping of environmental and social features, transmission routes, land use, and overlapping with sensitive areas, using satellite imagery and spatial data analysis.

Field Coordinators (support staff)

To ensure community consultations, surveys, and stakeholder engagement are conducted in the local language and in a culturally appropriate manner.

10. Reporting and Coordination

- The Consultant will report to EDC and coordinate with local authorities, project engineers, and financing institutions.
- All deliverables shall be submitted in English and Khmer, with data in editable formats.

11. Content of Environmental and Social Impact Assessment (ESIA) Report

Executive Summary

Concise presentation of key findings, major anticipated environmental and social impacts, and recommended mitigation and management actions related to grid strengthening activities, and conclusion.

Non-technical summary provided in English and Khmer.

Policy, Legal, and Administrative Framework

Overview of Cambodian National legal framework, environmental laws, and regulations.

Role of Ministry of Mines and Energy (MME) and Electricité du Cambodge (EDC)

World Bank Environmental and Social Standard (ESS) — ESS1 to ESS10 — applicability to the project.

Requirements of any co-financiers (e.g., World Bank, other Financial Intermediaries if applicable).

Cambodia's commitments to international environmental agreements (e.g., Ramsar, IUCN, etc.).

Project Description

Description of:

Proposed project and its geographic, ecological, social, and temporal context, including any offsite investments that may be required (e.g., dedicated access roads, water supply, housing, and raw material and product storage facilities) for transmission lines and associated infrastructures.

Site layout maps of locations with coordinates

Technical details of the transmission line and ancillary infrastructure (access roads, and substations)

Project activities in construction, operation, and decommissioning phases

Project timelines including implementation schedule for all phases

- Description of application of Associated Frameworks and Plans developed under ESMF of the CSET Project
    - Resettlement Policy Framework (RPF)
    - Indigenous People Planning Framework (IPPF)
    - Labor Management Procedures (LMP)
    - Chance Finds Procedures (for cultural heritage)
    - Protocol for UXO Risks Management
    - Stakeholder Engagement Plan with Grievance Redress Mechanism

Baseline Data

- Physical Environment: Topography, soils, geology, hydrology, climate data, coordinates of project sites.
- Biological Environment: Flora, fauna, endangered species, critical habitats, protected areas.
- Social Environment: Demography, vulnerable groups (ethnic minorities, women-headed households), livelihoods, land use, cultural heritage.
- Infrastructure and Services: Existing power infrastructure, roads, health and education facilities.

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- Future Developments: Other projects in the area that may interact cumulatively with CSET-Grid.
- Sources: Government reports, satellite imagery, Capacity assessment and screening results

Environmental and Social Impacts

- Prediction and assessment of potential positive and negative impacts during design, construction and operation phases.
- Land acquisition and resettlement
- Labor influx and worker-community interactions
- Dust, noise, and vibration during construction
- Soil erosion and water contamination risks
- Occupational Health and Safety risks
- Biodiversity impacts
- Impacts on cultural heritage
- Impacts on Indigenous Peoples (if any)
- UXO (Unexploded Ordnance) risks along proposed transmission routes
- Differentiation between: Short-term, medium-term, and long-term impacts
- Reversible and irreversible impacts
- Identification of:
- Mitigation measures
- Residual impacts (after mitigation)
- Opportunities for environmental and social enhancement.

Analysis of Alternatives

- Comparison of project alternatives:
    - Different transmission line alignments
    - Alternative substation sites
    - Without-project scenario
- Evaluation based on:
    - Environmental and social impact reduction
    - Technical feasibility
    - Economic considerations
    - Climate resilience

Appendices

- List of ESIA Preparers (individuals and organizations).
- References: List of data sources, literature, and reports used.
- Stakeholder Engagement Documentation:
    - Records of community consultations (including minority and vulnerable groups)
    - Summary of feedback received and how it was addressed.
- Records of Interagency Consultations: Meetings with Ministry of Mines and Energy (MME), EDC, provincial authorities, etc.
- Additional Data Tables: Summarized field survey results, water quality data, noise modeling results, biodiversity surveys, etc.

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ANNEX 5: GUIDELINE FOR PREPARATION OF ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) FOR BESS INSTALLATION

1. Introduction

1.1 Project Background

Cambodia is taking significant steps toward achieving its clean energy and decarbonization goals through modernization of grid infrastructure and energy storage capacity. The Cambodia Sustainable Energy Transition (CSET) Project, financed by the World Bank, supports these efforts through investments in grid strengthening, digitalization, and the deployment of clean energy technologies.

Under Component 1: Grid Strengthening for Facilitation of Energy Transition, implemented by Electricité du Cambodge (EDC), one of the key investments is the establishment of a Battery Energy Storage System (BESS) facility. The BESS will play a critical role in improving grid reliability, balancing renewable energy variability, and providing frequency regulation services.

The proposed BESS facility will be installed within or adjacent to existing grid substations to maximize land efficiency and minimize environmental and social impacts. The system will enhance Cambodia's grid flexibility and support renewable integration targets set out in the Revised Power Development Plan (2024) and the National Energy Efficiency Policy (NEEP).

1.2 Description of the Proposed Activity

Sub-component 1.2 – Battery Energy Storage System (BESS) at GS TKM

The proposed sub-component involves the design, construction, installation, and operation of a grid-scale Battery Energy Storage System (BESS) with a total capacity of approximately 100–150 MW, located within the existing GS TKM 230 kV substation compound in Tboung Khmum Province.

The BESS will enhance power system reliability and operational flexibility by storing excess energy during low demand periods and releasing it during peak hours. The facility will also provide ancillary services such as voltage regulation and contingency reserves for the Eastern grid corridor.

Key project features include:

- Installation of modular battery container units (lithium-ion technology)
- Power Conversion System (PCS) and step-up transformers for grid connection to the 230 kV busbar.
- Control building equipped with Energy Management System (EMS), HVAC, and communication systems.
- Fire detection and suppression systems, safety barriers, and emergency containment.
- Drainage and stormwater management infrastructure within the substation area; and
- Internal access roads, cable trenches, fencing, and other auxiliary works.

All civil and electrical works will be undertaken within EDC's secured substation boundary to minimize environmental disturbance and avoid land acquisition.

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1.3 Project Location

The GS TKM Substation is a 230 kV facility located in Tboung Khmum Province, forming part of Cambodia's national transmission grid operated by EDC. The substation occupies government land and is situated away from densely populated areas, flood-prone zones, and environmentally sensitive receptors.

Its strategic position enables connection between the Southern and Eastern transmission corridors, providing reliable support for renewable energy dispatch from solar and wind developments in neighboring provinces such as Kampong Cham, Kampong Speu, and Mondulkiri.

1.4 Scope of ESMP

The ESMP shall cover but not limited to:

- Detailed baseline conditions of project sites
- Comprehensive risk and impact identification and hazard assessment
- Mitigation plans, monitoring framework, and roles/responsibilities
- Stakeholder engagement, disclosure, and grievance mechanisms
- Capacity development and budget planning for implementation

2. Legal and Institutional Framework

2.1 National Legal Framework

This section will cover national laws and regulations are applicable to SC 1.2 activities to be conducted.

2.2 Relevant International Conventions and Treaties

This section will cover the international conventions and treaties, ratified by Cambodia, are relevant to SC 1.2:

2.3 World Bank ESF Requirement

The CSET project's sub-components 1.2 must comply with the World Bank's Environmental and Social Framework (ESF) to ensure environmental protection, social inclusion, and risk management

This Environmental and Social Management Plan (ESMP) should be developed to align with these ESS requirements by outlining appropriate mitigation, monitoring, and stakeholder engagement measures to implement SC 1.2 activities in the *[insert village]* effectively.

3. Environmental and Social Baseline Information

3.1 Environmental Component

Environmental baseline data should be collected for the target. The following information is recommended to include if applicable:

- Geography context: Describe the village's general location and setting?
- Climate: Optional unless it directly affects project logistics or activities.
- Topography: Elevation, slope, and flood risk exposure if relevant to the activities.
- Soil and geology: Briefly describe ground. Indicate if the land appears suitable for construction of BESS foundation or requires additional geotechnical considerations.
- Land resources: Land use patterns (agricultural, residential, forest); land classification (private/state land).
- Sensitive areas: Presence of protected areas, KBAs, wildlife habitats, or Dolphin conservation areas.

Attach maps, GPS coordinates, photos, and official data sources where available.]

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3.2 Social Component

This section should provide the site-specific social baseline data. Suggested areas of focus include:

- Demographics: Population size, household structure, and ethnic groups.
- Land ownership: Existing land tenure types; any risk of physical or economic displacement.
- Livelihoods: Main income sources (e.g., farming, , remittances).
- Vulnerable groups: Households headed by women, elderly, people with disabilities, or low-income families.
- Social services: Availability of schools, health centers, water supply, and access to markets and electricity coverage or accessibility if the information is available. Fire related emergency management
- Access and isolation: Infrastructure (roads, bridge); seasonal access issues.]

