TERMS OF REFERENCE

Feasibility Study,

Topographical surveys, Geotechnical investigation, LiDAR survey, Environmental and Social (E&S) Screening, Scoping, Baseline, and E&S Management Planning Framework, and Detailed Engineering Design including Environmental & Social Impact Assessment and Instruments

"Country Climate Resilient Sustainable Irrigation and Water Drought and Flood Mitigation (CCRSIWDFMP)" Project (Phase 1)

PPSF Grant Number S000655
(Contract Number: CAM-PMU-CS-6)

1. Introduction and Background

The Royal Government of Cambodia (RGC) requested AIIB assistance to finance the Country Climate Resilient Sustainable Irrigation and Water Drought and Flood Mitigation (CCRSIWDFMP). As a result, AIIB approved a grant of USD4,950,000 under the Project Preparation Special Fund (PPSF) to assist the RGC to support the project preparation, including Feasibility Study (FS), Topographical surveys, Geotechnical investigation, Lidar survey, economic assessment, environmental and social impact assessment, and detailed engineering design (DED) and other activities. The overall total project cost is USD 500 million, divided into two phases: Phase 1 USD200 million and Phase 2: USD300 million aimed at improving water availability and security, in particular during the dry season and building climate adaptation and resilience by mitigating impacts of flood and drought.

Cambodia is one of the most vulnerable countries to flood and drought disasters in the region with significant socio-economic impacts with projected increasing climate change effects. The proposed CCRSIWDFMP aims to address the urgency for improving adaptive capacity and resilience to impacts of climate change in the water resources sector through enhancing water security, improved irrigation service delivery, and mitigation of the impact of floods and droughts on food production and livelihoods in rural areas and municipalities within 15[1] selected provinces (based on the MOWRAM's Minister decision and recommendation) in Cambodia, subject to further project site selection.
The project phase 1 is covering from 2027 to 2031; the present Terms of Reference (TOR) is basically related to Phase 1.

The proposed phase 1 project will support the RGC's efforts to strengthen climate resilient sustainable irrigation and water drought and flood mitigation to foster agricultural and socio-economic development in the initial **Six** targeted provinces are severely affected by climate extremes namely; Kampong Thom, Preah Vihear, Siem Reap, Oddar Meanchey, Banteay Meanchey and Pursat. The proposed irrigation schemes for the Feasibility Study (FS) are included in the river basins of Stung Chinith, Stung Sen, Stung Chikreng, Stung Sreng,Stung Sisaphon, and Stung Purst, all of which are located in the northwestern provinces part of Tonle Sap Lake. Map of

[1] 15 target provinces = Kampong Speu, Kampong Chhnang, Pursat, Battambang, Banteay Meanchey, Oddar Meanchey, Siem Reap, Preah Vihear, Kampong Thom, Kampong Cham, Kandal, Prey Veng, Svay Rieng, Takeo and Kampot

the proposed existing irrigation schemes in project target Area is provided in figure 1, and for a list of references and for more detailed proposed irrigation schemes in Annex - 3. Critical strategies include: Improving irrigation efficiency, promoting water reuse and recycling, implementing water-efficient technologies, and ensuring equitable water allocation. Furthermore, environmental and social impacts must be central considerations in water management practices. Active involvement of local communities in decision-making is crucial for long-term success and sustainability. The proposed number of existing reservoir rehabilitation and modernization is mainly subject to the actual FS outcomes, and the DED studies can be done in Phase 1.

Kampong Thom Province –Three (03) irrigation schemes proposed with estimated command area of 20,000 ha include: **1**. improving the **Ou Koki Dam,** storage 300 MCM for supplementary supply for Stung Chinit Reservoir; **2**. improving **Padak Reservoir**, and rehabilitating of a on-stream reservoir, storage 200 MCM for supply to 30 Kanha Reservoir, and other demand downstream; and **3**. **Chey Sen Barrage and Diversion**, rehabilitate and improving of a canal diverting water from Stung Sen to supply into 30 Kanha Reservoir in Staung River.

Preah Vihear Province – Three (03) sub-projects are selected with an estimated command area of 20,000 ha aimed at creating additional water storages and facilities, improving the existing reservoir system, developing and improving increased storage capacity irrigation and drainage systems, and improving flood diversion canals.**1**. **Tumnub Ou Chonh**, improves existing reservoir system by improving reservoir to increase storage capacity to 50 MCM and by developing irrigation and drainage system. **2**. **Tumnub Stung Sambo**, improve existing reservoir system by improving reservoir to increase storage capacity to 10 MCM and by developing irrigation and drainage system, and **3**. **Tumnub Moradak Techo**, improve existing reservoir system by improving reservoir to increase storage capacity to 5 MCM and by developing irrigation and drainage system.

Siem Reap Province – Three (03) key irrigation systems are proposed to cover an estimated command area of 33,000 ha aimed at: **1**. improvement and modernization of irrigation and distribution networks of the **M'Kak reservoir** to increase the storage capacity, **2**. **Tumnub 78 Irrigation***,* improvement and modernization of irrigation distribution and drainage networks, and upgrading an off-stream reservoir; and **3**. **Spean Sreng**. Improvement and modernization of irrigation system and distribution networks, under Sreng 1 and Sreng 2 Reservoirs in Srey Snam and Pouk Districts.

Oddar Meanchey Province – The proposed (03) intervention areas aim to cover 32,000 ha. Includes improving existing reservoirs, upgrading irrigation distribution networks, and renovation of existing reservoirs. **1. Teuk Chum System**, Improvement of the Teuk Chum Reservoir, 10 MCM, and upgrading irrigation distribution networks; **2**. **Beng Reservoir system***,* Improvement of Ben reservoir, 15 MCM, and upgrading irrigation distribution networks and drainage facilities, and **3**. **Chong Kol Reservoir**, Improvement of Chong Kal reservoir, 10 MCM, and upgrading irrigation distribution networks.

Banteay Meanchey Province - The proposed two (02) intervention areas aim to cover 6,500 ha. Includes : **1**. **Dredging Stung Pouk River,** improvement of the existing flood diversion canal; dredging the Stung Pouk Rivers, 78 kilometers, to reactivate flood diversion capacities and create storage along the river, and construction of water control structures; and **2**. **Improvement of Trapaing Thmar irrigation system** upgrading water control structures around the area to better provide farmers with improved irrigation services, maximizing water allocation and efficiency and to also mitigate impact of flood risks.

Pursat Province – Proposed one (01) Intervention Area: **1. Charek Irrigation Canal.** The intervention focuses on improving and upgrading the existing Irrigation Canal and its system. The aim is to enhance irrigation efficiency and mitigate flood risks in the area, and expected to cover approximately **13,500 hectares** across six communes, and two districts Kandieng and Krakor.

Figure 1. Map of the Target provinces and proposed subproject under the CCRSIWDFMP – Phase 1

2. Project Description and Consultancy Assignment

2.1 Project objective.

The Ministry of Water Resources and Meteorology (MOWRAM) is currently looking for a qualified and experienced consulting firm to conduct a range of project preparation activities, including a feasibility study and other relevant studies and surveys such as climate change flood/drought risk assessment, topographical and LiDAR/DGPS surveys, geotechnical investigation, environmental and social (E&S) impact assessment and required E&S instruments, and detailed engineering design (DED) of the selected sub-projects proposed in the targeted provinces to ensure that the identified subprojects are technically and economically viable and feasible and to meet the financing requirements of AIIB and the RGC and related technical requirements and of the Implementing Agency (IA), the MOWRAM. The selected consulting firm is expected to develop and support the MOWRAM to prepare an investment project and sub-projects that best fit the following components.

2.2 Project components.

Component 1: Strengthening Flood Protection Infrastructures aims to reduce flood risk and vulnerability by rehabilitating, improving, and expanding flood control and protection

infrastructures. Envisaged activities under the component include (i) development of catchment development plans, infrastructure safety inspections, rehabilitation and upgrading of flood diversion channels and water storages for improving dry season cropping, (ii) strengthening of slope and bank protection for rivers and water storages for dry season cropping, (iii). reconstruction of water infrastructures damaged by recent floodings (from 2020 and later), (iv) establishing flood early warning systems and, if any piloting innovative solutions identified under Component 3, and, (v) construction of (emergency) spillways on existing reservoirs, to ensure the controlled release of excess water, maintaining the reservoir's water level below a predetermined safe limit and protecting the dam and downstream areas from damage. (vi) construction of watershed management infrastructures using nature-based solutions in reducing flood extreme magnitude, and implementation of critical measures to comply with AIIB's requirements on dam safety, including dam inspections, safety analysis and potential rehabilitation.

Component 2: Modernization and Strengthening of Irrigation and Drainage Systems aims to reduce their vulnerability to water stress drought and flooding and to optimize productivity of land and water by rehabilitation, upgrading and modernization of existing irrigation and drainage networks and their management. Activities under this component include: (i) rehabilitating and improving irrigation and drainage infrastructures with a complete system, (ii) rehabilitating and upgrading water storages to cope with intensified droughts, (iii) establishing and strengthening Farmers and Water Users Communities (FWUC), (iv) introducing and disseminating high-efficiency and low-carbon irrigation technologies, (v) The project will: (a) remodel existing reservoirs and/or improve existing reservoirs operation to increase flood protection capacities; (b) introduce flood risk mitigation interventions (e.g. flood dike strengthening, ring levee to protect communities, drainage improvements) with nature-based solutions; (c) develop and operate flood forecasting and early warning systems with the development of flood risk maps; and (d) develop and operate gender-responsive community flood preparedness plans and (vi) if any, piloting innovative solutions identified under Component 3 e.g. nature- based solutions.

Component 3: Flood and Drought Risks Management aims to complement and amplify the infrastructure performance strengthened under Components 1 and 2. The component will establish systems, planning, infrastructure and water resource management that continuously provide insights into the changing flood and drought risks, driven by climate change, and identify innovative solutions. Envisaged activities under the component include (i) mapping the flood and drought risks across the country, (ii) establishing and improving hydrological monitoring systems and water modelling, (iii) establishing data processing systems to allow regular updating of the risk maps complementing to the existing program of the establishment of National Water Resources Management Data Center (NWRMDC), (iv) identifying innovative technology and green solutions (may include nature-based solutions) to optimize the impact of Components 1 and 2. The identified innovative solutions could be piloted under Components 1 and 2 and implemented at a larger scale in Phase 2 of the Project. Analytical works under this component will utilize high-accuracy hydrometeorology, spatial, topography, and socio-economic data acquired from primary and secondary sources. They will provide valuable insights for decision-making in strategizing and implementing disaster preparedness and resource allocation. The project will also strengthen hydrometeorological networks by upgrading existing and installing additional rainfall, river flow, and climate stations with remote monitoring and data transmission system.

