



## Mekong River Commission

For Sustainable Development

### TERMS OF REFERENCE

#### 1. CONSULTANCY SUMMARY:

- Title:** Consultant for Regional Study on Salinity Intrusion at the Delta and Three Habitat Conditions
- Consultancy Type:** Special Service Agreement (SSA), type (a) One-time assignment
- Division:** Environmental Management Division (ED)
- Duration:** 50 working days from 31 March 2021 to 31 December 2021
- Duty Station:** Home-based in each own MC with possible travel to MRC Secretariat
- Reporting to:** The Consultant will be working under the overall supervision of the Director of ED and under the direct supervision of the Chief Environmental Management Officer of the MRCS ED as well as in close consultation with the MRCS ED Water Quality Programme Officer
- Expected Deliverables:**
- Concept Note on the development of detailed methodologies for regional studies on: (a) the extent of salinity intrusion in the Mekong Delta; and (b) the condition of riverine, estuarine and coastal habitats throughout the Lower Mekong Basin (1<sup>st</sup> and Final drafts);
  - A detailed methodology for a regional study on the extent of salinity intrusion in the Mekong Delta (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, and Final drafts);
  - A detailed methodology for a regional study on the condition of riverine, estuarine, and coastal habitats throughout the Lower Mekong Basin (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, and Final drafts);
  - Meeting materials and presentations for three (03) rounds of EGEM Meetings and one (01) round of National Consultation Meetings in the 4 MCs; and
  - A Briefing Note on the two methodologies for the MRC JC consideration for further implementation

#### 2. INTRODUCTION AND BACKGROUND:

The Mekong River Basin (MRB) is one of the largest and most biodiverse river basins in the world, spreading over more than 795,000 km<sup>2</sup> and extending over 5,000 km through six different countries and providing a home to more than 70 million people alone in its Lower Mekong River

Basin (LMB). For the Lower Mekong Countries (Cambodia, Lao PDR, Thailand, and Viet Nam), sustainable development and utilization of water resources of the LMB are utmost importance.

Recognizing that the LMB and its related water resources and environment are natural assets of immense value to all the riparian countries for the economic and social well-being and living standards of their peoples, the Lower Mekong Countries jointly established the Mekong River Commission (MRC) through the 1995 Agreement on Co-operation for the Sustainable Development of the Mekong River Basin. The role of the MRC is to coordinate and promote cooperation in all fields of sustainable development, utilization, management and conservation of the water and related resources of the LMB.

As the operational arm, the MRC Secretariat (MRCS) was established as one of three main permanent bodies of the MRC. The main purpose of the MRCS is to provide technical and administrative services to the other two permanent bodies of the MRC – the Joint Committee (JC) and the Council. Under the supervision of the JC, the MRCS has regularly undertaken periodic regional and basin-wide studies on behalf of Member Countries to assess potential effects of increasing development, growing population and uncertainty in climate variability.

Recent basin-wide assessment and reporting were found to be hampered by data limitations across a range of areas, including the 2017 Council Study (CS 2017) where the assessment of status and trends in several key environmental parameters (including salinity intrusion and riverine habitats and biodiversity as reported in the Biological Resources Assessment (BioRA) report for the Council Study) were relied on expert opinions due to the lack of available data. With the basin undergoing rapid and extensive change, tracking changes in conditions, analyzing the potential implications, and working cooperatively to leverage the benefits and avoid the problems are seen as critical to achieving the objectives of the 1995 Mekong Agreement.

To provide a greater strategic direction to the monitoring and assessment effort, the Mekong River Basin Indicator Framework (MRB-IF) was developed and approved aiming at providing a consistent and streamlined approach to data collection, analysis, and reporting. Through the MRB-IF, the MRC Member Countries (MCs) and stakeholders can be properly alerted to the key environmental issues and trends, and therefore, able to identify areas of further investigation and cooperation across five core dimensions (environment, social, economic, climate change and cooperation). The 15 Strategic Indicators across the five dimensions have already been incorporated into the current Basin Development Strategy and MRC Strategic Plan. These strategic indicators have been buttressed by 53 assessment indicators and associated monitoring parameters reflecting the priority areas of cooperative regional action among MCs. Included in these 53 assessment indicators and associated monitoring parameters are (i) the extent of salinity intrusion in the Mekong Delta (MD) – Assessment Indicator 14 and (ii) the condition of riverine, estuarine, and coastal habitats – Assessment Indicator 16. Both indicators are part of the Environment Dimension Strategic Indicators of the MRB-IF and are overseen by the MRCS Environmental Management Division (ED), which is responsible for environment monitoring, assessment, planning and management to support basin planning management and development for sustainable development of the Mekong River.