4. Identification of Potential Environmental & Social Risks and Impacts

Detailed E&S risks and impacts should be identified based on the site-specific context. It shall be considered that all risks and impacts in described in Chapter 5 ; it should be updated accordingly. Moreover, the risk hazard assessment for construction and operation of BESS should be carried out including but not limited to, fire, Explosive hazards (explosive gas or battery rupture hazard), Exposure to harmful chemicals or substance, toxic gases, electric shock, exposure to extreme heat, acoustic noise, pressure or light, and injury caused by movement of cables/components through electromechanical stresses, and hazards associated with movement, handing, movement of equipment.

5. Environmental and Social Management Plan (ESMP)

5.1 Proposed Mitigation Measures, and Monitoring

This section should present mitigation measures and monitoring for the identified environmental and social risks during pre-construction, construction, and operation phases. The mitigation measures and emergency preparedness measures resulting from hazard assessment should reflect in this section to inform the design and operational arrangement of BESS installation. Key management plans such as Battery Management and Spill Response Plan, emergency response and fire safety plan should be developed.

6. ESMP Implementation

6.1 Institutional Arrangement

This section should indicate the implementation of the ESMP under the leadership of the Project Management Units PMU of EDC with close collaboration among contractors, local authorities, and relevant government agencies.

6.2 ESMP Monitoring and Reporting

This section should present the ESMP Monitoring and Reporting procedures through the construction and operation phases of the BESS operation.

Key Performance Indicators (KPIs) should include but not limited to:

- Air, noise, and water quality levels
- Number of grievances received and resolved
- Implementation of mitigation measures (physical and procedural)
- Worker health and safety incidents
- Community consultation frequency and outcomes

6.3 Schedule and Implementation Budget

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This section should provide the estimated budget for implementation of ESMP.

6.4 Stakeholder Engagement, Disclosure, Consultation and Grievance Redress Mechanism

This section should discuss on the process of stakeholder engagement, disclosure of ESMP and consultation and introduce the GRM set up under EDC.

7. Capacity Development and Training

This section should describe the capacity development and training of workers during construction phase and the staff of EDC during operation phase in the BESS particularly which are essential for the occupational health and safety, and emergency risks management at the site. The adequate budget for the trainings should be estimated and included.

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ANNEX-6: TEMPLATE FOR ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM (ESMS)

For Financial Intermediaries (FIs) in CSET Project, Energy Efficiency Transition Project

Declaimer of
Financial Intermediaries (FIs)

In Cambodia, State-owned Banks play an important role in providing the financial support to the industrial enterprises through loans for energy efficiency investments. In the CSET project, State-owned Banks (e.g. SME Bank) and Commercial Bank (e.g. FTB) will serve as Financial Intermediaries (FIs) to deliver the loans to the industrial enterprise via two types of loans (Type-A Loans and Type-B Loan) ensuring the efficient allocation and utilization of financial resources.

The Financial Intermediaries (FIs) believe that environmental protection and social development are essential while introducing energy efficient technologies to the business operation.Therefore, FIs regard sustainable and social development as fundamental aspects of business management.

Consequently, we are committed to continuing the integration of environmental and social aspects into our business activities and those with whom we have a relationship with (e.g., Industrial Enterprises). To implement, we have developed an Environmental and Social Management System (ESMS).

The FIs will ensure the implication of the following indicative policy objectives:

- No financing of excluded activities, as defined in this ESMS;
- Committing that the operations of borrowers are adequately assessed against the environmental & social requirements as defined by the applicable environmental & social national and local laws and regulations in Kingdom of Cambodia and require compliance;
- Environmental and social risk management is adequately integrated into the credit review cycle to ensure they are all screened for environmental & social risks and impacts associated with the borrowers' industrial operation;
- Ensuring that there are designated specialists/experts with role sand responsibilities to support the implementation of the ESMS;
- Ensure that updates to the ESMS are made as required; and
- Report as required to our stakeholders on ESMS implementation.

[Add sign off e.g. Director of State-owned Banks]

[Date]

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1. Introduction

This section presents the background of FI, introduction about CSET project, objectives of setting up the environmental and social management system (ESMS) comprising sustainable financing, risk management, and regulatory compliance, and FI's commitment to the integration of environmental and social (E&S) risk management into their financing to industrial enterprises.

2. Applicable National Legislation and International Guidelines, and FI's E&S Policy

This section lists the applicable national, institutional, and international Environmental and Social Standards.

Example:

- National laws and sectoral guidelines laws applicable to environmental, labor, and social governance in EE projects.
- Any sector-specific guidelines for energy efficiency (EE) financing
- World Bank's Environmental and Social Framework (ESF) and its Environmental and Social Standards (ESSs)
- IFC's EHS Sectoral Guidelines for specific industries

FI's E&S Policy

This section defines the Environmental and Social Policy of the FI which will be applicable to the loans process and financial activities undergoing with Industrial Enterprise.

The policy shall explicitly reference and align with WB ESS1–ESS10, ensuring all environmental and social risks are considered in lending activities.

Policy Components:

A. Environmental and Social Management Policy
B. Policy Objectives
C. Key Commitments: Explicit reference to WB ESS1–ESS10, Paris alignment
D. Implementation Framework
E. Review and Update of the Policy

3. Scope

This section defines the scope of this ESMS, including types of financial products covered and eligible borrowers.

4. Organization Structure, and Roles and Responsibilities

This section describes how ESMS oversight is structured within FI's organization with an organogram if applicable. In addition, the roles and responsibilities of each team member in FI's organization are responsible for managing environmental and social (E&S) aspects of this project including the designated E&S specialists/consultants specialized in environmental and social risks and impacts of the industries operation.

5. ESMS Communication & Disclosure

This section describes how ESMS policies and updates will be communicated internally and externally.
Example:

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- Internal Communication: Ensure FI staff understand ESMS and its application.
- External Disclosure: Borrowers and stakeholders must be informed of ESMS requirements.
- Public Disclosure: FI may publish E&S commitments on its website.

6. Training

This section elaborates the staff training on ESMS processes and borrower awareness programs.
Example:

- PFI staff: Training on E&S risk management and due diligence.
- Borrowers: Awareness sessions on compliance with E&S safeguards

7. Environmental & Social Management Procedure

This section detailing the E&S screening process to be conducted by FI should be included. The indicative screening process is described as below:

- Phase 1: Screening and Appraisal
    - Project Screening:
    - Screen project against Exclusion List (Annex A).
    - Categorize projects based on E&S risk level (high, medium, low).
        - High-Risk: Significant negative impacts – not eligible for financing or Financing after approval from MME or MoF.
        - Medium-Risk: Manageable impacts – mitigation required.
        - Low-Risk: Minimal or no impact – standard monitoring.
- Due Diligence: Conduct environmental and social impact assessment (if required).
- Climate Risk Screening and Paris Alignment Assessment: As part of the E&S Screening and Appraisal process (Phase 1), FIs shall ensure consideration of a low exposure to risks from climate hazards and carbon lock-in risks.
- Checklist for E&S information required with loan (Annex B).

- Phase 2: Loan Agreement & Closing
    - Loan Agreement: Include E&S clauses and borrower commitments (Annex D).
    - Approval Process: Ensure compliance with ESMS before loan disbursement.
    - Establish monitoring & reporting obligations.

- Phase 3: Monitoring & Compliance
    - Site Visits: Regular inspections to ensure compliance.
    - Borrower Reporting: Submit E&S performance reports as required.
    - Annual compliance checks for all financed projects.
    - Incident reporting (Annex F) for any serious E&S violations

8. Reporting, Monitoring, and Audit of Environmental and Social Performance

This section specifies frequency and format of reports (quarterly, biannual, annual) and describes the reporting process, including submission formats and timeline, to the MME.
Example:

- Biannual E&S Monitoring Reports (Annex E).
- Material E&S Incident Reports for major non-compliance cases (Annex F).

This section will outline internal/external audit mechanisms and performance review criteria.
Example:

- FI will conduct internal E&S audits annually.

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- Independent third-party audits may be required for high-risk and medium-risk projects.

This section defines how serious E&S incidents (e.g., pollution, labor violations) will be handled with definite timeline and detailed procedure.

9. Stakeholder Engagement Plan and Grievance Mechanism

This section outlines strategies for engaging project-affected communities and key stakeholders and define how stakeholders, including regulators such as MoF, MME, and communities, will be managed.