Component 4: Project Management aims to strengthen the institutional and managerial capacity of MOWRAM, the Provincial Department of Water Resources (PDWRAM), and related implementing agencies in implementing the Project and managing their irrigation and flood protection systems. Envisaged activities under the component include (i) comprehensive capacity gap assessment and, thereafter, development and implementation of training programs, (iii) training programs to enable data-based operation of the irrigation networks, flood management infrastructures, (iv) workshops and capacity development for establishing river basins management committees in the relevant sub-basins and in line with the existing RBMC sub-decree[2] etc. This component will also provide trainings to river basin committees (RBCs) and officials from MOWRAM in river basin management concepts. In the target river basin groups this will include establishing effective RBCs and assisting RBCs in developing and implementing: (a) effective river basin management plans (RBMPs) with performance monitoring and assessment systems; (b) multiple reservoirs integrated operation

3. Consulting Assignment and the Responsibilities.

The broad scope of work as envisaged is as under:

a. Collection of all available data of the catchment areas, including topographic sheets, hydrological, hydrogeological, meteorological, etc. as may be required for the study.
b. Conduct hydrological and hydrogeological studies for the catchment area to assess the water availability in the catchment;
c. Undertake bathymetric surveys of the reservoir areas to assess the present capacity and extent of siltation in the reservoirs. And compare it with previous data to assess sedimentation rate and process
d. Assess the potential for water capacity enhancement in each reservoir.
e. Review safety risks of all dams and undertake a proportionate program of activities to determine the nature of risks and actions needed to address risks;
f. Conduct safety analysis of dam structures, plan, designs of dam rehabilitation. Conduct dam break analysis and prepare or update emergency preparedness plan. Conduct study and prepare preliminary design on dams whose capacity will be increased, and preliminary study for the construction of new dams (if any).
g. Collection of data related to land use, soil profile, cropping pattern, social and economic condition in the command area;
h. Undertake walk though survey to ascertain the canal system and irrigation network in the command area;
i. Undertake environmental and social activities as set out in section 3.3 below
j. Undertake complete topographic survey in the project and command area to plan the irrigation network and drainage, floodway, diversion canals, and rivers
k. Analysis of International Policy on International Relations (OPIR) as required by AIIB
l. Undertake detailed analysis of RBM including sustainable Lake Management for the Tonle Sap Lake
m. Undertake agriculture related studies to suggest the cropping pattern, crop water requirement and other related factors required for the optimum yield of the produce.
n. Plan and design the irrigation network for the project area; and floodway/diversion canals and structures

[2] The sub-decree of river basin management was issued by MOWRAM in 2015 to operationalize the Law on Water Resources Management enacted in 2007 which set a framework of IWRM and river basin planning. The legislation is the basis for the RBC.

o. Plan and design the various cross drainage structures, road bridges or other control structures that may be required on the irrigation network; and on floodway/diversion canals
p. Plan and design the SCADA system for the project – the system shall be proposed from the head work to the field outlet for proper operation and maintenance of the scheme;
q. Prepare the Feasibility Report and Detailed Engineering Design report;
r. Prepare the Bill of Quantity, Specifications and Tender Documents for the project.
s. Prepare relevant project documents for project loan negotiation including project operational manual (POM) and project delivery strategy and procurement plan;
t. Provide training to the stakeholders at various levels during the project design and project execution;

To ensure effective management, quality inputs, and risk mitigation, PMU-MOWRAM will divide the consulting services into **two packages based on the performance**:

- Package 1 – FS and relevant Studies and Surveys (total 20 weeks): Runs from contract signing through public consultation, public hearing, collection of all secondary and field data, assessment of water availability in the system, proposed irrigation network, final recommendations, and approval of MOWRAM for start of the preparation of the TORs for DED.
- Package 2 – DED (total 58 weeks): Conducting all additional surveys in the selected subproject area, undertake planning and design of the proposed activities, preparation of drawings, designs and other related aspects of the DED, preparation of bill of quantities, specifications and Tender Documents, finalizing ESIA reports, ESMPs, RAPs, and other applicable action plans (for each project/sub-project). Prepare relevant project documents for project loan negotiation including project operational manual (POM) and procurement delivery strategy

3.1. Detailed Tasks under the FS and relevant Studies and Surveys: Conduct a comprehensive FS and develop preliminary designs for a maximum of 15 proposed schemes/infrastructures (subjects to be changed based on inception plan and studies) across the six provinces. The objective of the FS is to ensure the proposed irrigation schemes are technically sound, economically viable, socially acceptable, and environmentally sustainable.

1. **Technical assessment:** Collection of all available data including the water availability in the catchment areas of all the proposed subprojects; evaluate the extent of increase in the storage capacity of the reservoirs; assess the existing dam and head regulator structures viz-a-viz the anticipated increase in the reservoir capacity; evaluate soil suitability, topography, and water availability (surface/groundwater) in the project area. Determine optimal irrigation methods and infrastructure design. Analyze climate risks (droughts, floods) and climate change resilience Review safety risks of all dams and undertake a proportionate program of activities to determine the nature of risks and actions needed to address risks; Conduct safety analysis of dam structures, plan, designs of dam rehabilitation. Conduct dam break analysis and prepare or update emergency preparedness plan. Conduct study and prepare preliminary design on dams whose capacity will be increased, and preliminary study for the construction of new dams. Integrate environmental and social requirements including in relation to the release of environmental / ecological flows, and analysis of International Policy on International Relations (OPIR) as required by AIIB.

2.**Economic & Financial Sustainability**: Conduct economic analysis and undertake agriculture-related studies to suggest the cropping pattern, crop water requirement, and other related factors

required for the optimum yield of the produce. Project agricultural productivity gains, crop yield increases, and diversification potential, and develop financing models, including farmer contributions, government subsidies, or donor funding.

3**. Environmental and Social impact and risk management activities:** Undertake E&S activities described in section 3.3 below relating to the FS.

4**. Risk Analysis & Mitigation:** Identify risks (e.g., cost overruns, climate shocks, community resistance). Develop contingency plans (e.g., alternative water sources, disaster preparedness).

5**. Identifying optimal modernization solutions** to strengthen systems, reduce vulnerability to water stress, drought, and flooding, and optimize land/water productivity via rehabilitation, upgrading, and improved management. Designs must incorporate innovative, climate-resilient practices, green construction, safety measures, resource efficiency, and modern tools.

6. **Identification and specification of necessary supplementary surveys and investigations**, including preparation of cost estimates and terms of reference for the package 2.

3.2. Detailed Engineering Design and specification of necessary supplementary surveys: The consulting firm is expected to prepare DED for each of the selected subprojects as recommended from the FS report. To prepare the DED the firm has to conduct all relevant studies and surveys (such as Bathymetric, Topographic, soil, geotechnical) as informed and recommended from the result of the FS. It may require to conduct other assessments and plans needed to meet country E&S requirements, the AIIB Environmental and Social Policy (ESP) and Environmental and Social Standards (ESSs), Good International Practices (GIP), and other relevant E&S standards as per section 3.3.

The scheme shall be planned and design considering all the components anticipated to be undertaken for the project activity. The designs should be based on norms and standards of the MOWRAM. The DED shall integrate innovative, climate-resilient practices, green construction, and nature-based solutions where feasible. It shall include safety measures, resource efficiency, and modern tools. DED shall ensure practical solutions, minimize negative impacts, are cost-effective, meet community needs, and ensure long-term viability (30–35 years). The study shall include Environmental and Social (E&S) safeguard studies as per section 3.3, cost estimations, and procurement assistance (e.g., tender document preparation). The report will support the government and AIIB project processing and procurement, incorporating safeguard documents covering environmental, social, and gender aspects as per section 3.3.

The DED shall be shared with MOWRAM for review and finalization. Post DED approval, a comprehensive design package for each approved sub-projects in the five provinces shall be prepared. Furthermore, surveys for the detailed resettlement plan and Inventory of Loss will be procured through the PMU under a separate budget.

3.3. Environmental and Social (E&S) Impact and Risk Management Activities

3.3.1 Overview

This section sets out the E&S activities that will be carried out concurrently and fully integrated with the FS and DED as part of an iterative design process,

In summary, the E&S activities at the FS stage will comprise:

- Collection of relevant E&S information to support a) assessment of feasibility optioneering (to be proposed in the FS), and b) recommend engineering option(s) that are minimize E&S impacts and risks, cost–effective, and operationally sustainable.

- Based on the data collected, establish E&S baseline conductions for each sub-project (with a focus on sub–project's potential area of influence).
- Conduct E&S scoping and assessment for each proposed sub–project, and propose categorization for each subproject as per AIIB's ESF (Section 19. Categorization).
- Prepare Stakeholder Engagement Plan (SEP), including Grievance Redress Mechanism (GRM).
- Prepare E&S Management Planning Framework (ESMPF) taking into account the E&S risks and impacts identified and preliminarily assessed for all sub-projects identified in the Feasibility Study. Update the &S Management Planning Framework – based on the final version of the Feasibility Study.
- Prepare Land Acquisition and Resettlement Planning Framework (LARPF)
- Indigenous Peoples Planning Framework (IPPF) (if preliminary screening of IP indicate there are IP potentially present in the project's area of influence)
- Integration of E&S requirements in procurement documentation.

The E&S activities at the DED stage will comprise:

- Prepare E&S Impact Assessment (ESIA) (proportional to the E&S risks and impacts identified and preliminarily assessed at FS stage and updated as much as possbile based on the progress of the DED for respective subprojects – as agreed with MOWRAM and AIIB at FS stage based on E&S scoping and categorization) – including additional surveys, modelling, and the similar, to update for a complete E&S baseline and E&S assessment of risks and impacts associated with the latest engineering design that are available at DED stage.
- Prepare E&S Management Plan (ESMP) based on the latest ESIA prepared for the subprojects.
- Prepare Resettlement Plan (RP) and Indigenous People Plan (IPP) – where required.

3.3.2. Institutional Frameworks for Preparation of E&S Instruments

As a minimum standards and guidelines that must be followed and complied with when undertaking E&S activities. The Consultant should note that there is an overlap between technical and E&S disciplines and that a number of these standards and guidelines have implications for technical workstreams. This list is not comprehensive and other key guidance for specific topics should be identified by the Consultant. The threshold standards for AIIB is Good International Practice (GIP), and that should be reflected in all E&S works.

- Applicable national laws, regulations, and policies relevant to the impacts and risks related to environment, occupational health and safety, and social aspects.[3]
- Relevant international treaties and conventions to which Cambodia is a signatory.
- AIIB's Environmental and Social Framework (ESF, 2024 version), including Environmental and Social Exclusion List (ESEL) which is part of the ESF [please note this should be appended to this ToR]
- As part of AIIB's ESF, apply the World Bank Group's (WBG) Environmental, Health, and Safety (EHS) (2007)[4].
- WBG EHS Guidelines for Construction Materials Extraction (2007)[5].

[3] The E&S Consultant is not expected to develop documents for regulatory submissions and approvals.
[4] https://www.ifc.org/en/insights-reports/2000/general-environmental-health-and-safety-guidelines
[5] https://www.ifc.org/content/dam/ifc/doc/2000/2007-construction-materials-extraction-ehs-guidelines-en.pdf

- IFC Performance Standard 6: Biodiversity Conservation and the Sustainable Management of Living Natural Resources including Guidance Note 6[6].
- All ILO conventions signed and ratified by the country, all ILO conventions covering core labor standards and all ILO conventions covering the basic terms and conditions of employment.
- Other relevant Good International Practices (GIP)[7].
- E&S Impact Assessment (ESIA) (or alternative proportional E&S assessment instrument as agreed with MOWRAM and AIIB at FS stage based on E&S scoping and categorization) including additional surveys, modelling and similar to complete robust E&S baseline
- E&S Management Plan (ESMP) and relevant management plans and procedures.
- Resettlement Action Plan (RAP), Indigenous People Plan (IPP) where required.
- SEP further elaboration and implementation, including detailed sub-project level community engagement

This section of the ToR is further supplemented by additional detailed information in ToR Appendix [A –D].

