Mekong River Commission

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TERM OF REFERENCE

1. Consultancy Summary:

Consultancy Title:	**Regional/International Consultant for Sustainable Groundwater Use and Management for Agriculture**
Consultancy type:[1]	**Special Service Agreement (SSA)**
Duration (# of days/months/from month to month):	**50 working days, from 01 May 2020 to 31 May 2021**
Division/OC:	**Planning Division**
Working station:	**Home based with a possibility to travel in the MRC's member countries in Cambodia, Lao PDR, Thailand, and Vietnam**

2. General background[2]:

2.1. Background and objective/s of the consultancy

The Mekong River Commission (MRC) was established by the 1995 Agreement on Co-operation for the Sustainable Development of the Mekong River Basin, between the governments of Cambodia, Laos, Thailand, and Viet Nam. In accordance with this Agreement, the Mission of MRC is: "To promote and coordinate sustainable management and development of water and related resources for the countries' mutual benefit and the people's well-being by implementing strategic programmes and activities and providing scientific information and policy advice". The MRC Agriculture and Irrigation Activity has been formulated to address land and water use issues in the agriculture sector to promote IWRM-based basin development in line with MRC's Strategic Plan 2016-2020 and the IWRM-based Basin Development Strategy (BDS). The BDS identifies Basin Needs in food and livelihood security, which agriculture and fisheries contribute to local food and income security. Agriculture and Irrigation Activity will cover in both rain-fed and irrigated agriculture applying IWRM approaches paying special attention to food security and poverty alleviation issues.

Needs of groundwater study in the LMB

MRC Strategic Plan 2016-2020 contains plans to implement a set of activities to identify practical knowledge on surface and groundwater capacity and to evaluate the potential of agricultural water use in the LMB. As agricultural water use can be comprised of surface and sub-surface water use, both should be regularly monitored for sustainable use. However, MRC has needed updating data and information on the groundwater use for more than a decade. Understanding the status of agricultural groundwater use must be an indispensable part of the knowledge base on agricultural water use in the LMB. Two main activities of groundwater include the Activity 1.7.2: "Conduct a survey of current groundwater use and the potential of

[1] ***Special Service Agreement*** - home based, daily rate: type (a) One-time assignment, 1 TOR, number of consultancy days within 12 calendar months; or type (b) Framework contract (number of consultancy days within 1 to 2 calendar years, multiple assignments with each assignment having 1 specific TOR). ***Service Contract*** - full time working with 21.75 days/month, MRCS based: One-time assignment (number of months within 1 calendar year).

[2] Be brief and to the point with maximum of 300-500 words.

new developments" and the Activity 1.7.3: "Conduct a study on groundwater sustainable yield management for crop production". The Activity 1.7.2 mainly aims to implement groundwater modeling and development of a groundwater safe yield map and evaluation of the sustainability of existing groundwater irrigation sites and the potential of future development, as well as necessary capacity building for Member Countries. The Activity 1.7.3 mainly aims to carry out a pilot project for transboundary agricultural water use in LMB and a pilot project for developing road map and assessing necessary capacity for management of two transboundary aquifers. On July 12, 2017, MRCS organized a regional consultation meeting to present the activity implementation plans of the groundwater activities. The Member Countries observed some duplicated tasks among the three groundwater activities and requested the Secretariat to combine them in one project.

Overall purpose of the study

The purpose of the groundwater study is to study transboundary groundwater sustainable yield management for crop production, including the transboundary agricultural water use in the LMB and developing road map and assessing necessary capacity for management of two transboundary aquifers. A survey of current groundwater use and potential new developments should be carried out for the whole LMB to facilitate better informed groundwater use in the agricultural sector by building a tangible capacity in relevant national institutes by making a groundwater safe yield map and evaluating the sustainability of current groundwater use as well as agricultural development plans to utilize groundwater.