10. Document Control, Review and Update of the ESMS

This section describes how ESMS-related documents will be maintained and updated and specify the review frequency (e.g., annually) and update process.]

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Annexes

Annex A: Exclusion List
This annex should list prohibited activities/equipment for financing, such as industries with legacy pollution issues (solid waste, water pollution, emission), use of child labor, etc. in align with WB ESF requirements.

Annex B: E&S Information Requirement for Loan Application
This annex should provide guidance to Financial Intermediaries (FIs) and Borrowers on the minimum environmental and social (E&S) information that must be submitted together with a loan application under the CSET Project. The purpose of this Annex is to ensure that:

- Borrowers provide sufficient information for FIs to undertake E&S screening, risk classification, and due diligence in accordance with the ESMS;
- FIs can identify potential environmental, social, labor, land, and climate-related risks associated with the proposed loan activity;
- Borrowers demonstrate compliance with national laws, relevant permits, and applicable World Bank Environmental and Social Standards (ESSs).

The Borrower shall submit all required documents listed in this Annex at the time of loan application. Where information is incomplete, FIs may request additional documents or clarifications.
The E&S information should be included but not limited to:

- Project environmental and social setting
- Land documentation and legacy issues
- Presence of Indigenous Peoples
- Occupational and community health and safety risks
- Climate vulnerability and hazard exposure
- Borrower's institutional capacity for E&S management
- Environmental permits, licenses, and statutory approvals

All statements made by the Borrower must be supported with relevant documents (maps, permits, photographs, licenses, reports) where applicable.

Annex C: Environmental and Social Risk Categorization Guidance
This annex should provide a risk matrix for categorizing projects based on E&S risk levels for the support

Category	Definition	Example Activities
High-Risk		
Medium-Risk		
Low-Risk		

Annex D: Screening and Appraisal Format
This annex should attach a template for project screening and risk assessment.

Annex E: Biannual Environmental and Social Monitoring Report Template for PFIs
This Annex provides a standardized format for periodic reporting.

Annex F: Material E&S Incident Report Template
This annex attaches a template for reporting significant environmental or social incidents.

Annex G: E&S Monitoring Report
This annex includes a sample report format for ongoing project monitoring.

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Annex H: Labour Management Procedure
This annex describes labor compliance requirements, including fair wages, worker safety, and labor rights.

Annex I: Clauses recommened to be included in Agreement between FI and Borrower
This annex should outline the key environmental and social (E&S) clauses that should be incorporated into the loan agreement between the PFI and the Borrower. These clauses ensure that the Borrower understands and complies with the PFI's Environmental and Social Management System (ESMS) throughout the loan cycle. The recommended clauses include:

- Compliance with ESMS
- Adoption and Applicability
- Adherence to Requirements
- Ongoing Compliance
- Reporting and Monitoring
- Noncompliance Measures

Annex J: Grievance Registration Form

This annex should guide the Grievance Registration Form to collect essential information to ensure proper documentation, tracking, and resolution of complaints. It must capture the complainant's contact details (unless the grievance is anonymous), preferred communication method, and a clear description of the issue, including what happened, where, when, and who was involved. The form should also record any actions already taken by the complainant and their preferred resolution. For internal processing, the form should include fields for the PFI GRC Coordinator to log registration details, method of submission, attached evidence or documents, and remarks. This ensures transparency, accountability, and an effective grievance-handling process.

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ANNEX-7: CHANCE FIND PROCEDURES FOR CULTURAL HERITAGE

1. Overview

The CSET Project mainly focus on grid strengthening for facilitation of Energy Transit and Industrial Energy Efficiency Investments in Cambodia. The activities under the project involve the construction of new transmission lines and substations, distribution network improvement, provision of credit lines to industrial enterprises for investment in the energy efficient equipment, and capacity building for implementation agencies. When implementing activities under the components and sub-components of the CSET Project—particularly those involving excavation—it is essential to have a Chance Find Procedure for cultural heritage in place as cultural resources are important as sources of valuable historical and scientific information, as Assets for economic and social development, and as integral parts of people's cultural identity and practices. Although the currently identified project sites are not located within or near nationally recognized cultural heritage areas, this procedure is necessary to ensure that any unexpected discoveries of cultural artifacts are properly managed. It helps prevent damage and ensures compliance with national regulations and international best practices for cultural heritage protection.

2. Definition of Cultural Heritage

As per Environmental and Social Framework of World Bank, the term "cultural heritage" encompasses tangible and intangible heritage, which may be recognized and valued at a local, regional, national or global level, as follows.

1. Tangible Cultural Heritage

Tangible cultural heritage includes 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. Tangible cultural heritage may be located in urban or rural settings and may be above or below land or under the water.

2. Intangible Cultural Heritage

Intangible cultural heritage, which includes practices, representations, expressions, knowledge, skill as well as the instruments, objects, artefacts and cultural spaces associated therewith—that communities and groups recognize as part of their cultural heritage, as transmitted from generation to generation and constantly recreated by them in response to their environment, their interaction with nature and their history.

3. National Laws and Regulations on Cultural Heritage Protection in Cambodia

Cambodia has a strong legal framework for the protection and preservation of cultural heritage. The following are key national laws and regulations that govern cultural heritage in the country:

i. Constitution of the Kingdom of Cambodia (1993)[31]

- Article 69: The State shall preserve and promote national culture.The State shall preserve ancient monuments and artifacts and restore historic sites.
- Article 70: Any offense affecting cultural artistic heritage shall carry a severe punishment.
- Article 71: 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.

ii. Law on the Protection of Cultural Heritage (1996)[32]

[31] https://cambodia.ohchr.org/sites/default/files/Constitution_ENG.pdf

[32] https://233773342789-lic.s3.eu-central-1.amazonaws.com/attachments/legislation/cambodia/Law_on_the Protection of cultural heritage_25.01.1996.pdf

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- Article 37: When construction work or any other activity bring 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 in the study of prehistory, history, archaeology, ethnology, paleontology or other branches of science dealing with the past or of 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 to the local police, who shall transmit it to the Governor of the province without delay. The Governor shall in turn in turn inform the competent authority and shall take the measures necessary to ensure the protection of the objects and the site.
- Article 38: The competent authority shall, within thirty days of the declaration mentioned in Article 37, announce the temporary suspension of the work and the safeguarding measures to be taken. If no such measures are announced within that time limit, the effects of temporary suspension shall no longer apply. The competent authority shall decide on the permanent measures to be taken concerning chance discoveries.
- Article 39: Movable cultural property found by chance is public property. The competent authority shall provide within three weeks a reward to the finder of the discovery, the amount of which is to be fixed by agreement or by expert opinion.
- Article 40: No one may carry out excavations or surveys, on land or under water, for the purpose of bringing to light cultural property likely to be of relevance to the study of prehistory, history, archaeology, ethnology, palaeontology or other branches of science dealing with the past of human sciences in general, without the prior authorization of the competent authority.

iii. Sub decree 98 the Implementation of Cultural Heritage Protection, Cambodia (2002)[33]

- Article 2: Cultural heritage means the body of tangible cultural property with the exclusion of intangible cultural property.
- Article 3: Included in cultural heritage is:
    a) Cultural property born of the individual or collective ingenuity of Cambodian nationals.
    b) Cultural property of a definite cultural, artistic or historical significance, created on national soil by foreign nationals or stateless persons residing on national soil.
    c) Cultural property found on national soil.
    d) Cultural property acquired by Cambodian cultural institutions, with the consent of the competent authorities of the country of origin of such property.
    e) Cultural property dealt in under freely agreed exchanges.
    f) Cultural property received free of charge or in return for payment, legally acquired with the agreement of the competent authorities of the country of origin of such property.
- Article 4: Cultural property refers to any artifact, moveable or immoveable, belonging to the following categories:
    a) Archaeological material resulting from ground or underwater excavations, legal or illegal, and archaeological discoveries.
    b) Prehistoric and historic property such as monuments, components from the dismantling of a monument, sites, graves, remains of ancient villages, grottos and ancient pagodas.
    c) Properties of antiquity such as tools, pottery items, inscriptions, coins, seals, jewels, weapons and funerary remains.
    d) Sacred cultural property or having certain community significance, belonging to and used by a native or tribal community, for the traditional or ritual use of such community.
    e) Anthropologic and ethnological material.

[33] https://www.wipo.int/wipolex/en/legislation/details/10947

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f) Property of artistic interest such as:
    1. Paintings and drawings, executed entirely by hand on any medium and in any material, with the exclusion of industrial drawings and hand decorated manufactured items.
    2. Original rubbings, posters and photographs as a means of original creation.
    3. Original artistic assemblages and montages, in any material.
    4. Objects of applied art, in materials such as glass, ceramics, metal or wood.
g) Manuscripts and incunables, books documents and publications of special interest, notably for science, history, art and literature.
h) Property of numismatic interest (medallions and coins) or philatelic interest.
i) Archival documents, including recordings of material, maps and other cartographic material, photographs, motion-picture films, sound recordings and machine-readable documents (diskettes, CDs, etc.).
j) Furnishings, tapestry, carpets, ancient silk cloth, traditional costumes and musical instruments.
k) Zoological, botanical and geological specimens.