For dams and reservoirs, the following GIP also applies[8]:

- IFC Good Practice Handbook - Environmental Flows for Hydropower Projects -Guidance for the Private Sector in Emerging Markets (2018)
- IFC Good Practice Note: Environmental, Health, and Safety Approaches for Hydropower Projects (2018)
- EBRD Environmental and Social Guidance Note for Hydropower Projects
- World Declaration on Dam Safety
- ICOLD Dam Safety Bulletin
- IHA Hydropower Sector Climate Resilience Guide
- World Bank Group Good Practice Note on Dam Safety (2020)
- IHA GHG Reservoir (G-res) tool
- Canadian Dam Association Guidelines for Public Safety Around Dams (2011)
- EIB Environmental, Climate and Social Guidelines on Hydropower Development (2020)
- Hydropower Sustainability Alliance: The Hydropower Sustainability Standard and associated 'How To' guides: https://www.hs-alliance.org/document-center
- Hydropower Sustainability Alliance: 'How To' guides: https://www.hs-alliance.org/how-to-guides

3.3.3. General E&S Requirements

The E&S scope of work outlined in this ToR shall be regarded as essential, though not exhaustive. The Consultant is expected to exercise professional judgment and proactively identify areas of engagement and additional E&S assessments as needed. The aim is to ensure that the analytical output is comprehensive and compliant with relevant laws and regulations and AIIB's ESP.

6 https://www.ifc.org/en/insights-reports/2012/ifc-performance-standard-6

7 GIP is defined as the exercise of professional skill, diligence, prudence and foresight that would reasonably be expected from skilled and experienced professionals engaged in the same type of undertaking under the same or similar circumstances globally or regionally. The outcome of such exercise should be that the Project employs the most appropriate technologies in the Project-specific circumstances.

8 Where GIP refers to hydropower projects, the elements of those guidance documents that relate to dams and reservoirs applies to this project.

The Consultant shall understand that it is responsible for performing all necessary services to fulfil the objectives of this ToR, even if not explicitly stated. These services shall be deemed reasonable and necessary by a competent professional in the field. Throughout the Project's duration, other consultants shall be providing services to AIIB or MOWRAM. The Consultant is expected to refer to the work product of these parties where relevant, ensuring cooperation and coordination without hindering the overall progress of the Project.

The Consultant shall be accountable for completing the E&S tasks outlined in this ToR, including collecting and analyzing secondary and primary data, supporting stakeholder engagement and consultation activities for the E&S Studies. Consultations shall be conducted in the national and/or relevant local language, with consideration of any health measures, guidance and / or requirements as may be in force from time to time.

It shall be the responsibility of the Consultant to translate relevant documents and/or information provided by AIIB or MOWRAM and stakeholders into the local language and/or English, as relevant.

MOWRAM shall provide reasonable support as needed to facilitate the smooth execution of the assignment. Project records, such as the Feasibility Study, design reports, permits and approvals, consultation records, and land acquisition documents, etc., shall be made available for review and, if necessary, copying. In instances where MOWRAM does not have the required documents or information to fulfil the objectives and scope of work in this ToR, the Consultant shall assume responsibility for collecting the same.

3.3.4. E&S Detailed Activities

In undertaking activities under this ToR the Consultant must ensure compliance with the AIIB's ESP including ESSs. As a minimum:

(i) An iterative design process should be adopted such that E&S risks and impacts are reflected in the project and can be avoided, or if avoidance is not possible (where acceptable under the ESP), minimized to the extent feasible in accordance with the mitigation hierarchy.

(ii) In early feasibility stage, identify potential environmental and social (E&S) risks and impacts[9], perform a desktop review to determine the availability of E&S baseline information and identify gaps that will be required to characterize the E&S baseline[10], undertake E&S baseline studies and surveys required for FS stage, characterize an appropriately detailed baseline, and select and apply relevant E&S criteria to inform feasibility stage optioneering. Surveys shall cover all relevant topics and include but not be limited to identification of beneficiary and affected communities (including gender, ethnic minorities, and smallholders), hydrology, hydrogeology, and aquatic biodiversity and habitats for example.

(iii) All project alternatives considered in the analysis shall be recorded in the FS along with the findings of the appraisal against the E&S criteria for each. This shall include he rationale for selection / rejection of options including where relevant details of changes made to avoid / minimize environmental and social risks and impacts. For all options a justification of environmental and social acceptability (that is the ability to

9 The identification of risks and impacts at feasibility, preliminary and detailed design stages must include not only the direct impacts of the project infrastructure, but also the effect of intakes and discharges on water bodies including their ecology in impacted reaches, the availability and quality of water downstream, and impacts on downstream water users.

10 For informing (A) meaningful E&S appraisal of options, and (B) for completing ESIA of detailed designs.

comply with AIIB's Environmental and Social Policy (ESP) will be included. Where environmental and social compliance of any option with AIIB's ESP relies on the undertaking of future actions these will be specified, including responsibilities, costs and timeframes.

(iv) Prepare an SEP and undertake initial stakeholder engagement.

(v) Prepare as part of the FS (as an annex to the FS report or as a standalone document submitted concurrently with the FS report), an ESMPF and E&S Scoping Report, that:

a. Categorizes each sub-project according to AIIB's categorization criteria for category A, B and C projects.

b. Describes a framework for undertaking Environmental and Social Impact Assessments (ESIAs) in accordance with Cambodian EIA law and AIIB's ESS1 for the identified sub-projects (including the permanent, temporary and associated facilities11), and a schedule for delivery of the ESIAs (mapped to the program for Detailed Engineering Design).

c. Records the availability and suitability of community grievance redress mechanisms (GRM's) in the sub-project areas as may be available to support sub-projects. Establish an AIIB compliant GRM that can be adopted for each sub-project if one is not available. Refer to ESMPF template in [Appendix A].

d. Scopes each of the proposed ESIAs in accordance with [Appendix B] to this ToR, including identification of the topics that will be scoped in and out of each of the project / sub-project ESIAs, baseline survey requirements, assessment methodologies and responsibilities for the assessments, and assessment areas of influence, etc. Refer to detailed E&S Scoping Report requirements in [Appendix B]. The Consultant shall attend a follow-up meeting with the MOWRAM Project team and AIIB in which the Scoping Report shall be described, and key findings highlighted. This meeting could be held either via video-conference or in person, and the format should be specified in the Consultant's proposal.

(vi) Prepare alongside the FS report and ESMPF and in accordance with Good International Practice and the AIIB ESP, a Land Acquisition and Resettlement Planning Framework (LARPF) and an Indigenous Peoples Planning Framework (IPPF) and other framework plans as may be identified as necessary during the feasibility stage as relevant, to define overarching institutional frameworks, general responsibilities of project delivery parties / stakeholders, and overarching approaches, standards, sub-plans, procedures (such as for specific risk topics including biodiversity, waste management, pollution prevention, erosion control, noise, air quality etc. as per the identified risks and impacts) and implementation tools etc. that will be adopted and elaborated during detailed design through the drafting of sub-project specific management plans. Refer to ESMPF template annexes in [Appendix A], and RPF requirements in [Appendix D].

(vii) Alongside Detailed Engineering Design and in accordance with the ESIA schedule presented in the ESMPF, prepare sub-project specific ESIAs and sub-project specific management plans and procedures etc., in accordance with [Appendix B] to this ToR and the framework management plans described under (iv) above. ESIAs will be conducted in parallel with design such that ESIA findings can inform the configuration

11 the quantum of facilities will include for example (but not limited to) component / facility sites and pipeline routes, right of way, temporary construction sites such as labor camps, material storage yards, quarries and borrow areas, construction debris disposal, vehicle garages, maintenance and laydown areas, spoil disposal areas etc

or design of sub-components of the proposed water supply system as necessary as part of an iterative design process. Each ESIA will be accompanied by a non-technical summary (NTS) to support stakeholder engagement. Refer to detailed ESIA requirements in [Appendix C].

(viii) To the extent that any E&S compliance actions / mitigations (as will be identified through steps (ii) – (vi) above) will be passed down to contractors and sub-contractors, the Consultant shall ensure that these are captured in the contracting agreements and will prepare ToRs / scopes of work / contract specifications as necessary to achieve this. Standard contract conditions to adopt and comply with AIIB's ESP 2024 shall also be included.

3.4. Preparation of Procurement Documents. The Consulting firm shall prepare the Procurement Documents for Civil Works and Goods and Consulting Service in accordance with the AIIB Procurement Policy (June 2024, as amended from time to time) and Directive on Procurement Instructions for Recipients (July 2024, as amended from time to time). In the process of preparing the Procurement Documents the Consultant will:

- Develop the Project Delivery Strategy and Procurement Plan which will contain the contract package(s) to be procured under the Project.
- Based on the contract packages in the procurement plan, prepare the Procurement Documents, in accordance with international standards in line with AIIB Procurement Policies and Procedures, including detailed specifications, Bills of Quantities (BOQs), and employer's requirements. The BOQs and technical specifications shall incorporate all relevant environmental and social mitigation measures specified in the ESIA, environmental social and management plan (ESMP) and other management plans, such as dust control, noise abatement, waste management, traffic safety measures during construction. Specifically, the technical specifications shall incorporate hazard identification, risk assessment and controls, recorded in the risk register. Consider environmental and social factors in both construction and operation phases, including any specific or unique conditions or requirements. Prepare temporary generic designs or appropriate specifications for temporary protection measures during construction. The main focus will be given to details for tender evaluation criteria and contractors' evaluation criteria. These will be developed in close consultation with the EA/AIIB.
- Include the technical specifications with define minimum standards for labor and working conditions, including occupational health and safety, non-discrimination, and provision of adequate worker facilities, in line with AIIB's environmental and social framework (ESF).
- Define labor management standards, including adherence to national labor laws and international standards, and specify requirements for community health and safety, including accident prevention and traffic management, and gender-sensitive considerations in the design and implementation of safety measures, such as provision of safe access for women and vulnerable groups.
- Ensure contractors' responsibilities include preparing and implementing Contractor's ESMPs (C-ESMPs), maintaining grievance redress mechanisms (GRM) for contractors and subcontractors, workers, and conducting meaningful consultations with project-affected people and other relevant stakeholders, with particular attention to engaging women and other vulnerable groups.
- Include monitoring and reporting requirements for contractors to track environmental and social performance and submit progress reports regularly to the EA, including gender-related monitoring and reporting requirements under gender analysis framework GAF.

Prepare detailed drawings, technical specifications, detailed BOQ, cost estimation, Method of Measurement and other relevant documents needed for international tendering procedure.

- Develop Technical specifications with definition of used material and minimum workforce standards for all kinds of works, methodology for measuring works and payments.
- Specify provisions for protecting cultural heritage, engaging with Indigenous Peoples' concerns (if applicable) and complying with any commitments made under Indigenous People Plan (IPP) if (applicable), and engaging with local communities throughout the Project implementation.
- Prepare the TOR for construction supervision consultancy and/or Project Management consultancy for supervision as instructed by the Client.
- Prepare relevant procurement inputs for the project documents for project loan negotiation including project operational manual (POM).