To implement MRB-IF, Data Acquisition and Generation Action Plan (DAGAP) has been developed to provide clear direction to MCs and the MRCS on the data requirements, and while the DAGAP concluded that the data required for implementing the MRB-IF largely exists, systematic process of collection and analysis of the data for status and trends evaluation is missing. Therefore, introducing a more systematic approach to data generation and acquisition can provide greater certainty for all stakeholders on roles and responsibilities and helps target appropriate investment in further data collection towards common objectives and to agreed standards.

Given the current gaps in data availability as reflected in the ongoing data collection mechanisms, a variety of sources have been identified under DAGAP to address these gaps, including the implementation of periodic studies and surveys undertaken through the MRC work-plan by the MRCS and MCs<sup>1</sup>. Two such studies to be periodically implemented are:

1. A regional study on the extent of salinity intrusion in the MD (MB-IF Assessment Indicator No. 14); and
2. A regional study on the condition of riverine, estuarine, and coastal habitats (MB-IF Assessment Indicator No. 16).

To ensure common understanding among MCs and MRCS on the roles and responsibilities, processes, and arrangements for data collection, modelling and mapping in accordance with the MRB-IF objectives, the MRCS ED is seeking a qualified Consultant to develop a basin specific systematic approach to periodically assess the extent of salinity intrusion in the Mekong Delta and the conditions of the riverine, estuarine, and coastal habitats across the LMB.

**3. OBJECTIVES OF THE CONSULTANCY:**

The overall objectives of this consultancy assignment are to develop:

1. A detailed methodology for a regional study on the extent of salinity intrusion in the MD (hereafter Detailed Salinity Intrusion Methodology (SIM)); and
2. A detailed methodology for a regional study on the condition of riverine, estuarine, and coastal habitats (hereafter Detailed Riverine, Estuarine and Coastal Habitats Methodology (RECHM)).

**4. EXPECTED RESULTS:**

The expected results of this consultancy service are presented as follows:

- The first and final drafts of a Concept Note (CN) on the development SIM and RECHM will be developed and completed;
- The first, second, third and final drafts of SIM will be developed and completed;
- The first, second, third and final drafts of RECHM will be developed and completed;
- The meeting materials and presentations to support the finalization of the CN, SIM and RECHM; and
- A Briefing Note on the SIM and RECHM for the MRC JC consideration.

**5. DELIVERABLES AND CONCRETE TIMELINES:**

A tentative schedule of key deliverables is provided below. The exact schedule will depend on the timing of the contracting with the successful consultant, but it is anticipated that the assignment will commence on 01 March 2021 through 31 December 2021.

Del. No.	Deliverables and Expected Output	Number of Working Days	Deadline
1	<b>First draft</b> of a CN on the development of SIM and RECHM.	12	15 April 2021

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<sup>1</sup> Periodical data collection and regional studies are often carried out at river basin level led by the MRC Secretariat with the support of the relevant line agency of the MCs.

Del. No.	Deliverables and Expected Output	Number of Working Days	Deadline
2	Prepare materials for and attend the Meeting of the EGEM in connection with <b>Deliverable No. 1.</b>	2	30 April 2021 (for materials); and 14 May 2021 (for EGEM Meeting)
3	<b>Final draft</b> of a CN on the development of SIM and RECHM.	2	30 May 2021
4	<b>First draft</b> of SIM	12	15 July 2021
5	<b>First draft</b> of RECHM		
6	Prepare materials for and attend the Meeting of the EGEM in connection with <b>Deliverable No. 4 and 5.</b>	3	20 July 2021 (for materials); and 05 August 2021 (for EGEM Meeting)
7	<b>Second draft</b> of SIM	6	24 August 2021
8	<b>Second draft</b> of RECHM		
9	Prepare materials for and attend national consultation workshops in connection with <b>Deliverables 7 and 8.</b>	2	09 September 2021 (for materials); and 15 September – 15 October 2021 (for 4 national consultation meetings)
10	<b>Third draft</b> of SIM	5	30 October 2021
11	<b>Third draft</b> of RECHM		
12	Prepare materials for and attend the Meeting of the EGEM in connection with <b>Deliverable No. 10 and 11.</b>	2	10 November 2021 (for materials); and 25 November 2021 (for EGEM Meeting)
13	<b>Final draft</b> of SIM	4	20 December 2021
14	<b>Final draft</b> of RECHM		
<b>Total Number of Working Days</b>		<b>50</b>	<b>01 March – 31 December 2021</b>