4. Purpose, Objectives and Scope

The Chance Find Procedure (CFP) for this ensures that the discovery of cultural heritage during project activities is managed in compliance with national laws and international best practices.

Objectives of the Chance Find Procedure:

- Prevent Loss or Destruction: Prevent the irreversible loss or damage of previously unknown cultural heritage sites or objects discovered during construction or other activities.
- Ensure Compliance: Ensure the project adheres to relevant national cultural heritage laws (e.g., Cambodian Constitution, Law on the Protection of Cultural Heritage, Sub-decree 98) and World Bank's ESS8.
- Minimize Disruption: Establish clear steps for managing chance finds to minimize disruptions to the construction schedule while ensuring the protection of cultural heritage.

Scope of the Chance Find Procedures

This procedure applies to all activities associated with the project. All project staff must be familiar with the procedure and trained to respond appropriately in case of a cultural heritage discovery.

5. Procedure and Implementation

Chance Find Procedure

In case tangible cultural heritage / artefacts are unexpectedly encountered during implementation of project activities such as excavation, earthwork, site cleaning etc., this chance find procedures shall be followed. This procedure takes into account requirements related to Chance Finds under the country legislation including Constitution of the Kingdom of Cambodia (1993), Law on the Protection of Cultural Heritage (1996), and Sub-decree 98 the Implementation of Cultural Heritage Protection, Cambodia (2002).

In case of a chance find, the implementers will undertake the following actions:

i. Stop the construction activities in the area of a chance find temporarily.
ii. Delineate the discovered site or area;
iii. 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 i.e., Commune Authorities or the Provincial Department of Culture and Fine Arts

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take over, and avoid publicly announcement of the findings before handing over to the responsible local authorities.

iv. If notification received under item (3), the Commune Authorities shall keep the said chance find as necessary and shall forward the information and notify the relevant Provincial Departments immediately.

v. Notify the relevant person in charge who will inform the responsible implementing agencies (e.g., EDC, MME, REF) at Provincial Level immediately.

vi. Provincial Department of Culture and Fine Arts would be in charge of evaluation /inspection of the significance or importance of the chance finds and advise on appropriate subsequent procedures.

vii. If the Provincial Department of Culture and Fine Arts determines that Chance Find is a non-cultural heritage Chance Find, it is necessary to have an engagement with the local community to confirm whether this may be locally recognized cultural heritage or not.

viii. If both the Provincial Department of Culture and Fine Arts and the local community determine the find has no cultural heritage value, the relevant entity / contractor will resume construction process.

ix. If the Provincial Department of Culture and Fine Arts determines Chance Find is a cultural heritage Chance Find, the Department would provide technical supports/advice on chance find treatment with related expenditure on the treatment provided by the entity report the chance find.

Construction work or other related activities can resume only after permission is given from the responsible local authorities (such as General Administration Department) and / or the relevant Department (Mainly from Provincial Department of Culture and Fine Arts). These procedures must be included as standard provisions in all construction contracts. During project supervision, the Site Engineer shall monitor the above regulations relating to the treatment of any chance find encountered.

Relevant findings will be recorded in regular reports of the contractors and in the Government's reports to the World Bank according to the indicative template described in Attachment-2. The report will include:

- 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
- Date, location, and description of the discovery.
- Photographic records and expert assessments.
- Decisions made by the authorities.

Community and Stakeholder Engagement

- If the find is related to Indigenous or local community heritage, consultation with Indigenous representatives and local stakeholders is required.
- Free, Prior, and Informed Consent (FPIC) must be obtained if the discovery significantly impacts Indigenous cultural heritage.

6. Conclusion

The Chance Find Procedure ensures that cultural heritage is protected while allowing project to continue responsibly. By integrating legal requirements, best practices, and stakeholder engagement, this procedure supports sustainable infrastructure development.

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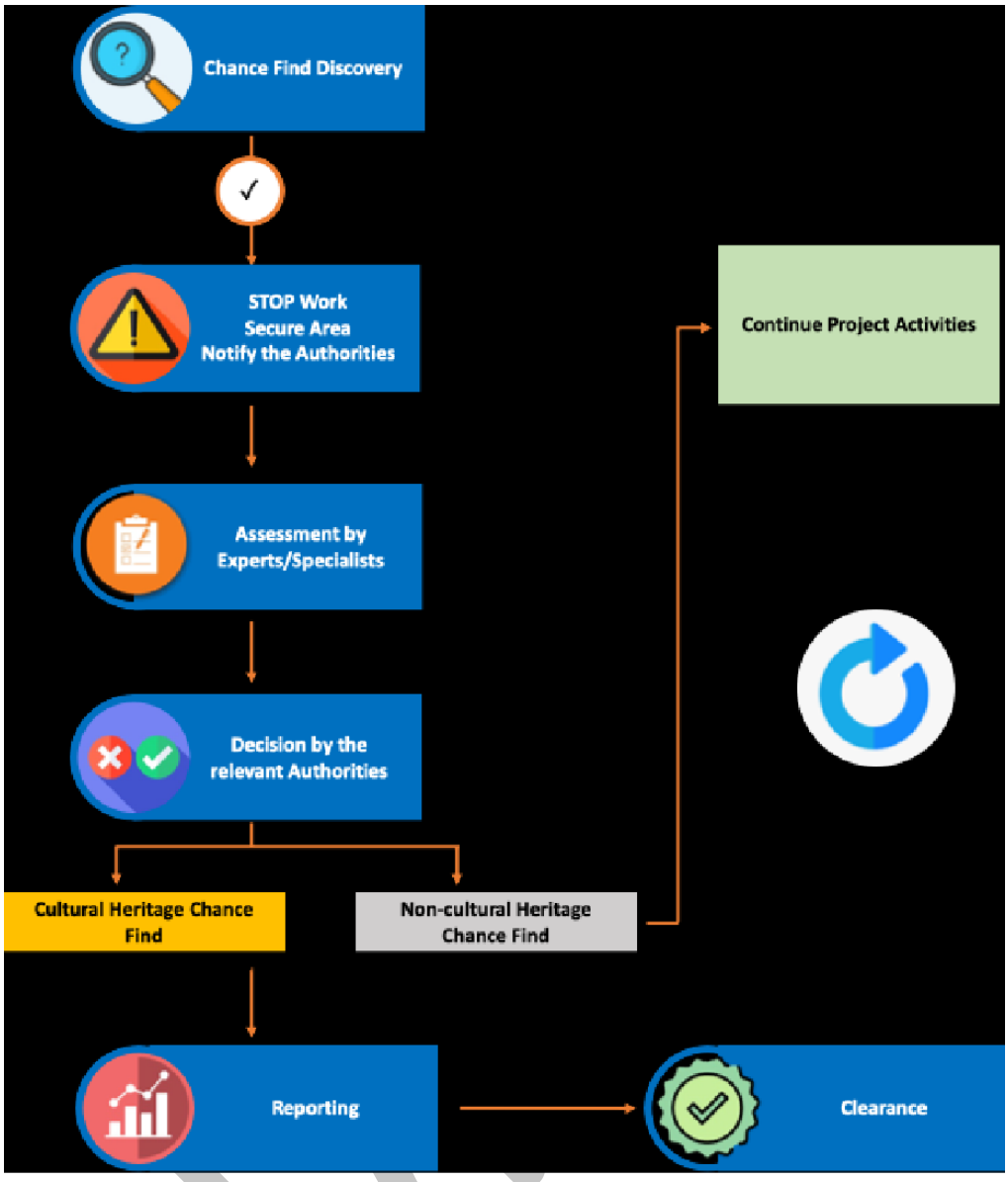
Attachment 1: Flow chart of Chance Find Procedure



Attachment 2: Template for Chance Find Reporting to World Bank

Report Date:
Prepared By: [Name/Organization]
Submitted To: Ministry of Culture and Fine Arts, National Authorities, Provincial Authorities

1) Executive Summary

[Provide a summary of the chance find discovery, including key details of the site or artifact, and a brief overview of the procedures followed.]