4.0. Deliverables, Procurement Documents, Cost of Estimation, Contract Amount, Payment Schedule, and Reporting

The assignment is expected to commence in January 2026 and be fully completed within approximately max 18 months up to 31 May 2027 within 78 weeks in total.

The FS and relevant studies and surveys is expected to start in **January 2026** and be completed in **May 2026 and should not take** more than 5 months, followed by 13 months for other surveys and studies for the DED, and procurement documents under 3.4

The projected schedule, the tasks and the deliverables, and key outputs and activities is presented in Table 2 below.

4.1 Deliverables. The consulting firm will submit the following reports to MOWRAM and AIIB: (i) Inception Report, within 4 weeks of contract signing, (ii) Interim deliverables of the feasibility studies and include all related assigned surveys, studies, and midterm/interim progress reports, within 16 weeks of contract signing, (iii) draft final Reports within 18 weeks, and final reports within 20 weeks of contract signing in package 1. The deliverables outputs of package 2 with a total of 58 weeks, and the total deliverable is within 78 weeks of contract as specified in Table 1.

Additionally, the firm will submit quarterly progress reports and any other deliverables. All reports must be submitted in English, and all collected or produced maps and GIS data must be submitted in both GIS-compatible digital formats and PDF files.

Table 1: The deliverables, schedule, key activities and outputs

Major Outputs	Delivery	Key Activities
Package 1 of the task assignment in total 20 weeks		
Inception Report	1 month after mobilization	
Feasibility Study Report (draft, final, and design produced)	5 months after mobilization	1.**Technical assessment:** ● Evaluate the water availability in the catchment areas of all the proposed subprojects; ● evaluate the extent of increase in the storage capacity of the reservoirs; ● assess the existing dam and head regulator structures viz-a-viz the anticipated increase in the reservoir capacity; ● evaluate soil suitability, topography, and water availability (surface/groundwater) in the project area. ● Determine optimal irrigation methods and infrastructure design. ● Analyze climate risks (droughts, floods) and climate change resilience ● Review safety risks of all dams and undertake a proportionate program of activities to determine the nature of risks and actions needed to address risks; ● Conduct safety analysis of dam structures, plan, designs of dam rehabilitation. ● Conduct dam break analysis and prepare or update emergency preparedness plan. ● Conduct study and prepare preliminary design on dams whose capacity will be increased, and preliminary study for the construction of new dams. ● Integrate environmental and social requirements including in relation to the release of environmental / ecological flows. ● analysis of International Policy on International Relations (OPIR) as required by AIIB. 2. **Economic & Financial Sustainability:** ● Conduct economic analysis, ● Analysis and undertake agriculture- related studies to suggest the cropping pattern, crop water requirement, and other related factors required for the optimum yield of

		the produce. ● Projected agricultural productivity gains, crop yield increases, and diversification potential, and ● Develop financing models, including farmer contributions, government subsidies, or donor funding 3**. Environmental and Social impact and risk management activities** Undertake E&S activities described in section 3.3 relating to the FS 4**. Risk Analysis & Mitigation:** ● Identify risks (e.g., cost overruns, climate shocks, community resistance). ● Develop contingency plans (e.g., alternative water sources, disaster preparedness) ● Identify beneficiary communities (including gender, ethnic minorities, and smallholders). ● Assess land tenure security and potential displacement/resettlement needs. ● ensure stakeholder participation (farmers, local authorities) and conflict resolution mechanisms ● **Analyze impacts on water resources:** downstream flow, groundwater depletion), biodiversity, and ensure compliance with Cambodian laws (e.g., Law on Water Resources Management, EIA regulations), and propose mitigation measures (e.g., sediment traps, afforestation). 5. Identifying optimal modernization solutions to strengthen systems, reduce vulnerability to water stress, drought, and flooding, and optimize land/water productivity via rehabilitation, upgrading, and improved management. 6. Identification and specification of necessary supplementary surveys and investigations, including preparation of cost estimates and terms of reference for the package 2
Package 2 of the task assignment in total 58 weeks		

Studies and Surveys		Other specific Studies and surveys based on the recommended from the FS reports in selected subprojects
DED		5 steps of DED From (1) Site Assessment and Data Collection, 2) Hydraulic Design, 3) System Component Selection, 4) Detailed Layout and Drawings, and 5) Cost Estimation and Construction Planning
		Prepare relevant project documents for project loan negotiation including project operational manual (POM) and procurement delivery strategy
Total		**78 weeks**

List of output for ES safeguard, it includes documents to satisfy AIIB's safeguard policy and standards:

- relevant project-level frameworks, i.e., Environmental and Social Management Planning Framework (ESMPF);
- Resettlement Planning Framework (RPF); Indigenous Peoples Planning Framework (IPPF), etc. and
- site-specific plans, i.e., Stakeholder Engagement Plan (SEP), Environmental and Social Impact Assessment (ESIA), Environmental and Social Management Plans (ESMPs), Resettlement Action Plan/Indigenous People Plans (where required),
- Gender Assessment and Gender Action Plan (GAP), etc.

4.2. Cost estimates, the percentage of payments and schedule.

Cost Estimates. The total cost for the entire assignment is estimated at max **USD 2,750,000**, and the amount is allocated between the **two** packages as follows:

- Package 1**:** 40% of the total contract amount or equal to USD 1,100,000
- Package 2: 60% of the total cost amount or equal to USD 1,650,000

However, the firm can propose their cost of the assignment.

A consulting firm will be recruited by MOWRAM's Project Management Unit (PMU), in close consultation with AIIB, using international open competitive selection/Quality- and Cost-Based Selection (QCBS) procurement method (80:20 quality-cost ratio) and full technical proposal following AIIB's Procurement Policy (June 2024, as amended from time to time) and Directive on Procurement Instructions for Recipients (July 2024, as amended from time to time). The Consulting firm shall be a reputable consultancy firm to undertake the consulting services as described in this TOR. The firm has to provide international and national consultants and experts, with estimated requirements of **72** person-months (pm) for international consultants and **88** pm for national consultants as indicated in Table 2 for entire assignment. However, the consulting firm may propose relevant experts in the Technical Proposal as may be needed to fulfil this TOR. The Consulting firm may mobilize supporting experts and administrative staff as necessary to execute the Scope of Services. The Consultant is encouraged to engage a diverse team composition, including mixture of genders.

Table2: Propose Composition Team for the assignment

Positions	(Person-months)	
	National Expertise*	International Expertise
Water Resources Specialist/Team Leader (Key)	-	9
Water Resources Specialist/Deputy Team Leader (Key)	15	-
Dam Expert	4	4
Hydrologist/Water Modelling Specialist	3	4
Hydrometeorologist /Flood and Drought Forecasting/Climate Change Specialist (Key)	3	3
Climate Change Adaptation Specialist	3	2
GIS Specialist	7	6
Flood and Drought Early Warning Specialist (Key)	3	3
Agriculture Specialist	6	5
Land Use Specialist	2	3
Irrigation Design Specialist	8	8
Structural Design Engineer	4	5
Geotechnical Specialist	2	1
Project Economist (Key)	6	4
Financial Management Specialist	3	2
Procurement Specialist	6	3
Environment and Health and Safety Safeguards Specialist	4	3
Social Safeguards Specialist (Key)	3	3
Gender and Social Specialist	2	1
Institutional/River Basin Management Specialist	2	2
Rehabilitation and Resettlement Expert	2	1
Total	**88**	**72**

(*) Excluded additional staff required for surveys and support activities

The contract will operate under a partial lump-sum payment structure with provisions for reimbursable expenditures. Lump-Sum Milestone Payments (Detailed in Table3).

Table 3. Summary of Deliverables and Milestone Payments

Report	Due Date (weeks)	Milestone Payment (100%)
Package 1: FS (see detailed Table 2)		40%
After contract signing	4 weeks	10% (Mobilization)
Upon approval of Inception Report	6 weeks	5%
All draft and final reports	18 weeks	20%
All FS final reports and Approved all TORs for the studies and surveys	20 weeks	5%
Package 2: DED		60%
Mobilisation of survey teams to the project areas	24 weeks	5%

Report	Due Date (weeks)	Milestone Payment (100%)
Completion of field investigations and surveys	36	10
Preparation of Interim report for the Scheme	40 weeks	10%
Preparation of the Draft report for the Scheme	58 weeks	10%
Preparation of Bill of Quantities, Specifications and Tender Documents	66 weeks	10%
Draft Reports	70weeks	10%
Final Report	78 weeks	5%

4.3 Reporting Requirements. Table 3 highlights all the reports, due date, and the associated milestone payment as a percentage of the total contract amount. The Consultant will prepare an invoice for each payment request and submit it to the Client: PMU -MOWRAM for review and approval. The Client will make its best efforts to process agreed payments within 30 days.

5.0 Key staff roles and responsibilities

Staff Qualifications. Below are the staff qualification requirements for each position. Following the qualifications is a summary of the evaluation criteria.

5.1Team Leader/Deputy Team Leader Water Resources Specialists (international: 9.0 PMs, national; 15.0 PMs).

The Water Resources Specialists (Team Leader -TL and Deputy Team Leader-DTL) shall have a master degree or higher in Water Resources civil engineering or a related subject. He/she should have at least 15 years (10 years for national position) of work experience in both IWRM and FRM planning and preparing both WRM and FRM projects. The expert should have undertaken and handled teams for undertaking the following: (i) Planning and design of irrigation schemes and networks; (ii) flood risk assessments to prioritize and establish strategy and solutions to address identified challenges; (iii) design of diversion structures like dams, head regulators, cross regulators etc.; and (iv) optimization of dam operations into WRM and FRM and development of drought mitigation measures. He/she should have experience as team leader (as deputy team leader for national position) in at least 2 projects preparatory services or similar activities for both WRM and FRM projects in Southeast Asia or similar region countries with the advantage of having its experiences for Cambodia. The TL must have a broad knowledge of irrigation water management, irrigation engineering, surveys, irrigation modeling, drainage/flood control, pond development, smart water management, institutional aspects for irrigation water management, and environment and social safeguards. The TL should have work experience in developing countries and experience managing multidisciplinary international and national consultant team for loan project preparation. He/she must have excellent written and oral communications skills in English, including ability to produce regular written reports of high quality.

Tasks include:

- provide overall direction to the team, coordinate for inputs, and consolidate outputs responsible for outputs with quality assurance, and ensure compliance of project outputs with AIIB guidelines;
- coordinate with the IE MOWRAM and other stakeholders
- manage preparation of the inception report, draft and final FS, DED and other reports and other documents required for AIIB's loan processing
- recommend system innovations to improve water use efficiency and delivery flexibility
- recommend institutional arrangement for operational management of the project
- supervise teams working the survey, model, and basic design
- supervise environment, social, resettlement, gender plans
- supervise financial and economic analyses, manage the entire consulting team, and ensure that all consultants will work closely with each other so that all individual outputs are well integrated and complement each other in the required outputs;
- review all aspects of implementation in previous and ongoing donor-funded projects and private investments to identify constraints, bottlenecks, concerns, and synergies; and ensure timely delivery of consultants' outputs, and of other outputs, in accordance with contract requirements
- with other specialists of the team, prepare ToRs and cost estimates for (a) surveys, studies and special designs required for preparing investment packages and due diligence, and (b) improving project readiness. Based on the ToRs and cost estimates, consultants or suppliers to be financed by the AIIB will be selected by MOWRAM and contracts will be signed and administered by MOWRAM. Indicative surveys, studies, special designs will include but not limited to the following: geotechnical and soil tests; topographic survey(s), LIDAR mapping, socio-economic baseline survey(s), and potential dam safety analysis.