## 6. REQUIRED TASKS AND RESPONSIBILITIES:

To successfully carry out this assignment, the selected consultant is required to:

- Review relevant documents, technical reports, scientific research literature, and/or applicable guidelines and standard procedures from within the LMB and other river basins around the world on studies of the extent of salinity intrusion and the condition of riverine, estuarine, and coastal habitats, especially previous studies by the MRC including the previous salinity intrusion mapping carried out as part of the climate change adaptation activities. The aim of the review should be to identify and summarize applicable and proven methods that have been used by research, private, governmental and/or river basin management organizations for the periodic assessment of the extent of salinity intrusion and of the condition of riverine, estuarine, and coastal habitats (including areas of sandy and rocky habitats, deep pools, vegetated riparian areas, and mangrove, and

considering riverbank and coastal erosion). The review will also need to consider the availability of potential source data in the LMB including relevant station monitoring data and remote sensing products. Methods are expected to include modelled and measured approaches or a combination of both and enable the spatial representation of results across the LMB;

- Based on the result of the review, prepare a CN on the development of SIM and RECHM as per **Deliverable No. 1 (Section 5)** summarizing not only the background and objectives of the assignment but also results of the above literature review. A list of applicable and proven methods for each study (SIM and RECHM) should be included along with the advantages and disadvantages of each as they apply to the Mekong River Basin. The evaluation of advantages and disadvantages will need to consider issues including but not limited to:
  - The availability of required models, modelling capacity and input data over time;
  - The cost of periodically applying the methodology;
  - The ease of implementation and the accuracy and spatial resolution of the results;
  - The capacity to construct a time series of change in conditions, recognizing the annual and seasonal variability inherent in the LMB;
  - The sensitivity to detect change in conditions including as a result of water resources development and climate change.

Based on the results of the review, the Consultant should provide a recommendation on the most suitable methods for the LMB for the periodic assessment of the extent of salinity intrusion and the condition of riverine, estuarine, and coastal habitats, taking into consideration that the work is to be carried out at a regional level led by the MRC Secretariat with ground truthing by relevant line agencies of the MCs at the country level. In addition, the CN should provide a clear process and timeline for the development of the detailed methodologies in connection with this assignment;

- Following the submission of the MRCS ED approved **First Draft of the CN**, the Consultant is required to prepare materials including PowerPoint presentations and attend an EGEM Meeting as per **Deliverable No. 2**. The objectives of this EGEM meeting will be to obtain feedback and approval for the finalization of the CN from relevant line agencies of MCs;
- Based on the results of the EGEM Meeting, revise and finalize CN as per **Deliverable No. 3** and prepare the First Draft of SIM and RECHM for submission as per **Deliverables No. 4** and **No. 5**. SIM and RECHM should be prepared as separate documents unlike the CN. Both SIM and RECHM will be prepared based on the recommended methods in the approved CN, and should provide detailed guidance for periodic implementation of the assessment methodology in order to monitor change in the extent of salinity intrusion and the condition of riverine, estuarine, and coastal habitats. The guidance should include but not be limited to:
  - Objectives of the assessment;
  - Resources required for the assessment including monitoring;
  - Recommended timeframe (duration) of the assessment;
  - Detailed tasks in sequential steps to be carried out at regional or river basin level (by the MRCS) including Standard Operating Procedures if relevant;
  - Detailed tasks in sequential steps to be carried out at Member Country level (by relevant line agency) including Standard Operating Procedures if relevant; and