2) Chance Find Discovery Details

Date of Discovery	Location	Type of Find	Description	Estimated Date/Period (if known)

3) Initial Actions Taken

Date	Action Taken	Responsible Person	Comments

4) Reporting to Authorities

Date	Authority Notified	Method of Notification	Details of Report

5) Expert Assessment

Date of Assessment	Expert Name/Position	Assessment Summary	Findings	Recommendation

6) Authority Decision

Date	Authority	Decision Made	Comments/Instructions

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7) Detail Activity/Plan on find Objects

[Detail of how the find is preserved, excavated, and upcoming plan]

8) Work Resumption

Date of Work resumed	Details of Resumption

9) Attachments

1. Photographic records of the find
2. Expert Assessment Report
3. Clearance Certificate/Letter from relevant authority
4. Details Maps and site location

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ANNEX-8: PROTOCOL FOR UXO/ERW/LANDMINE RISK MANAGEMENT

Background

Cambodia has a long history of unexploded ordnance (UXO) and explosive remnants of war (ERW) contamination due to conflicts spanning several decades as indicated in section 3 of this protocol. This UXO Risk Management Protocol applies to the Cambodia Sustainable Energy Transition (CSET) Project, covering key provinces: Phnom Penh, Kandal, Steung Treng, Takeo, Kratie, Pursat, and Prey Veng but not limited to.

The CSET project is divided into three main components:

Component 1: Grid Strengthening for facilitation of Energy Transition
- SC1.1: Transmission Lines and Substations
- SC1.2: Battery Energy Storage System (BESS)
- SC1.3: Distribution Network Expansion and Strengthening

Component 2: Industrial Energy Efficiency (EE) Investments
- SC2.1: Credit Line for Energy Efficiency Technologies

Component 3: Implementation Support and Technical Assistance
- SC3.1: Implementation Support to MME
- SC3.2: Implementation Support to EDC

Since some areas in Phnom Penh, Kandal, Steung Treng, Takeo, Kratie, Pursat, and Prey Veng have a history of UXO contamination, all infrastructure investments (grid, energy storage, EV infrastructure, and rural electrification) involving excavation and construction activities must refer to this protocol.

This document consists of five components:

- Definition of UXO
- UXO contamination in Cambodia
- Status of UXO clearance in Cambodia
- Procedure for UXO risk management
- Chance Find Procedure for UXO/mines

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Figure A6 1-1 Map of the Potential Sites under the CSET

Definition of UXO

Unexploded Ordnance (UXO) - refers to munitions (bombs, rockets, artillery shells, mortars, grenades, and the like) that were used but failed to detonate as intended. UXO includes artillery and tank rounds, mortar rounds, fuses, grenades, and large and small bombs including cluster munitions, sub-munitions, rockets, and missiles. UXOs are usually found in areas where conflict has taken place or at military firing ranges. They are often extremely unstable and can detonate at the slightest touch. Injuries can often occur when people are farming or undertaking construction work in a contaminated area and touch, move or tamper with them. UXO accidents are often more lethal than landmines due to their higher explosive and fragmentation content.

Mine[34] - means a munition designed to be placed under, on or near the ground or other surface area and to be exploded by the presence, proximity or contact of a person or a vehicle.

Anti-personnel mine[1] - means a mine designed to be exploded by the presence, proximity or contact of a person and that will incapacitate, injure or kill one or more persons. Mines designed to be detonated by the presence, proximity or contact of a vehicle as opposed to a

[34] https://geneva-s3.unoda.org/static-unoda-site/pages/templates/anti-personnel-landmines-convention/APLC+English.pdf

person, that are equipped with anti-handling devices, are not considered anti-personnel mines as a result of being so equipped.

Mined area[1] - means an area which is dangerous due to the presence or suspected presence of mines.

Explosive ordnance[35] - means conventional munitions containing explosives, with the exception of mines, booby traps and other devices as defined in Protocol II of this Convention as amended on 3 May 1996.

Abandoned explosive ordnance[2] - means explosive ordnance that has not been used during an armed conflict, that has been left behind or dumped by a party to an armed conflict, and which is no longer under control of the party that left it behind or dumped it. Abandoned explosive ordnance may or may not have been primed, fused, armed or otherwise prepared for use.

Explosive remnants of war(ERW)[2] - means unexploded ordnance and abandoned explosive ordnance.

Existing explosive remnants of war[2] - means unexploded ordnance and abandoned explosive ordnance that existed prior to the entry into force of this Protocol for the High Contracting Party on whose territory it exists.

UXO/ERW/Landmine Contamination in Cambodia

Cambodia remains one of the most UXO-affected countries in the world due to conflicts from:[36]

- U.S. bombing during the Vietnam War (1965-1973)
- the Khmer Rouge era (1975-1979)
- Vietnamese-Cambodian War (1978-1989)
- Cambodian Conflict (1979-1998).

These successive conflicts resulted in the laying of an estimated 4 to 6 million landmines, along with 30 million pieces of ERW (including cluster munitions, heavy bombs, and chemical bombs) across Cambodia, posing significant risks to infrastructure development.
The heaviest contamination is concentrated along the border with Thailand (K5 mine belt[37]) and in provinces such as: Banteay Meanchey, Battambang, Oddar Meanchey, Pailin, Preah Vihear, Pursat, and Siem Reap, especially in the northwestern part of Cambodia.

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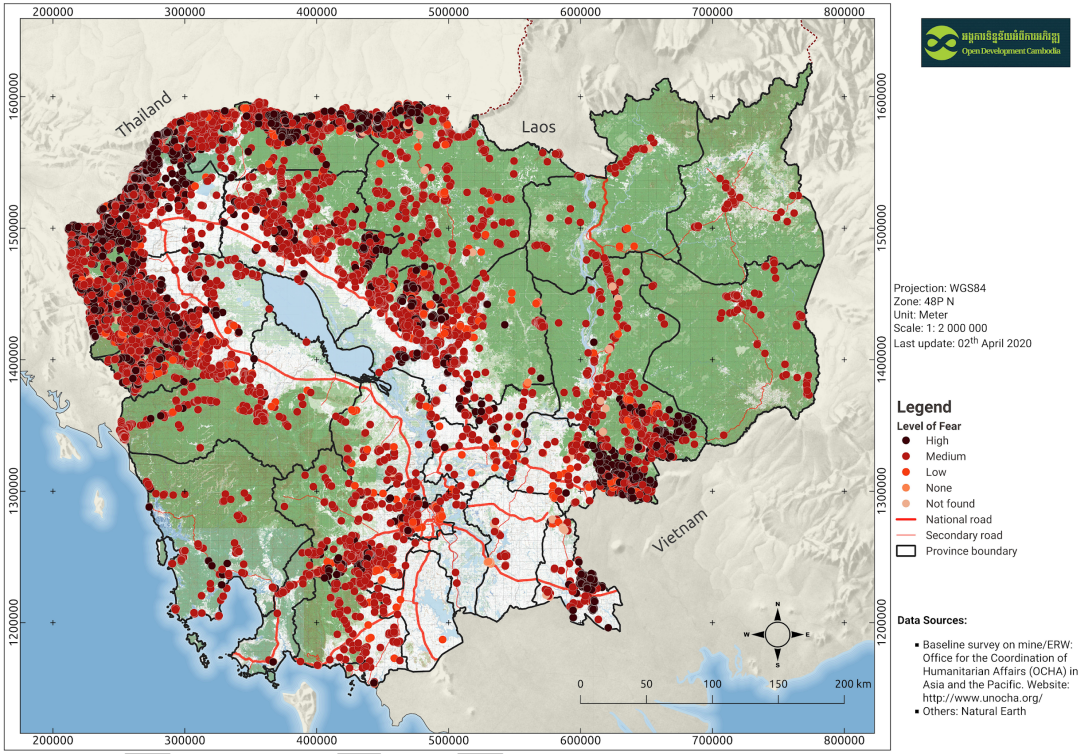
[35] https://www.un.org/en/genocideprevention/documents/atrocity-crimes/Doc.46_CCW P-V.pdf
[36] CMAC Annual Report 2023: https://cmac.gov.kh/wp-content/themes/cmac/pdf/ANNUAL-REPORT-2023.pdf
[37] MINE CLEARANCE IN CAMBODIA (PHASE II) by Switch Agency for Development and Cooperation SDC https://www.eda.admin.ch/dam/countries/countries-content/cambodia/en/mine-action-factsheet_2022_EN.pdf

Figure A6 3-1 Baseline Survey on Mine/ERW (2009-2014)[38]



[38] https://data.opendevelopmentmekong.net/th/dataset/erw/resource/2b20a617-b791-4b13-addc-ac4c45cc2ffe

Anti-personal Mine Contamination

An anti-personnel mine is one of the UXO, and it is a specific type of explosive designed to injure or kill people when triggered by their presence. Cambodia identified AP mined area of 435km2 in 10 provinces at the end of 2023, details can be seen in the following table.