5.2 Irrigation Design Specialists (international: 8.0 PMs, national; 8.0 PMs).

The Irrigation Planning Specialists shall have a master degree or higher in irrigation, agricultural engineering or a related subject. He/she should have at least 15 years (10 years for national position) of work experience in irrigation planning and preparing irrigation projects covering: (i) designing physical and nonphysical measures for improving irrigation efficiency and agricultural water productivity; (ii) incorporation of the CCRs and CCIs in irrigation plans, with at least 2 project preparatory services or similar activities for irrigation projects in Southeast Asia or similar region countries. Irrigation project preparation experience funded for Cambodia by MDBs is an advantage. He/she must have excellent written and oral communications skills in English.

Tasks include:

- gap analysis for existing reservoirs/dams' operations from agriculture and irrigation aspects to assist the Water Resources Specialist in developing MRIOPs;
- identify and reviewing existing irrigation plans and master plans;
- identifying possible geographic sites for improving irrigated agriculture performance and/or developing new irrigated agriculture;
- carry out irrigation planning for identified possible sites (including specific water balance assessments, water requirement analysis, existing and target agriculture water productivity and irrigation efficiency, designing needed structures and system alignment

covering up to the on-farm level irrigation and drainage canals;
- gap analysis for existing irrigation weirs and their operational practices to review if these do not hamper efficient and stable water intake for domestic water supply;
- propose remodeling of existing exiting weirs including operational practices for stable water intake for domestic water supply;
- develop feasibility level designs for the relevant structures;
- identify key factors to enable direct and optimum economic benefits of irrigation improvements to farmers' livelihood and rural economy – and adopt them in preparing a feasibility study, detailed engineering design, etc.

5.3 Dam Expert (international: 4.0 PMs, National 4.0 PMs)

The specialist will have a post-graduate qualification in water resources, civil engineering, or dam designs with at least 15 years (10 years for national) of experience in the design of dams and cross drainage works. Should have experience of undertaking the dam assessment in terms of life, strength, and rehabilitation. The expert should be well conversant with the issues related to dam modernization and rehabilitation, study of dam stability. Experience in Southeast Asia or similar region and specifically in Cambodia enhances the qualifications. Experience with increase in dam heights to enhance the reservoir capacity would be an additional advantage

Tasks include:

- identify and reviewing existing dams;
- gap analysis for existing reservoirs/dams' operations from agriculture and irrigation aspects to assist the Water Resources Specialist in developing MRIOPs;
- study of dam stability and assessment of the possibility of increasing the reservoir capacity;
- study and analyze the dam and reservoir operations;
- gap analysis for existing irrigation weirs and their operational practices to review if these do not hamper efficient and stable water intake for domestic water supply;
- propose remodeling of existing exiting weirs including operational practices for stable water intake for domestic water supply;
- develop feasibility level designs for the relevant structures;

5.4 Hydrologist/ Water Modeler Specialist (international:4.0 PMs, National 3.0 PMs)

The specialist will have a post-graduate qualification in hydrology, civil engineering, or relevant engineering, degree computer science, data management, or similar degree with at least 15 years (10 years for national) of experience in the design open canals, hydraulic structures, drainage/flood systems, and irrigation ponds, and experience with technical data management that includes databases, models, data from sensors, data integration, data management and data analysis Experience in Southeast Asia or similar region and specifically in Cambodia enhances the qualifications. Experience with smart water systems including sensors and solar pumping for irrigation is a bonus.

Tasks include:

- conduct of hydrological studies for detailed feasibility study for all relevant river basins and detailed design study for the first priority batch sub-projects and update the data and

hydrological analysis for the purpose of determining water availability; and establish the water balance for the river basins
- take part in the review of topographical, geologic and hydrogeologic maps
- review the proposed survey and model to ensure the data for design is collected and used in the model
- assist in modernizing canal operations such as design discharge capacity of distribution canals based on crop water requirements and intermittent operations during shortage in command area
- conduct water balance analysis, flood and drought forecasting analysis
- calculate design flood flows and flood levels at proposed embankments and outfall structures particularly for the sub-projects ensuring suitable selection of design features for extreme events when overflows may occur. This will include analysis of water levels of the Great Lake as well as the flows from upstream parts of the river
- provide basic hydraulic design of the canal system, including hydraulic design of canals and canal structures, gates, regulators, and pumps. The design should be the basis for the detailed design team.
- prepare design guidelines/criteria and standardized spreadsheets for hydraulic design of structures
- prepare relevant reports of quality standard to document findings, as well as providing relevant contributions to feasibility studies
- review MOWRAM's existing database(s) and working with the survey team to develop the data needs assessment, sensor needs, data integration, model any training with MOWRAM or other stakeholder staff
- work with various databases to integrate project data with MOWRAM's databases and GIS
- run hydraulic simulation on with- and without-project scenarios
- develop capacity needs assessment for project implementation, both at the MOWRAM level and at the FWUC level
- develop cost estimates for the Project's IT needs, and work with and team on any IT needs

5.5 Hydrometeorologist/Flood &Drought Forecasting/Climate Change Specialists (international: 3.0 PMs, National 3.0 PMs).

The Hydrometeorologist/Flood and Drought Forecasting Specialists shall have a master's degree or higher in hydro-meteorology, flood forecasting and/or another relevant subject. He/she should have at least 15 years (10 years for national position) work experience in hydrological reviews, incorporating CCRs and CCIs in adaptive physical and non-physical measures, in at least 2 project preparatory services and/or feasibility study developments (1 for national position) for WRM-related projects in Southeast Asia or similar region countries as river hydrologist, flood forecasting specialist. Working experiences for project preparatory services financed by MDBs and for Cambodia are advantage. He/she must have excellent written and oral communications skills in English.

Tasks include:

- conduct gap analysis of flood models; flood and drought forecasting systems and staff capacity
- flood and drought risk analysis and flood and drought risk mapping
- carry out flood and drought frequency analyses, develop flood modelling and flood and drought risk maps, with different return periods and with possible use of satellite remote sensing technology, in target rivers. The above analysis and mapping exercise must incorporate CCRs and CCIs, available and future planned urban/city/transportation

development plans, constructed and planned construction of reservoirs with their operation practices, and critical river-crossing and/or diversion/regulated structures.

- develop the plan for flood and drought forecasting systems, including training and capacity building plan to be developed and implemented during the project implementation.
- The expert responsible for the gap analysis, needs assessment of: (i) meteorological and hydrology services and networks; (ii) meteorological and hydrological stations/observations; (iii) automatic monitoring, recording and transmission of meteorological and hydrological data; and (iv) maintenance requirements and costs. Based on these, the specialists will develop physical and non-physical modernization investment packages of meteorological and hydrology services and networks with possible use of satellite-based rainfall monitoring and real-time ground-truthing, including the program of training and capacity building to be invested and implemented during the project implementation

5.6 Climate Change Assessment and Adaptation Specialists (international: 2.0 PMs, national; 3.0 PMs).

The Climate Change Assessment and Adaptation Specialists shall have a master's degree or higher in climate change assessment, flood forecasting and/or other relevant subject. He/she should have at least 15 years (10 years for national position) work experience in climate change risk assessment, incorporating CCRs and CCIs in adaptive physical and non-physical measures, in at least 2 project preparatory services and/or feasibility study developments (1 for national position) for WRM-related projects in Southeast Asia or similar region countries as climate change specialist. Working experiences for project preparatory services financed by MDBs and for Cambodia are advantage. They should have at least 3 years' experience conduction climate vulnerability studies and experience with doing vulnerability field work at the local level. Experience in irrigation and/or water resources management projects and knowledge of GCF will be helpful. Experience with smart water systems including sensors and solar pumping for irrigation is a bonus. They should have a working knowledge of written and oral English.

Tasks include:

- assist with developing the CVA framework with the International CVA manager
- assist with coordinating the CVA activities with the PMU and local stakeholders
- collect CVA related documents and conduct interviews as needed
- participate in CVA field activities as needed
- identify national climate policies and impact assessments
- identify specific climate adaptation issues in the project provinces
- with the international climate expert, review the with the design team the basic project design and recommend climate change adaptation measures, smart water features, and local climate issues

5.7 GIS Specialists (international: 6.0 PMs, national; 7.0 PMs).

The GIS specialists must have a degree in GIS or related fields with preferably 10 years of experience (5 years for national specialist) on applying GIS software (both commercial and free licenses) to process or analyze GIS data. The international expert should have experiences on GIS data and satellite-based information analysis through use of software (both commercial and free wares) and development of scripting for GIS data analysis. The national expert should have experiences on GIS data analysis and map development. Experiences in working with agencies in Cambodia is beneficial. Previous experience working in projects relevant and funded by AIIB, ADB,

World Bank, or other development agencies is an advantage, and excellent English communication (written and oral) skills will be considered an asset.

Tasks include:

- recommend appropriate remote sensing and satellite data (e.g., optical and radar) and public-domain satellite-based information (e.g., rainfall, land use, digital elevation models [DEM], etc.) to fit the needs of the clients on water resources management.
- The expert will focus more on using GIS software for data analysis and map preparation for water accounting.
- perform GIS and satellite-based information analysis to support water resources management and application of water accounting plus.
- develop metadata to provide summary of content, quality, type, creation, spatial information, and source of information about data set by adhering to common metadata standards to ensure data sharing environment.
- prepare maps and figures based on GIS data, satellite-based, and remote sensed information as required (national specialist).
- provide input to the capacity development, training and workshop programs related to user interface development, O&M and relevant topics

5.8 Flood and Drought Early Warning Specialists (international: 3.0 PMs, national; 3.0 PMs)

The Specialists shall have a master's degree or higher in flood and/or drought early warning, flood and/or drought risk management or other relevant subjects. He/she should have at least 15 years (10 years for national position) work experience on flood and/or drought early warning, flood and/or drought preparedness and evacuation planning in at least 2 project preparatory services and/or FS developments (1 for national position) for WRM and/or FRM projects as flood and drought early warning or other relevant specialists in Southeast Asia or similar region countries. Working experiences for Cambodia for developing and/or implementing flood and/or drought early warning systems is an advantage. He/she must have excellent written and oral communications skills in English.

Tasks include:

- Develop preliminary draft of flood preparedness plan and flood evaluation plan.
- Develop the flood and drought risk maps with different return periods and with reference to the flood and drought forecasting system, meteorological and hydrological systems to be modernized.
- Conduct gap analysis of the flood and drought early waning practices including the roles of communities to be reflected in the draft plans.
- Develop a plan to finalize and implement the plans by incorporating communities' voices and women role in consultation process with communities, to be implemented during the project implementation.