2.2. Expected final product

- Implementation plan for case studies, including methods, tools and work plan for primary data collection and analysis for case studies, proposed pilot areas, draft cost estimate for primary data collection, and reporting template for transboundary report
- Term of References of National Working Groups for implementation of the case studies
- Road map and assessment for the necessary capacity for the management of two transboundary aquifers in the LMB revised base on the implementation of case studies and comments from the two countries
- Action plan for primary data collection for transboundary aquifers, especially groundwater and water quality, revised base on the implementation of case studies and recommendations from the two countries
- Training courses/workshops for capacity building for primary data collection, with the outline of training package and manual
- Technical guidelines and instructions for groundwater modelling to indicate areas for sustainable agricultural groundwater use and potential of new developments
- A regional report on sustainable groundwater use and management for agriculture (Second year report: case studies for transboundary aquifers); including
    - knowledge and understanding on transboundary groundwater use for crop production in the LMB, including the current situation of groundwater use for agriculture, whether local governments and farmers wants to use groundwater more for the cultivation, and problems generated from the groundwater use (e.g. land sinking, groundwater quality degradation and depletion)
    - summary and discussion of the case studies on sustainable groundwater use and management in transboundary aquifers, especially in terms of agricultural use included what kind of crops are irrigated by groundwater, timing of the groundwater irrigation for the cultivation the amount of used groundwater for irrigation, future plans for groundwater use in areas, with its nature and extent in the four MCs
    - Lessons learned from the case studies

3. Required deliverables, timelines and responsibilities

3.1. Deliverables and concrete timelines:

No.	Task	Deliverable	Number of days	Deadline
1	Review the countries' data and reports from secondary data collection (Project Phase I) and work together with the national experts to providing guidance, advice and inputs to data aggregation and harmonization of transboundary aquifers and identification of data gaps in for case studies	• Technical guidance, advice and recommendations to data aggregation and harmonization of the transboundary aquifers • Data gaps for primary data collection and analysis, especially groundwater level and quality, for case studies identified	5	June 2020
2	Review the implementation and results of the project Phase 1 and develop an implementation plan for case studies of sustainable agricultural groundwater use and management for transboundary aquifers and the potential of new developments	• Implementation plan for case studies including: - Methods, tools and work plan for primary data collection and analysis for case studies - Proposed pilot areas for case studies for further discussion and selection - Term of References of National Working Groups for implementation of the case studies - Draft cost estimate for primary data collection for the case studies • Reporting template and guide for a transboundary report. • Presentations of implementation plan for case studies, Term of Reference of National Working Groups for implementation of case studies and, and reporting template	10	July - August 2020
3	Provide capacity building	• Trainings/workshops for	5	May 2020 –

No.	Task	Deliverable	Number of days	Deadline
	for primary data collection and analysis and case studies implementation	primary data collection, with the outline of training package and manual		May 2021
4	Provide technical guidance, advice and inputs to the implementation of case studies of sustainable agricultural groundwater use and management for transboundary aquifers and the potential of new developments	• Technical guidance, advice and inputs to implementation of case studies	5	May 2020 – May 2021
5	Review and revise a draft road map for necessary capacity for transboundary aquifers management based on the implementation of case studies and recommendations from the two countries	• Road map and assessment for the necessary capacity for the management of two transboundary aquifers in the LMB revised base on the implementation of case studies and comments from the two countries	5	February 2021
6	Review and revise an action plan for primary data collection for the sustainable agricultural groundwater use management for transboundary aquifers, especially groundwater and water quality, based on implementation of the case studies and recommendations from the two countries	• Action plan for primary data collection for transboundary aquifers, especially groundwater and water quality, revised base on the implementation of case studies and recommendations from the two countries	5	February 2021
7	Prepare technical guidelines and instructions, including groundwater modelling and mathematical model design and construction, and input parameters	• Technical guidelines and instructions for groundwater modelling to indicate areas for sustainable agricultural groundwater use and potential of new developments	5	February 2021
8	Write the regional	• A regional report on	10	April 2021

No.	Task	Deliverable	Number of days	Deadline
	second year report (Implementation of case studies)	sustainable groundwater use and management for agriculture. (Second year report: case studies for transboundary aquifers)		
		Total working days	50	

3.2. Required tasks and responsibilities[3]:

The duties of International Consultant for Sustainable Groundwater Use and Management for Agriculture will include to:

- Review the countries' data and reports from secondary data collection (Project Phase I) and work together with the national experts to providing guidance, advice and inputs to data aggregation and harmonization of transboundary aquifers
- Provide technical guidance and support to identification of data gaps in for case studies
    - Develop an implementation plan for case studies of sustainable agricultural groundwater use and management for transboundary aquifers and the potential of new developments, including methods, tools and work plan for primary data collection and analysis for case studies, and proposed pilot areas
- Prepare term of References of National Working Groups for implementation of the case studies, a draft cost estimate and a reporting template for the case studies
- Provide capacity building for primary data collection and analysis and case studies implementation
- Provide technical guidance, advice and inputs to the implementation of case studies of sustainable agricultural groundwater use and management for transboundary aquifers and the potential of new developments
- Review and revise a draft road map for necessary capacity for transboundary aquifers management
- Review and revise an action plan for primary data collection for the sustainable agricultural groundwater use management for transboundary aquifers, especially groundwater and water quality
- Prepare technical guidelines and instructions, including groundwater modelling and mathematical model design and construction, and input parameters
- Write the regional report on sustainable groundwater use and management for agriculture (Second year report: case studies for transboundary aquifers)

4. Working Arrangement:

4.1. Director supervisor: The consultant reports to Director of Planning Division through Agriculture and Irrigation Specialist

4.2. Communication line: Under the overall supervision and guidance of the Director of Planning Division with the support from Agriculture and Irrigation Specialist, the consultant will provide technical guidance and support to the National Consultants.

5. Payment mode[4]: Per Milestones

[3] When possible, please include activities such as report revision; *capacity building, knowledge and skills transfer (K&S) to MRCS and MCs; gender mainstreaming/reporting/data; handover of data and assets to MRC when contract complete*. You can reach out to the Gender Focal point of the MRCS for support to gender related requirements, and to HR for capacity building and K&S requirements if need be.

Payment will be made based on the actual number of working days with the MRC's daily timesheet template provided by the consultant. Travel and subsistence costs will be included in the working day rate of the consultant. Tasks will be assessed and technically endorsed and approved by the PD's Agriculture and Irrigation Specialist prior to payment.

Milestone	Percent of payment	Target date
After signing of the contract and upon submitted of original invoice.	10%	01 May 2020
Upon the completion and submission of related deliverables of task from 1 to 4 and PD/MRCS reviewed and approved.	40%	31 July 2020
Upon the completion and submission of related deliverables of task from 5 to 7 and PD/MRCS reviewed and approved.	30%	28 February 2021
Upon the completion and submission of related deliverables of task 8 and PD/MRCS reviewed and approved.	20%	31 May 2021

6. Qualifications and Requirements:

- Master's degree or higher in hydrogeology, groundwater hydrology, groundwater modelling and management or related fields;
- Minimum 15 years of experience in transboundary groundwater use and management, especially proven experience in the regional or internal, or similar with focus on groundwater use and management for agriculture studies, research, development, and management, preferably on both practical field experiences and academic research;
- In-depth and proven knowledge and skills in hydrological science, groundwater modelling, especially MODFLOW, safe yield mapping, transboundary aquifers management action plan and road map development, groundwater data management;
- Experience in preparation and organizing of training courses on groundwater data collection, modelling, and management;
- Ability to communicate effectively, verbally and in writing with a wide range of people and to work in a multicultural environment;
- Practical experience with good knowledge of the Mekong riparian countries or similar tropical regions is a strong asset;
- Ability to work and cooperate in international working environments is essential;
- Excellent written and oral communication skills in English; working knowledge of riparian languages is an advantage.

7. Intellectual property rights[5]:

Intellectual property rights - IPR: Information, data, database, knowledge resources in the forms of briefings, reports, proceedings, articles, essays, etc. issued by and for the MRCS will be the MRCS property. Any utility, announcement and disclosure that are without MRCS highest levels of authority' permission is considered illegal and will be charged by relevant local and international legal procedures.

8. Signature Block[6]

[4] Please consider choosing the payment mode/s i.e. lump sum, installment, per day, per hours, per products or per milestones.

[5] Please indicate if *any product/s* that the consultant produces or any MRC data that the consultants are/will be going to use will belong to MRC and will be under MRC *intellectual property rights* (IPR). This part also includes the requirement for the consultant to transfer to MRCS the ownership of data, IPR and materials generated during the work with the MRC.

MRC Secretariat Division: Planning Division Name of Director: Bountieng Sanaxonh Signature: ----------	 Date: ----------
Consultant Name of consultant: ---------- Signature: ----------	 Date: ----------

[6] This *signature block should include* names of MRCS staff who oversees the consultancy. The consultant who has to sign the TOR when signing the service contract with MRC.