Table A6 3-1 AP mined area at the end of 2023[39]

No.	Province	No. of Suspected hazardous area	Area (m2)
1	Banteay Meanchey	999	65,391,084
2	Battambang	947	88,806,660
3	Kampong Thom	2	306,058
4	Koh Kong	297	17,992,686
5	Oddar Meanchey	614	67,625,395
6	Pailin	233	11,510,222
7	Preah Vihear	606	108,384,799
8	Pursat	539	59,318,422
9	Ratanak Kiri	4	950,755
10	Siem Reap	89	14,778,004
	Total	4,330	435,064,085

* Provinces which may involve in CSET project are highlighted in blue color.

Status of UXO/ERW/Landmine Clearance in Cambodia

Cambodia has been actively engaged in UXO clearance operations since the 1990s.
Key organizations involved include[40]:

Management Authority

CMAA (Cambodian Mine Action and Victim Assistance Authority)[41]: Established by Royal Decree No. 160 on September 4, 2000, the CMAA is the government agency responsible for regulating, demining and explosive remnants of war (ERW) clearance activities, as well as providing risk education and assistance to mine/ERW victim, providing license and accreditation, coordinating, and monitoring all mine action activities, i.e. mine/ERW clearance, as well as for formulating national mine action strategies and plants to achieve the priorities identified by RGC's development policies.

National Operators

1. **CMAC (Cambodian Mine Action Centre)**: The primary national agency, working in the key areas of Survey and Land Release, Mine and UXO Clearance, Mine and UXO Risk Education and Training, Research and Development.
2. **RCAF (Royal Cambodian Armed Forces):** CMAC partnered with the Royal Cambodian Armed Forces in its 10-year demining project. Around 250 RCAF retired members and staff of RCAF help CMAC's demining activities.

[39] https://www.mineactionreview.org/assets/downloads/Cambodia_Clearing_the_Mines_2024.pdf
[40] Mine Action Review 2024: https://www.mineactionreview.org/assets/downloads/Cambodia_Clearing_the_Mines_2024.pdf
[41] Clearing For Result Phase IV-Mine Action For Human Development-Cambodia: https://www.undp.org/cambodia/projects/clearing-result-phase-iv-mine-action-human-development?utm

3. **CSHD (Cambodia Self-Help Demining in Cambodia):** CHSD is founded in 2007 and has about 25 deminers. Their team focus on low priority areas in the country.
4. **NPMEC (National Centre for Peacekeeping Forces Management, Mines and Explosive Remnants of War Clearance):** NPMEC is a Cambodian governmental body responsible for managing and deploying peacekeeping forces, as well as overseeing the clearance of landmines and unexploded ordnance (UXO) within the country.

International Operators

1. **MAG (Mines Advisory Group):** International NGO that finds, removes and destroys landmines, cluster munitions and unexploded bombs from places affected by conflict.
2. **HALO Trust (Hazardous Area Life-support Organization):** International NGO working on large-scale demining and UXO disposal since 1991 in Cambodia.
3. **APOPO (Anti-Persoonsmijnen Ontmijnende Product Ontwikkeling):** APOPO is a registered Belgian non-governmental organisation and US non-profit which trains southern giant pouched rats and technical survey dogs to detect landmines and tuberculosis, also joined the demining efforts in 2014.
4. **NPA (Norwegian People's Aid):** NPA have been working in Cambodia since 1992, initially in support of efforts to repatriate Cambodian refugees returning from Thailand. It has been actively involved in Cambodia's mine action sector since 2013, focusing on cluster munition clearance in Ratanakiri province Partnering with CMAC, NPA expanded survey and clearance operations across eastern Cambodia. In 2022, NPA played a key role in declaring Kep province mine-free and continues to support Cambodia's mine-free 2025 goal, including clearance efforts along the Thai-Cambodian border to promote regional security.

Other Actors

1. UNDP (United Nations Development Programme)
2. GICHD (Geneva International Centre for Humanitarian Demining)
3. ARMAC (ASEAN Regional Mine Action Centre)

Status of Clearance over Target Areas all over the Country

Cambodia humanitarian mine action began in 1992. According to CMAA in 2017[42], over 1,544,958,523 m² (about 1,545 km²) of contaminated land has been cleared for productive use; 1,036,376 anti-personnel mines, 24,251 anti-tank mines, and
2,660,638 items of explosive remnants of war were found and destroyed. The number of Mine/ERW casualties has been brought down from 4,320 per year in 1996 to an annual average around 100 in a year over the last five years.

In the three years from 2018 to 2020, a total of 280,353,909 square meters of mine contaminated area were released by all operators to support physical infrastructure and socio-economic development as well as risk reduction, and in comparison with the reporting period target of 328,000,000 square meters, Cambodia achieved 85% of the planned target.[43]

[42] National Mine Action Strategy: https://firebasestorage.googleapis.com/v0/b/cmaa-b0275.appspot.com/o/news%2Fge9dj1616923830929NMAS_in English.pdf?alt=media&token=1b66e55e-085f-46d7-813e-91181f6ec24c

[43] Evaluation Report of the Three-Year Implementation Plan 2018-2020 of the National Mine Action Strategy 2018-2025: https://firebasestorage.googleapis.com/v0/b/cmaa-b0275.appspot.com/o/news%2Fqdnsol1655105530214Evaluation Report of the Three-Year Implementation Plan 2018-2020_EN_Final-V1.pdf?alt=media&token=cd058433-7b3a-40a5-adfb-add2f7891317

Table A6 4-1 Results of releasing mine contaminated area (2018 to 2020)

Results of releasing mine contaminated area compared with target			
Years	Area released	Target	Performance rating
2018	94,195,887	109,600,000	86%
2019	91,370,190	109,600,000	83%
2020	94,787,832	109,600,000	86%
Total	280,353,909	328,800,000	85%

Laws, regulations, and decrees regarding UXO

UXO clearance in Cambodia follows national and international standards, including the National Mine Action Strategy (NMAS) and the International Mine Action Standards (IMAS).

1. **Anti-Personnel Mine Ban Convention (1999):** Cambodia is a participant in this international treaty, which bans the use, stockpiling, production, and transfer of anti-personnel mines. It also requires the destruction of all landmines and mandates that states assist landmine victims. Article 5 of the Convention allowed for a 10-year period for the destruction of anti-personnel mines, which Cambodia extended until 2019.

2. **Royal Decree No. 177 (2000):** This decree established the Cambodian Mine Action and Victim Assistance Authority (CMAA), tasked with regulating, monitoring, and coordinating mine action activities in Cambodia. The CMAA integrates development projects into mine action and coordinates the Mine Action Technical Working Group (MA-TWG), aiming to align and harmonize aid for mine action.

3. **Sub-decree No. 70:** This regulation outlines the guidelines for the socioeconomic management of mine clearance operations. It covers the process for clearing and releasing land, which includes conducting non-technical surveys, detailed surveys, and clearance operations. It also requires community meetings and action plans for landmine clearance.

4. **The Law on the Protection and Promotion of the Rights of Persons with Disabilities (2009):** This law ensures that Cambodia provides assistance to victims of landmines in accordance with the Anti-Personnel Mine Ban Convention and the UN Convention on the Rights of Persons with Disabilities.

Procedures for UXO/ERW/Landmine Risk Management

UXO/ERW/Landmine risks pose serious threats to workers and communities. If the sub-project activities involving excavation and construction activities are proposed in the provinces particularly in the heavily contaminated provinces mentioned in chapter 3, the identification of UXO/ERW/Landmine risks shall be conducted by the implementing agencies through the secondary data collection from the Cambodian Mine Action and Victim Assistance Authority (CMAA).

The implementing agency (Electricité du Cambodge (EDC) and Ministry of Mines and Energy (MME)) shall not permit and commence any sub-project activities which includes excavation work and construction work at the locations where identified the UXO/ERW/Landmine risks unless the UXO/ERW/Landmine clearance has been obtained from the Cambodian Mine Action and Victim Assistance Authority (CMAA).

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Chance Find Procedure for UXO/ERW/Landmine

This chance find procedure should be applied to all the project sites identified under the CSET Project particularly in the heavily contaminated provinces mentioned in chapter 3. If UXO is discovered during construction:

1. Immediately halt all work and evacuate the area.
2. Immediately restrict access to the area to prevent accidental detonation.
3. Immediately notify local authorities, CMAA, CMAC, and PMU.
4. Set the signs and markings with the use of yellow, red, and blue ropes in the landmine/UXO existing area to warn the public.
5. Inform local communities to avoid the area until clearance is completed.
6. Wait for certified UXO clearance teams to assess and dispose of the UXO.
7. Report the UXO find to PMU and CMAA, and ensure proper documentation.