5.9 Agriculture Development Specialists (international: 5.0 PMs, national; 6.0 PMs).

The specialists must have a higher degree (M.Sc. or equivalent) in agriculture, agronomy, or a related subject or equivalent. The specialists must have at least 10 years of relevant experience in agricultural extension services, climate-smart agriculture, and water-serving agriculture to develop/improve water and agricultural productivity, with at least 3 project preparatory services or

similar activities for agriculture and/or irrigation projects in Southeast Asia or similar region countries. Experiences for project preparation in agriculture and/or irrigation financed by MDBs-financed project for Cambodia is an advantage. He/she must have excellent written and oral communications skills in English. Tasks include:

- Identification and review of existing agricultural areas and planned agriculture development/master plans;
- Identifying possible geographic sites for improving agriculture performance and/or developing new agriculture areas with proper irrigation;
- Developing irrigated agriculture plan for modernization and/or new developments in identified possible sites, which will cover needed improvement of agriculture value chain;
- Preliminary draft of capacity development and training program for growing high value crops and farm management;
- Preliminary draft of climate-smart agriculture program with training program to be demonstrated by farmers, covering both climate adaptation and mitigation

5.10 Land Use Specialists (international: 3.0 PMs, national; 2.0 PMs).

The specialists must have a master's degree in land use and spatial planning or similar subjects. He/she must have at least 10 years' experience in rural land use planning, land management or similar field in at least three similar projects. Experiences for project preparation in agriculture and/or irrigation financed by MDBs-financed project for Cambodia as a land use and/or land management specialist is an advantage. He/she must have excellent written and oral communications skills in English. Tasks include:

- reviewing existing and planned land use and land management plan at provincial, district, and commune levels;
- reviewing existing and planned developments in various sectors (e.g. agriculture, urban, industries, transport, energy) which will require new lands;
- identifying the potential synergy and/or conflicts of land use between the project's interventions and other land use and management plans;
- coordinating with relevant authorities and people who are involved in these plans;
- reflecting planned interventions under the project in existing and planned land use and/or land management plans by proposing land use options based on the analyses and assessments carried out under the project (e.g. flood risk areas, drought risk areas, areas of increased resilience to floods and droughts);
- reflecting existing and/or planned land use plan and land management plan in the project interventions; and
- development of the preliminary draft of the program to develop district and community level land use plans in the project target areas.

5.11 Structural Design Engineers (international: 5.0 PMs, national; 4.0 PMs).

The Structural Design Engineers shall have a master's degree or higher in civil and hydraulic engineering. He/she should have at least 15 years (10 years for national position) work experience on structural designs, structural stability assessments, preparation of design drawings and cost estimates, with experience in at least 3 WRM related projects (2 WRM related projects for national position) at their design stages as a structural design engineer.

Tasks include:

- structural assessment/analysis of existing WRM structures,
- identifying the need of strengthening, modernization and/or upgrading of existing WRM structures;
- identifying the need of construction of new WRM structures in line with the intended project outcome and outputs; and
- development of feasibility level structural designs, their drawings, cost estimates, and bill of quantities.
- preparation of detailed engineering design for selected first batch of priority sub-projects. Including drawings, cost estimates, and bill of quantities.

Target structure for which he/she needs to develop drawings, cost estimates and bill of quantifies include feasibility level and detailed engineering hydraulic designs to be developed by the Hydraulic Design Engineers. The scope of WRM-related structures will include but not limited to the following: dams, reservoirs and their associated structures, headworks and weirs, bridges, flood embankments, drainage canals and pumps, irrigation canals and gated/regulated structures.

Tasks include:

- conducting the gap analysis and needs assessment for development and/or updating operation and maintenance (O&M) plans/norms of the WRM-related structures with the sustainable manner;
- developing a program of the sustainable O&M mechanism with O&M manual and training and capacity building to be implemented in the project with cost estimates including bill of quantities; and developing asset management framework

5.12 Geotechnical Specialists (international: 1.0 PM, national; 2.0 PMs).

The Geotechnical Specialists shall have a master degree or higher in geotechnical engineering. He/she should have at least 15 years (10 years for national position) work experience on geological/geotechnical reviews and investigations on hydraulic infrastructure construction and/or rehabilitation, with experience in at least preparing 2 projects (1 projects for national position) for FRM covering upgrading and/or construction of flood protection embankments, in Southeast Asia or similar region countries with the advantage if having its experience in Cambodia.

Tasks include:

- conduct geological/geotechnical review and investigation of WRM related infrastructures (e.g. flood protection embankments, flood escape and/or link channels and other critical flood protection structures, irrigation canals, weirs),
- identify the risk of failures at the disaster events, and prioritize critical structures for upgrading and replacements under the Project,
- conduct supplementary geological/geotechnical investigations, if needed. These reviews and investigations should follow the relevant international standard requirements. If necessary, geotechnical site investigations could be outsourced and proposed to be contracted by MOWRAM but need to be supervised by the incumbent. This will cover the following items but not limited to: (i) conduct a series of geological investigations/tests, such as seismic refractions, bore-holing/logging, trial pits, in-situ and laboratory tests for

measuring soil/rock type classification, shear stress, permeability, grouting procedures, etc.; (ii) conduct seismology assessment of the critical infrastructures.

- provide technical judgments to inform the feasibility level structural designs and the level of detailed engineering design for the first batch works package.

5.13 Project Economists (international: 4.0 PMs, national; 6.0 PMs).

The specialists must have a higher degree (M.Sc. or equivalent) in water economics, development economics, economics, or a relevant discipline, and must have at least 15 years (10 years for national position) of relevant experience in economic analysis of projects financed by international financial institutes with the minimum number of three (the minimum number of two for national), preferably in MDB financed project preparatory/transaction technical assistance. He/she must have experiences in dealing with preparation of WRM-related projects as the project economist in Southeast Asia or similar region. He/she must have excellent English written and oral communications skills. Cost estimation and economic internal rate of return (EIRR) calculation must be on Excel, organized, well-labelled, and transparent, following conventional financial modelling best practices and standard.

Tasks include:

- assess the macroeconomic and sector contexts;
- establish an economic rationale for public sector involvement;
- estimate and update project cost by consolidating inputs from relevant experts; (iv) assess least-cost investment options;
- conduct economic cost–benefit analysis and financial sustainability assessment;
- conduct distribution analysis and sensitivity analysis. In addition, the specialists will (i) assist in preparing project cost estimates and a financing plan; and
- conduct agriculture and natural resources (ANR) assessment and prepare ANR assessment reports and summarized ANR sector assessment report for project

5.14 Financial Management Specialists (international: 2.0 PMs, national; 3.0 PMs).

The specialists must have a degree in accounting, finance, or a related field, and will have a recognized professional accountancy qualification. The international and national consultants should respectively have at least 15 and 8 years of experience, including in financial due diligence. They must have at least 10 years with the minimum number of three projects (for the international consultant) and 5 years with the minimum number of two projects (for national consultant) of relevant experience in supporting financial management preferably in a MDB financed project preparatory/transaction technical assistance. Experience in dealing with climate change assessment and environmental accounting is an asset. Knowledge of Cambodia government planning cycle, procurement procedures, and financial management mechanisms is essential. He/she must have excellent English written and oral communications skills.

Tasks include:

- conduct an FMA of the project's executing/implementing agency (EA/IA). This includes

    a. assessing whether previous FMA(s) have been conducted by other agencies and, if so, reviewing the results and ascertaining whether these can be used as input;
    b. assessing their capacity to manage AIIB's advance fund and statement of expenditure procedures; and

c. concluding on the financial management risk rating and identifying and confirming measures for addressing identified deficiencies;

- assess the EA/IA's policies and capacity for financial and disbursement management, and identify any further needs for capacity development and funds flow design and disbursement arrangements;
- review existing procedures for disbursement, funds flow, and approvals, and design streamlined funds flow and procedures for contracting and disbursement under the project, as well as internal control and audits;
- prepare cost estimates and a financing plan of the project, which are based on verifiable data and are sufficient to support project implementation, and conduct a financial viability evaluation for the overall project and by the eligible subproject;
- assess capacity for planning and budgeting, management and financial accounting, reporting, auditing, internal controls, and information systems; and public disclosure arrangements for the project, and, as appropriate, identify and agree on arrangements for receiving financial statements from EAs/IAs;
- prepare financial projections and conduct financial analyses and incremental recurrent costs to determine financial sustainability; review proposed cost-recovery and tariff policies, including affordability; and conduct sustainability assessment of the EAs/IAs and prepare its reports to be appended with Project Document Package.;
- conduct financial evaluations (financial cost-benefit analyses) including sensitivity analyses of project components/subprojects that have full cost-recovery objective, if any;
- where significant risks are identified to project financial sustainability or viability, propose relevant financial performance indicators to be incorporated in financial covenants and a financial management action plan; and
- submit Excel files developed for cost estimates for eligible subprojects and ensuing project to AIIB as a deliverable;
- provide input in the Project implementation Manual and other linked documents based on results of financial due diligence.

5.15 Procurement Specialists (international: 3.0 PMs, national; 6.0 PMs).

The specialists shall have an M.Sc. or equivalent in civil engineering, procurement, law or related discipline. The international consultant must have at least 15 years of experience performing procurement and /or contract management functions related to works and selection of consultant (preferably under projects financed by MDBs). The international consultant must have a demonstrable track record of assessing procurement management capabilities of procuring agencies and procurement risk assessments for projects. He/she should have strong analytical skills to enable market analysis, tailor the procurement approaches and assessment of viable procurement options to prepare feasible procurement arrangements for the project. The national consultant must have at least 10 years of experience performing procurement functions (preferably under projects funded by MDBs). The national consultant must have a deep understanding of Cambodia's public procurement system and experience performing procurement and/or contract management activities related to works and consulting contracts. The international and national consultants must have excellent English written and oral communications skills.

Tasks include:

- carry out procurement capacity assessment of the project's EA and IAs to identify any known factors, both enablers and constraints, which may affect the delivery of the project

and the procurement approach being developed; as well as to help AIIB identify any targeted, early interventions such as training or enhanced support, from which the EA and IAs may benefit,

- conduct market analysis to allow the EA and IAs to develop an appropriate understanding of the relevant market sectors, their structures and how they operate, which is then reflected in the Project Delivery Strategy (PDS),
- prepare the PDS and Procurement Plan which which shall (i) include the Project's implementation arrangements in relation to procurement, the country's procurement legal framework, economic conditions; (ii) describe specific procurement arrangements and contracting strategies in line with AIIB's Procurement Policy (June 2024, as amended from time to time) and Directive on Procurement Instructions for Recipients (July 2024, as amended from time to time); and (iii) identify key risks to the project, assesses the likelihood and impact of those risks occurring within the project, proposes measures to manage those risks and creates a project risk register to manage the allocated risks during the procurement process to ensure that the mitigation measures will remain effective;
- prepare the tender documents for key civil work contract package(s), project management and implementation consultants' package, and other necessary goods packages to be procured under open competitive tendering procedures following the AIIB Procurement Policy (June 2024, as amended from time to time) and Directive on Procurement Instructions for Recipients (July 2204, as amended from time to time); and
- provide overall support to the EA and IAs in procurement related matters.

5.16 Environmental (resource efficiency, pollution prevention and biodiversity) and Health and Safety Safeguards Specialists (international: 3.0 PMs, national; 4.0 PMs)

The specialists must have a master's degree in environment or natural resources management or similar subjects. He/she must have at least 10 years' experience in environment, EIA, natural resources management or similar field in at least three similar projects. Experiences for project preparation in agriculture and/or irrigation MDB financed projects for Cambodia or similar region as an environment or natural resources management specialist is an advantage. He/she must have excellent written and oral communications skills in English.