Conclusion

This UXO/ERW/Landmine Risk Management Protocol ensures that all infrastructure development under the Proposed Project in Cambodia adheres to strict UXO safety guidelines, reducing risks to workers and communities while ensuring compliance with Cambodian national law and regulations

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ANNEX-9: COMMUNITY HEALTH AND SAFETY GUIDELINE

1. Introduction

1.1 Project Context

The Cambodia Sustainable Energy Transition (CSET) Project (P508278) is a World Bank-financed initiative designed to support Cambodia's long-term energy transition by enhancing grid reliability, integrating renewable energy sources, and promoting industrial energy efficiency. The project aligns with Cambodia's Power Development Plan (PDP) and the government's commitment to achieving a 70% renewable energy mix by 2030, while also ensuring energy affordability and security. Through targeted infrastructure investments and policy interventions, the project aims to modernize Cambodia's energy sector, expand electricity access, and improve energy efficiency in key industries.

1.2 Project Development Objective and Project Components

The project aims to support the government's energy sector priorities by:

- Upgrading electricity grids for enhanced capacity, reliability, and efficiency, including integration of renewable energy and clean power imports.
- Enabling and promoting E-mobility.
- Driving energy efficiency investments in the industrial sector to support the National Energy Efficiency Program (NEEP).

These objectives align with the goals of the NEEP and the government's socio-economic development agenda.

- ***Project Components.***

To meet the above PDO, the following project activities will be implemented. These activities are organized into three components, as summarized below:

Component 1: **Grid Strengthening for facilitation of Energy Transition**

- ***Sub - Component 1.1: Grid Strengthening for facilitation***
  This sub-component will finance the construction of one 230 kV and one 115 kV double circuit transmission lines with associated substations to meet the growing demand for electricity and enable increased clean power imports from Lao PDR.
  Specific investments include:
  - **230 kV transmission line** from GS Lvea Am to GS Arey Ksat (15 km)
  - Substations**: New 115 kV substations at Arey Ksat (ARK) and Chroy Chang Va III (CCV III) Substations,** and **230 kV line bay extension** at Lvea Am Substation.

- ***Sub-Component 1.2: Battery Energy Storage System (BESS) Investment***
  This investment will finance 150 MW of Battery Energy Storage Systems (BESS) to improve Cambodia's ability to manage frequency (primary, secondary, tertiary control), enable load shifting, and enhance grid reliability—especially under high penetration of solar and variable renewable energy.

- ***Sub-Component 1.3: Distribution Network Expansion and Strengthening***
  This sub-component addresses the gap in electricity access in unelectrified villages, while improving service reliability in rural areas. Investments include:
  - MV/LV network extension and installation of poles, transformers

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Component 2: **Industrial Energy Efficiency Investments**

- ***Sub-Component 2.1: Credit Line for Industrial Energy Efficiency (MME)***
  This sub-component provides concessional credit lines to industrial enterprises for investments in energy-efficient equipment and technologies, contributing to reduced operating costs and GHG emissions. Priority sectors include agro-processing, food, apparel, cement, and light industry.

Component 3: Implementation Support and Technical Assistance

- **Sub-Component 3.1: Implementation Support to MME**
  This sub-component will strengthen MME's institutional and technical capacity to oversee the Industrial Energy Efficiency Credit Line (Component 2), including development of the Operational Manual, establishment of the ESMS for SME Bank and FTB, and provision of training on E&S risk management, gender, and grievance handling.

- **Sub-Component 3.2: Implementation Support to EDC**
  This will support EDC's Project Management Unit (PMU), including technical supervision, procurement and financial management support, and environmental and social compliance monitoring through EDC's Social, Environmental, and Public Relations Office (SEPRO).

1.3 Purpose of the Community Health and Safety Guideline

This Community, Health, and Safety Guideline (CHSG) is prepared in accordance with the WB's Environmental and Social Framework (ESF), particularly the ESS4 (Community Health and Safety) and the WB's Environmental, Health, and Safety (EHS) Guidelines. The CHSG is also in line with relevant laws and regulations of the Royal Government of Cambodia (RGC). The main purpose of the CHSG is to provide guidance on the key principles involved in ensuring the health and safety of community and workers are protected and preparation of the community, health, and safety plan (CHSP).

2. Principles

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

2.1 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.

2.2 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).

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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.

2.3 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 include the correct use of PPE and providing employees with appropriate incentives to use PPE.

2.4 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.

2.5 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.

3 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;

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- 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.

4 Implementation

4.1 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.

4.2 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.

4.3 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

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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.

5 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

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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 MME and EDC 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 MME and EDC 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.

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ANNEX-10: ENVIRONMENTAL AND SOCIAL MONITORING AND REPORTING TEMPLATE

1. Introduction

The Cambodia Sustainable Energy Transition (CSET) Project supports Cambodia's shift toward sustainable and resilient energy infrastructure through grid strengthening, battery energy storage systems (BESS), e-mobility infrastructure, and clean energy access. This Monitoring and Reporting Template is designed for use by the Project Management Unit (PMU), housed within the Ministry of Mines and Energy (MME) and Electricité du Cambodge (EDC), to track and implement internal reporting process in compliance with the Environmental and Social Management Framework (ESMF), and other safeguards instruments.

This template shall be completed quarterly during the first year of implementation and semi-annually thereafter and submitted to the Project Steering Committee (PSC) and the World Bank.

2. Monitoring and Reporting Outline

Following is a recommended outline for the Environmental and Social Monitoring Report to be submitted on a regular basis to the PSC and World Bank. It includes a basic table of contents with an explanation recommending what information each chapter should contain. Some tables for some of the environmental and social risk issues are presented as examples, although this is not an exhaustive set of data requirements and table formats. For details of measurements and preparation of monitoring requirements, please refer to each associated annex of this ESMF, such as ESMP, Biodiversity Management Plan, and other E&S documentation.

Cover Page and Project Information

- Project Title, Reporting Period, Submission Date
- PMU Name and Contact
- Names of report preparers and responsible focal points

Abbreviations and Glossary

- List of acronyms and key terms

1. Introduction

This section shall provide a brief statement as to what the document is about and the document linkages to previous monitoring report, covering -

- Purpose of the report
- Reporting period
- Linkages to previous monitoring reports

2. Institutional Structure and Staffing

This section is designed to provide -

- PMU structure and updates
- Safeguards staffing: Environmental and Social Specialists, Consultants (Including Any Replacements or Substitutions)
- Contractor mobilization for the proposed project activities (Provide information about the contractors recruited for each project activity)

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3. Project Implementation Status

This is the most important, providing updates on the status of the Project Components, sub-components and activities. Furthermore, the progress on the implementation of ESCP and the performance / compliance status of the E&S requirements set in the ESMF, and all ES instruments should be more focused and included in this E&S monitoring report.

Some examples of data table formats which could be included in this section (but not limited to) are described in the example tables.

Table 1. Component Progress Summary

Component	Sub-Component	Description	Status	Physical Progress (%)	Issues / Remarks

Table 2. Environmental and Social Instrument Implementation Status

Instrument	Applied to -	Status (Draft, Approved, Under Implementation)	Implementer	Key Updates	Remarks
ESIA	Component (x.x)	Draft	Third Party Consultant –		
ESMP	Component (x.x)	Approved			

4. Stakeholder Engagement and Consultation

4.1 Stakeholder Meeting and Consultation

This section should capture public meetings, community consultations, and technical workshops conducted. Include data disaggregated by gender and stakeholder group.

Table 3. Stakeholder Consultations and Engagement

Date	Location	Stakeholders Engaged	Female Participants	Male Participants	Summary of Discussion

4.2 Awareness raising and capacity building

Here, detailed training programs, awareness campaigns, or engagement events with government, workers, or local communities to promote safeguards compliance should be included.

Table 4. Awareness Raising and Capacity Building

Date	Topic	Target Audience	Female Participants	Male Participants	Status

5 Environmental Risk Management

5.1 Environmental Compliance Summary

Summarize environmental monitoring results, focusing on site-specific ESMPs and contractor environmental obligations. Identify recurring issues and good practices.

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Table 5. Environmental Compliance Summary

Sites	Date of Visit	Observation	Mitigation Measures	Responsible Party	Status

5.2 Environmental Incident and Non-compliance Summary

Log any environmental incidents, such as spills, waste mismanagement, or vegetation clearance beyond agreed limits. Include the type of response taken.

Table 6. Environmental Incident and Non-compliance Summary

Date	Site	Incident Description	Severity	Immediate Actions Taken	Follow-up Actions

6 Social Risk Management

6.1 Land Acquisition, Access Restriction and Livelihood Impact

Report progress on land acquisition, including status of compensation and livelihood restoration.

Table 7. Land Acquisition, Access Restriction and Livelihood Impact Summary

Sites	Type of Impact	Affected Households	Types of Compensation	Grievances Raised	Remarks

6.2 Labor and Working Conditions

Track the use of labour by type, gender, skill, and location. Note adherence to fair labour standards, grievance channels, and child/forced labour avoidance.

Table 8. Labor and Working Conditions Summary

Contractor	Month	No of Local Workers	No of Migrant Workers	Female / Male Ration	Skill / Unskilled Ratio	Remarks

7 Health and Safety

7.1 Health and Safety Summary

Summarize occupational health and safety performance and incident reports. Include minor injuries, near misses, and fatalities, if any.

Table 9. Health and Safety Summary

No	Type of H&S Incident (near miss, minor injuries, major injuries, fatalities)	Location	Immediate Action Taken	Follow-up Actions	Remarks

7.2 Summary of OHS Training

Track training activities aimed at improving worksite safety, personal protective equipment (PPE) use, and emergency response awareness.

Table 10. OHS Training Summary

Implementer	Date	Topic	Target Group	No of Trainee	Remarks

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8 Grievance Management

8.1 Grievance Register

All grievance received shall be recorded by using the formal below or appropriate grievance record if already developed. Provide the details of grievance register in this section.

Table 11. Grievance Register

Grievance Registration No (GRM ID)	Date	Name	address	Contact No.	Description of Grievance	Name of person taking the Grievance	Type of Grievance	Directed to whom	Status of resolution	Details of resolution

8.2 Summary of Grievance by Types

Summarize grievances collected through the GRM under different thematic areas (e.g. land, labour, community health).

Table 12. Grievance Breakdown Summary by Types

GRM ID	Date	Related Project	Complaint	Type of Complaint	Status (Received, Resolved, Pending)	Avg Resolution Time	Resolution Summary

8.3 Regional Breakdown of Grievances

Identify the geographic distribution of grievances to highlight hotspots or trends in engagement.

Table 13. Regional Grievance Breakdown Summary

Province	District	Total Grievances Received	Resolved Grievances	Under Processing Grievances	Grievances Taken to Court	Not Project Related	Remarks

9 Incident Reporting

9.1 Summary of Incidents by Severity

Categorize and document reported incidents based on their severity and impact. Distinguish between minor, serious, and severe incidents.

Table 14. Indicative Incident

Date	Location	Incident	Severity (Minor, Serious, Severe)	Status	Notified to – (PSC, World Bank)

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9.2 Incident Log Template

All serious incidents (e.g., fatalities, major environmental or social harm, gender-based violence, forced eviction, etc.) must be reported within 48 hours of occurrence. The PMU is responsible for compiling, verifying, and submitting incident reports, whether they originate from the MME, EDC or their contractors. Contractors and field implementers must inform their supervising agency immediately and document the event using the template below. Reports should include both immediate responses taken and corrective actions planned. The PMU is accountable for follow-up, recordkeeping, and escalation to the World Bank.

Table 15. Incident Reporting Template

No	Field	Description (Example)
1	From	Name of person reporting (MME/EDC/Implementing Contractors)
2	Title	Position of reporter
3	To	Position of to whom the incident is informed
4	Date of submission	DD/MM/YYYY
5	Date of incident	DD/MM/YYYY
6	Location	Site/Province
7	Related Project Activities	e.g., Rural Electrification
8	Nature of incident	e.g., serious injury, fatality, environmental spill
9	Severity classification	Minor / Serious / Severe
10	Description of incident	Factual summary of what occurred
11	Name(s) / Occupations of involved staff or parties	If known
12	Details of person(s) who reported	Information about the person who first reported the incident
13	Immediate response taken	Actions taken onsite
14	Follow-up measures planned	Mitigation or corrective actions
15	Additional comments	Lessons, escalation needed, etc.
Details of Actions by PMU (For PMU Use Only)		
1	Name/Position of the PMU Staff incident was reported	
2	Comments / Recommendations from PMU	
3	Would PSC be informed about this incident?	Yes/No; include date of notification
4	Would WB be informed about this incident?	Yes/No; include date of notification

** Note: It is important that incidences of child abuse and sexual harassment and severe criminality / social risks that may involve Project staff are documented and brought to attention of MME, EDC and World Bank for information and determination if further investigation is needed to avoid any possible negative consequences on the Project.*

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10 Annexes

Attach supporting documents that provide evidence or elaboration on items covered in the main sections.

1. Maps of Project Sites
2. Minutes of Consultation Meetings
3. Permits Obtained
4. Summary Reports from Contractors
5. Specialized Monitoring (e.g., Biodiversity, Resettlement)
6. Photos of Activities

NOTE: All reports must be aligned with the ESCP, and instruments including the ESIA, ESMP, IPP, SEP, and LMP. Serious incidents must be reported to the World Bank within 48 hours using the Incident Notification Template.

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ANNEX-11: ENVIRONMENTAL AND SOCIAL CODE OF PRACTICES FOR CONSTRUCTION ACTIVITIES

Potential Risks/Impacts	Mitigation Measures
1. Noise	a) Perform noisy operations during less sensitive hours (e.g., 9 AM to 5 PM). b) Plan activities in consultation with communities while activities are implementing inside the village so that noisiest activities are undertaken during periods that will result in least disturbance. c) Use possible noise-control methods such as fences, barriers or deflectors (such as muffling devices for combustion engines or planting of fast-growing trees) d) Use low-noise equipment such as mufflers/silencers for compressor engines and use vibration dampening such as rubber mats or dampers under equipment while working very close to the houses in villages e) Minimize project transportation through community areas.
2. Soil erosion	a) Contour and minimize length and steepness of slopes. b) Use mulch, grasses or compacted soil to stabilize exposed areas. c) Cover with topsoil and re-vegetate (plant grass, fast-growing plants/bushes/trees) construction areas quickly once work is completed. d) Design channels and ditches for post-construction flows and line steep channels/slopes (e.g., with palm frowns, jute mats, etc.).
3. Air quality	a) Minimize dust from exposed work sites by applying water on the ground regularly. b) Do not burn site clearance debris (trees, undergrowth) or construction waste materials. c) Keep stockpile of gravel/sand materials covered to avoid suspension or dispersal of fine soil particles during windy days or disturbance from stray animals.
4. Water quality and availability	a) Activities should not affect the availability of water for drinking and hygienic purposes. b) No soiled materials, solid wastes, toxic or hazardous materials should be poured or thrown into water bodies for dilution or disposal. c) The flow of natural waters should not be obstructed or diverted to another direction, which may lead to drying up of riverbeds or flooding of settlements. d) Separate as best as possible concrete works in waterways and keep concrete mixing separate from drainage leading to waterways.
5. Solid and hazardous waste	a) Collect and transport construction waste to appropriately designated/ controlled dump sites. b) Maintain waste (including earth dug for foundations) at least 300 metres from rivers, streams, lakes and wetlands. c) Use secured area for refuelling and transfer of other toxic fluids distant from settlement area (and at least 50 metres from drainage structures and 100 metres from important water bodies); ideally on a hard/non-porous surface. d) Train workers on correct transfer and handling of fuels and other substances and require the use of gloves, boots, aprons, eyewear and other protective equipment for protection in handling highly hazardous materials.

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Potential Risks/Impacts	Mitigation Measures
	e) Collect and properly dispose of small maintenance materials such as oily rags, oil filters, used oil, etc. Never dispose spent oils on the ground and in water courses as it can contaminate soil and groundwater (including drinking water aquifer). Use safe disposal method capable by rural community, for example, burning spend oil as fuel.
6. Health and Safety	a) Provide personal protective gear for workers for construction work as necessary (gloves, dust masks, hard hats, boots, goggles). b) Train workers for any risks and hazards such as UXO for any excavation work. c) Keep worksite clean and free of debris on daily basis. d) Keep corrosive fluids and other toxic materials in properly sealed containers for collection and disposal in properly secured areas. e) Ensure adequate toilet facilities for workers from outside of the community. f) Rope off construction area and secure materials stockpiles/ storage areas from the public and display warning signs. Do not allow children to play in construction areas. g) Fill in all earth borrow-pits once construction is completed to avoid standing water, water-borne diseases and possible drowning. h) Each construction activity to have a basic first-aid kit with bandages, antibiotic cream, etc. i) Control speed limits for mobilizing the construction materials and equipment within community areas/village j) Install safety signage as necessary and where applicable
7. Other	a) No cutting of big trees or destruction of vegetation other than on construction site. b) No hunting, fishing, capture of wildlife or collection of plants. c) No use of unapproved toxic materials including lead-based paints, un-bonded asbestos, etc. d) No disturbance of cultural or historic sites, if any. e) Supervise for, 1) children not to enter the site and 2) not to have child labour.

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