Tasks include:

- reviewing existing and planned land use and land management plan at provincial, district, and commune levels;
- reviewing existing and planned developments in various sectors (e.g. agriculture, urban, industries, transport, energy) which might impact the environment;
- identifying the potential conflicts of land use and environmental and natural resources assets in areas of project interventions activities;
- coordinating with relevant environmental authorities and people who are involved in these plans;
- assess impacts on the environment and natural resources and provide mitigation measures, as needed
- assess impacts on fish and fish migration from the planned activities; and
- identify threats to rare or endangered species in the project area.
- delivering environmental and health and safety aspects of the ES Annex:

The Specialists shall be responsible for producing, but not limited to the following outputs.

- Environmental baseline characterization
- Inputs to feasibility optioneering, including through ES appraisal, impact avoidance advice and iterative design
- Inputs to the ESMPF
- Inputs to the ES Scoping Report
- Inputs to the Management Plan Frameworks and Management Plans
- Inputs to sub-project ESIAs, ESMPs and environmental and health and safety procedures
- Support integration of Environmental and health and safety safeguard requirements in contractual scopes as necessary.

5.17 Social Safeguards Specialists (international: 3.0 PMs, national; 3.0 PMs).

The specialists will have at least a university degree in social sciences, anthropology, development studies, or a relevant field. The specialists must have at least 15 years working experiences (10 years for national position) in resettlement and ethnic minority development plan preparation, implementation and addressing social safeguard issues with at least 4 (2 for national position) project preparatory services or similar activities for development projects in Southeast Asia or similar region, preferably in Cambodia. Experience in MDBs projects is strongly recommended. He/she must have excellent written and oral communications skills.

Tasks include:

For involuntary resettlement (IR), the specialists will deliver social aspects of the ES annex, and:

- closely working with and assisting the GDR-MEF in preparing Resettlement Policy Framework (RPF) and basic resettlement plans (BRP), revisiting the costs of resettlement, executing resettlement plans and developing DRP with the GDR, and prepare monitoring activities to be applied during construction with guidance from MOWRAM Focal Point.
- The specialists will have experience of preferably one of AIIB, IFAD, ADB financed projects, and be fully aware of the AIIB's ESF, specific tasks include:
- preparation of resettlement plans for identified sub-projects and ensuring timely submission of these to the Inter-ministerial Resettlement Committee (IRC)
- monitor and report on progress of the RPs and their implementation.
- assist with preparation of the right of way (ROW) or reservation width alignment drawings.
- ensure that a claim mechanism is in place whereby affected persons (AP) may have their claims registered.
- assist with land holding mapping and registration of ownership data as necessary.

For other social impacts (labor, occupational health and safety, community health and safety, cultural heritage, stakeholder engagement), indigenous people (IP) and ethnic minorities (EM), the specialists will:

- develop a profiling report to determine the presence of EM in the proposed project areas;
- analyze and document the following aspects applicable to ethnic minorities in the project area; (a) National and local laws and regulations, including relevant local and traditional/customary laws and practices, (b) Relevant administrative arrangement and requirements, and (c) Relevant budgetary processes;
- as part of the social impact assessment, assess social impacts, and carry out surveys and field-based studies required to assess potential project impacts on the EMs. The social

impact assessment will be carried out in a gender-sensitive manner, in consultation with ethnic minority communities. It will provide a baseline socioeconomic profile of the ethnic minority groups in the project area and project impact zone; assess their access to and opportunities to avail themselves of basic social and economic services; assess the short- and long-term, direct and indirect, and positive and negative impacts of the project on each group's social, cultural, and economic status; assess and validate which ethnic minority groups will trigger the IP safeguard; and assess the subsequent approaches and resource requirements for addressing the various concerns and issues of projects that affect them;

- train and advise EAs and IAs on the social impact management, EM/IP issues to increase awareness and sensitivity.
- determine whether ethnic minorities will be physically displaced and whether impacts, if any, are principally resettlement in nature. Based on the assessment, determine the need for Indigenous People Planning Framework (IPPF) and stand-alone Indigenous People Plan(s) (IPPs);
- provide social input to ESCIA and other social related instruments
- conduct meaningful consultations with concerned EM groups. Initiate a participatory process for IPPF/IPP preparation and implementation among affected people, affected communities, local leaders, proponents, and stakeholders;
- advise the executing agency, participating local government(s), and implementing agencies on AIIB's ESF and relevant policies and requirements and procedures on Indigenous Peoples/EM.
- conduct due diligence on indigenous peoples/ ethnic minority issues and impacts, and prepare/revise the required social safeguard documents for the Project processing such as: (a) ethnic minority development framework, (b) ethnic minority development plans or combined (c) IPPF/IPP, and due diligence reports to meet the requirements of both the Government and AIIB indigenous peoples;
- prepare an indicative budget for the IPPF/IPP with specific sourcing and approval process. Secure tentative agreement from concerned authorities on provision of outlays necessary for IPPF/IPP updating and implementation;
- conduct workshops to present the draft IPPF/IPP planning document(s) to local authorities and concerned EM households;
- assess the capacity and commitment of responsible institutions to update and implement the IPPF/IPP. Recommend an institutional strengthening strategy, and/or formation and training of a social safeguards' unit within the executing agency and implementing agency, if required;
- ensure overall project compliance with AIIB's ESF. Work closely with the social development and gender specialist, and other relevant TA team specialists to ensure EM concerns, impacts, mitigation measures and required resources are
- reflected in the overall project design, cost estimates, and other relevant project documents. Enhance existing project social impact reports, where appropriate;
- develop a project-specific grievance redress mechanism to handle complaints in an effective and culturally appropriate manner in close coordination with relevant TA team specialists;
- provide advice to EA and IAs on the requirements of monitoring reports on indigenous peoples/ EM issues in accordance with AIIB requirements.
- prepare EM specific consultation and communication plans; and
- prepare the IP checklist along with the project IP categorization form.

5.18 Gender and Social Specialists (international: 1.0 PM, national; 2.0 PMs).

The specialists must have a higher degree (M.Sc. / M.A. or equivalent) in social sciences, gender and development studies, public policy, sociology, comparative culture or a relevant field. The international specialist must have at least 15 years of experiences, with a minimum of 10 years dedicated to integrating gender equality in development projects (experience in the preparation and gender mainstreaming in at least 3 projects); and the national specialist must have at least 7 years work experience in social development and gender field of with the minimum number of 2 project preparatory services experience. Experience on gender equality in the water sector is a strong advantage. Experience with international development organizations is an advantage.
He/she must have excellent English written and oral communications skills.

Tasks include:

- identify the socio-economic profile of the target population and groups, collect baseline data disaggregated by sex and other relevant factors for water resource management, water access, climate change risk reduction, women leadership and employment related indicators which may be included in the design and monitoring framework of the project (DMF) and gender action plan (GAP).
- assess the potential gender-differentiated impacts, mitigation actions, and opportunities of the program to promote gender equality.
- identifying constraints and capabilities (social and physical infrastructure) of women, female headed households and other vulnerable groups to benefit from integrated water resources improvement project
- assess women's role in decision making on water management and capacity building required to fulfill those roles in management position in FWUCs.
- identify the potential threats, particularly climate change affecting local community, especially women and other vulnerable groups and existing mechanisms to support them increasing their resilience to climate change
- identify communication channels of women and other vulnerable groups in accessing to water resource and early warning system
- draw good practices on strengthening women's access to water, women's role and leadership in water resource management and climate change risk mitigation and adaptation.
- assess the need for capacity building of the relevant government agencies to ensure proper implementation and monitoring of GAP;
- prepare a poverty reduction and social strategy based on the Poverty and Social Assessment report; based on the findings from the gender analysis, develop a GAP within the project scopes and geographical areas and provide inputs (key gender indicators and targets) to the design and monitoring framework. GAP shall include specific, relevant, and measurable targets and activities. All gender targets set should be informed by baseline data, where possible, local stakeholder consultations and close consultations with the relevant ADB officers.
- estimate budget for GAP implementation to incorporate in costs of overall project and eligible subprojects;
- prepare terms of refence for gender and social development consultants for the implementation of gender action plan and social actions

5.19 Institutional/River Basin Management Specialists (international: 2.0 PMs, national; 2.0 PMs).

The specialists must have a master's degree in Environmental Science, Water Resources Management, or a related field. Minimum of 15 years of experience (national 8 years) in river basin management or a related area. Strong understanding of hydrological processes, water resource management, and environmental conservation. Excellent communication and stakeholder engagement skills. Demonstrated ability to work in multidisciplinary teams and manage complex projects and experience from 3 previous 3 projects (national 1) with same kind of complexity. Experiences for project preparation for MDBs-financed project for Cambodia as a river basin management specialist is an advantage. He/she must have excellent written and oral communications skills in English.

Tasks include:

- Advise on policy and regulatory frameworks for river basin management, water allocation and water accounting.
- Develop strategies for sustainable water resource utilization and conservation.
- Promote the integration of climate change adaptation measures.
- Coordinate with relevant stakeholders, including government agencies, NGOs, and local communities.
- Ensure alignment with national and regional water management policies
- Develop format for river basins management committees based on the existing sub-decree for sub-national river basin committees
- Prepare Strategy paper on river basin management and river basin committees; and
- Terms of Reference for River Basin Committees based on stakeholder engagement and the existing sub-decree for the selected river basins.

5.20 Rehabilitation and Resettlement Expert (international: 1.0 PMs, national; 2.0 PMs).

The specialists must have a master's degree in social science, management or related field. Minimum of 12 years of experience (national 8 years) in the related field. Should have experience of design or implementation of quantitative and qualitative project performance monitoring systems for large infrastructure projects of similar nature, preferably funded by international funding agencies i.e. ADB, World Bank, AIIB etc. Should be well conversant with the requirements of the international funding agencies for social safeguards, and familiar with preparation and implementation of R&R plans as per the requirements of international funding agencies i.e. ADB, World Bank, AIIB etc. He/she must have excellent written and oral communications skills in English.

Task include:

- Prepare Land Acquisition and Resettlement Plan in accordance with AIIB's Environmental and Social Framework (ESF) and Government requirements, including an estimation of costs for all options.
- Prepare the TOR for the preparation of LARP.
- Conduct a socioeconomic and poverty survey of the areas potentially impacted by the project, assessing the likely poverty reduction and social impacts of the project options; prepare a profile of beneficiaries for each option; prepare a program for monitoring and evaluating the benefits and impacts of the project before and after construction.
- Prepare a Social Impact Assessment (SIA) in accordance with AIIB's ESF including socio-economic and land market survey, mapping and video filming of the existing households, land use and infrastructure.

- Identify and cost a program of potential community development activities that could be funded in affected communities.

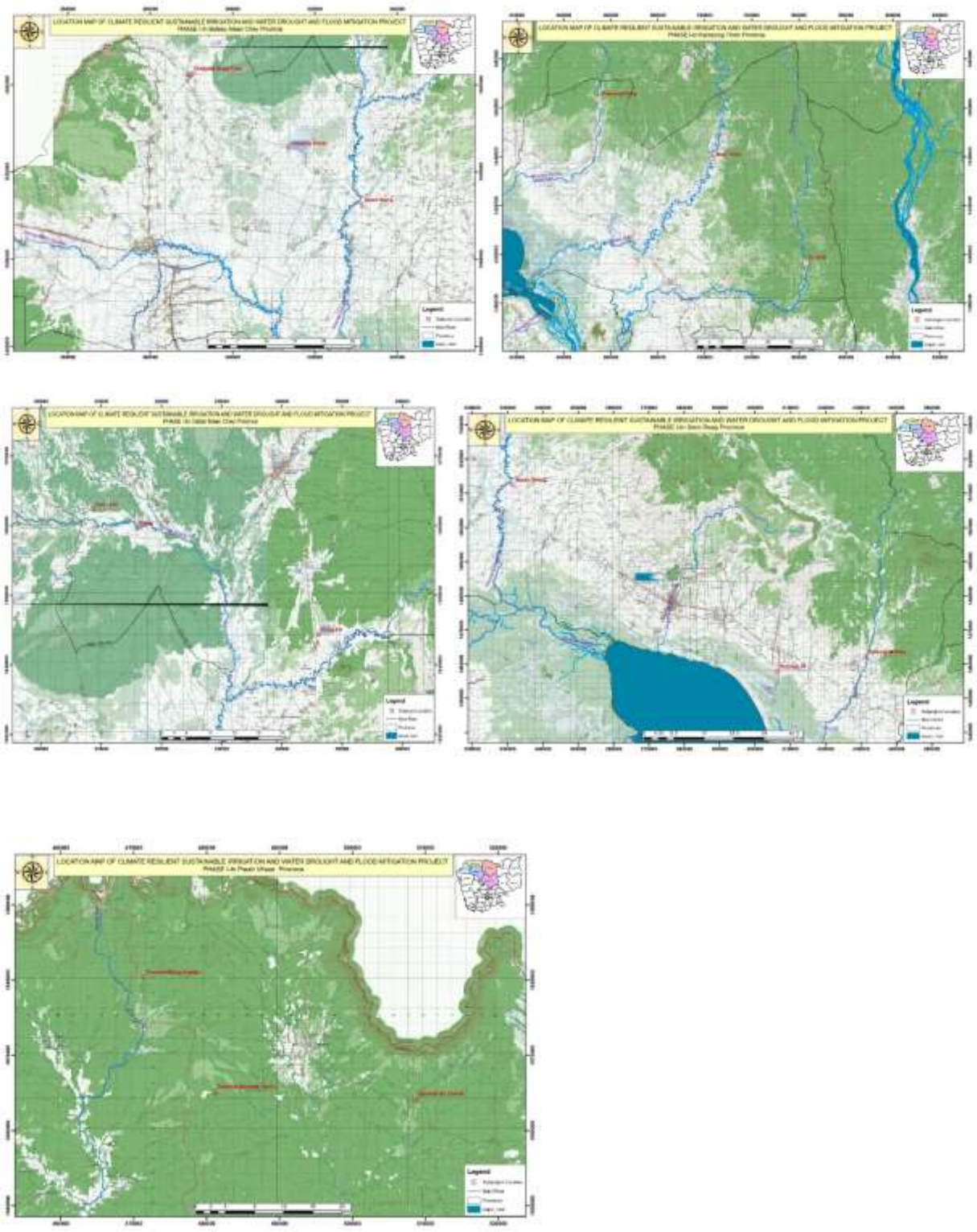
6.0 List of Annexes

- Annex 1- Proposed subproject by province maps and name of river basins
- Annex 2- Key Selection Criteria for the Flood and Drought Management Infrastructures, Irrigation Schemes, and River Basins Management Facilities.
- Annex 3 – List of references and for more detailed proposed irrigation schemes
- Annex 4- Detail budget for the FS and DED Estimated (for internal used only, and has removed from the TOR)

7.0 List of Appendixes

- Appendix 1 – Environmental Social Management Framework (ESMF)
- Appendix 2 - Environmental Scoping Requirements
- Appendix 3 - Detailed ESCIA Requirements
- Appendix 4 – Resettlement Planning Framework (RPF)

Annex 1. Proposed subprojects by province Maps and names of river basins



Annex 2: Key Selection Criteria for the Flood and Drought Management Infrastructures, Irrigation Schemes, and River Basins Management Facilities.

Feasibility Area	Feasibility Criteria
Economic and Financial	**Flood and Drought Management Infrastructures**: ● Potential for significant risk reduction for damage due to floods and inundations (flood diversion, flood control, potential for increasing the storage capacity to reduce the flood peaks) for assets and services related to agricultural production municipalities. Prioritized on rehabilitating and improving existing flood and drought management infrastructures ● Potential for increase of water storages and reservoirs to increase water availability and capacity for year-round supply, especially during the dry season for irrigated agriculture as well as for other uses. **Irrigation and Drainage Network (Irrigation Schemes):** ● Potential for significant incremental gains in productivity (yields) or cropping intensity with enhanced access to reliable water irrigation services and better flood (inundation) management at the scheme and farm level to generate a better household income. ● Potential for diversifying crops for an enhancement of water productivity (dollar per m^3 of water). ● Farmers and local authorities are willing to contribute to the operation, management, and maintenance (OMM) of the improved schemes so that they can provide irrigation services in the long run. ● Areas where agricultural commercialization is progressing and there are potentially accessible markets/distribution channels/roads.
Technical and Institutional	**River Basin** ● The Cambodian government / authorities is willing to establish, equip, and strengthen river basin management through establishment of a river basin management committee (RBMC) who is expected to provide directions and guidance through annual management plans and emergency solutions.

	● River Basin Management Plan (RBMP) is available or can be prepared within the project implementation time frame. ● Preparedness of (local) Government to adequately provide human resources and funding for O&M of anticipated river basin infrastructure. ● The opportunities and needs to undertake a basin-wide improvements **Irrigation Schemes** ● Water availability in terms of quantity and quality is sufficient to ensure feasibility without requiring new dam construction. ● Existing irrigation systems requiring rehabilitation work. ● Medium to large schemes with command area between 500 and 5,000 ha, and larger with the potential of increasing cropping intensity from 1 to 3 crops per year, and with high potential for crop diversification, including high value crops. ● The willingness of farmers and FWUCs as well as local authorities to take over/contribute to irrigation scheme operation (irrigation service fees), and management maintenance (OMM) works for long term sustainability of the schemes. ● The opportunities and needs to undertake a basin-wide improvements
Social	● No or minimum need for land acquisition and resettlement. ● The selected sites are free of land disputes. ● Farmers must be able and willing to participate in the investment/activity choice decisions (including VLD). ● Selected sites will not have significant adverse impacts on downstream water users (commercial and community)
Environmental	● Meets both Cambodia and AIIB's environmental and social requirements/standards. ● Can be designed / rehabilitated / operated to meet AIIB's dam safety requirements ● Not an area affected by water contaminants from mining/industry ● Not located in a culturally or geologically protected area ● Not located in, or could have an impact on any up or downstream biodiversity protected area or area meeting AIIB criteria for critical habitat (as may be influenced by changes in sediment or daily / seasonal / annual water availability or by preventing the

	migration of aquatic species for which sites are designated for example)
International Relations	● As per AIIB's International Policy on International Relations (OPIR), can be designed / rehabilitated / operated having minimal or no effect on a riparian's reasonable access to, use of, or benefit from the water by changing the quantity or quality of the water, or the timing of water flows, so as to materially affect public health, economic productivity or the environment in the territory of a riparian[12].

[12] The term "riparian" refers to a riparian or littoral state. A Project involving an International Waterway may comprise a hydroelectric, irrigation, flood control, navigation, drainage, water and sewerage, industrial, energy, mining or similar project.

Annex 3: List of references and for more detailed proposed irrigation schemes

Descriptions	Names of River Basins					
	Stung Chinith	**Stung Sen**	**Stung Chikreng**	**Stung Sreng**	**Stung Sisaphon**	**Stung Pursat**
Name of province	**Kampong Thom**	**Preah Vihear**	**Siem Reap**	**Oddar Meanchey**	**Banteay Meanchey**	**Pursat**
Name of river	Stung Chinith, and Stung Sen	Stung Sen	Stung Chikreng	Stung Sreng	Stung Sisaphon, and Stung Sreng	Pursat River
Name of the dam, if any Name of flood canal, if any	Ou Koki Dam					
Name and type of irrigation system:						
1. On-stream Reservoir with irrigation system	1.**Ou Koki Dam,** Storage 300 MCM for supplementary supply for Stung Chinit Reservoir. 2. **Padak Reservoir,** Construction of a new on-stream reservoir, storage 200 MCM for supply to 30 Kanha Reservoir, and other demand downstream		1.**Tumnub M'Kaka,** Improve reservoir, increase the storage capacity, and upgrading irrigation distribution networks and drainage facilities covering an area of 15 000 ha			
2. Off-stream Reservoir with irrigation system		1.**Tumnub Ou Chonh**, Improve existing reservoir system by improving reservoir to increase storage	2.**Tumnub 78 Ir**rigation. Improvement and modernization of irrigation distribution and	1.**Teuk Chum System**, Improvement of the Teuk Chum Reservoir, 10 MCM, and upgrading irrigation distribution networks		

Descriptions	Names of River Basins					
	Stung Chinith	Stung Sen	Stung Chikreng	Stung Sreng	Stung Sisaphon	Stung Pursat
		capacity to 50 MCM and by developing irrigation and drainage system to cover area of 3000 ha 2.**Tumnub Stung Sambo**, Improve existing reservoir system by improving reservoir to increase storage capacity to 10 MCM and by developing irrigation and drainage system to cover area of 3000 ha 3.**Tumnub Moradak Techo**, Improve existing reservoir system by improving reservoir to increase storage capacity to 5 MCM and by developing irrigation and drainage system to cover area of 1500 ha	drainage networks, covering 3000 ha, and upgrading an off-stream reservoir	cover 2000ha 2. **Beng Reservoir system**, Improvement of Ben reservoir, 15 MCM, and upgrading irrigation distribution networks and drainage facilities 3. **Chong Kol Reservoir**, Improvement of Chong Kal reservoir, 10 MCM, and upgrading irrigation distribution networks covering 2000ha		

Descriptions	Names of River Basins					
	Stung Chinith	Stung Sen	Stung Chikreng	Stung Sreng	Stung Sisaphon	Stung Pursat
3.Flood Diversion and Water Storage facilities					1.**Dredging Stung Pouk River**. Dredging of 78 Kilometers, to reactivate flood diversion capacities and create storage along the river, and construction of water control constructures.	
4.Flood evacuation channels, water control for irrigation					2. **Improvement Trapaing Thmar Irrigation System.** upgrading water control structures around the area to better provide farmers with improved irrigation services, aximizing water allocation and efficiency and to also mitigate impact of flood risks for up to 25000ha	
5.River Regulator, Diversion	3. **Chey Sen Barrage and Diversion Canal**. Diverting water from Stung Sen to supply into 30 Kanha Reservoir in Staung River					
6.Irrigation system			3.**Spean Sreng**. Improvement and modernization of			1. **Charek Irrigation Canal.** Improving and upgrading the existing

Descriptions	Names of River Basins					
	Stung Chinith	Stung Sen	Stung Chikreng	Stung Sreng	Stung Sisaphon	Stung Pursat
			irrigation system and distribution networks (15 000 ha), under Sreng 1 and Sreng 2 Reservoirs in Srey Snam and Pouk District			Irrigation Canal and its system (mainly located in in Sya Commune). The aim is to enhance irrigation efficiency and mitigate flood risks in the area. It is expected to cover approximately 13,500 hectares and benefit around 20,000 families across six communes, Kandieng and Bakan Districts.