- Expected output of the assessment (e.g., monitoring data, modelling outputs and reports).
- Following the submission of the MRCS approved First Drafts of SIM and RECHM, the consultant is required to prepare materials including PowerPoint presentation and attend an EGEM Meeting to discuss and obtain feedback and guidance on the draft SIM and RECHM, as per **Deliverable No. 6**;
- Based on the results of the EGEM Meeting, revise and update the SIM and RECHM for approval as per **Deliverables No. 7** and **No. 8**. Following the approval, prepare materials including PowerPoint Presentation to National Consultation workshop to be carried out at four Member Countries (one workshop per MC) as per **Deliverable No. 9**. The objectives of the national consultation workshop will be to present and obtain comments and feedback on the SIM and RECHM from relevant line agencies of the MCs including those responsible for the implementation of the SIM and RECHM at the country level;
- Based on the results of the national consultation workshop, consolidate comments from all four workshop and revise/update the SIM and RECHM for the approval from the MRCS ED as per **Deliverables No. 10** and **No. 11**. Following the approval, prepare materials including PowerPoint presentation for the final meeting of the EGEM of this assignment (as per **Deliverable No. 12**) to present the outcomes of the national consultation workshops and also, the changes made to the SIM and RECHM following the national consultation workshops. The goal of this EGEM meeting will be to obtain final comment and principally approval from the MCs on the SIM and RECHM;
- Based on the comment of the final EGEM Meeting, revise, update and submit the final drafts of the SIM and RECHM for approval as per **Deliverables No. 13** and **No. 14**.; and
- Following the review and acceptance from the MRCS ED on the final drafts of the SIM and RECHM, a **Briefing Note (BN)** on the SIM and RECHM will then be prepared by the Consultant for a submission to the MRC JC consideration for further implementation.

## 7. PAYMENT MODALITY:

Since several deliverables are expected for this consultancy assignment, to minimize administrative works, payment modality under this assignment will be carried out in segment based on the completion of a group of deliverables as follows:

- 1<sup>st</sup> payment: the consultancy fee of **5 working days** (or 10 % of total working days) will be paid after signing the contract;
- 2<sup>nd</sup> payment: the consultancy fee of **10 working days** (or 20 % of total working days), will be paid following the completion of **Deliverables No. 1-3** as specified in **Section 5** of this ToR and they are reviewed and approved by MRCS ED;
- 3<sup>rd</sup> Payment: the consultancy fee of **20 working days** (or 40 % of total working days) will be paid after submission of **Deliverables No. 4-8** as specified in **Section 5** of this ToR and they are reviewed and approved by MRCS ED; and
- Final payment: the consultancy fee of **15 working days** (or 30 % of total working days) will be paid after the submission of **Deliverables No. 9-15**, as specified in **Section 5** of this ToR and they are reviewed and approved by MRCS ED.

**Note:** Consultancy rate is defined by the MRCS consultancy rate policy and the level of consultancy. MRC is a tax-exempted agency for the work done for the MRC. Consultant, in case mission is required, will be covered with a return ticket to and from the assigned duty stations with a daily related subsistence allowance of 75% of the UN for the mission days.

## **8. INTELLECTUAL PROPERTY RIGHTS:**

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.

## **9. DECLARATION OF NON-FRAUDULENCE AND PROTECTION OF PERSONAL DATA:**

The Consultant shall adhere to the MRC's relevant rules and regulations of the MRC on personal data protection, business exclusion, and fraud prevention and anti-corruption principles, and shall be under strict disciplinary measures should any violation occurs.

## **10. WORKING ARRANGEMENT:**

**Communication Line:** The Consultant will be working under the overall supervision of the Director of ED and under the direct supervision of the Chief Environmental Management Officer of the MRCS ED as well as in close consultation with the MRCS ED Water Quality Officer

## **11. QUALIFICATIONS AND REQUIREMENTS:**

- University degree (Master/Doctoral degrees or equivalent minimum) in Environmental Remote Sensing and Geospatial Sciences, Earth and Environmental Sciences, Environmental Geographic Information Sciences, Geoinformation Sciences, Environmental Geomatics, GIS and Remote Sensing with focus on Environmental Monitoring and Management, or related fields;
- Minimum 10 years experiences working in the field of environmental spatial analysis, remote sensing, and advanced environmental monitoring and management with remote sensing with proven experience in the LMB region (Cambodia, Lao PDR, Thailand and Viet Nam) or internationally, preferably on both practical field experiences and academic research;
- Extensive experience in preparing technical and research paper, document, report, guidelines, and standard operation procedures relating to the monitoring of environmental indicators including instream habitats and salinity levels.
- Experience in preparing documents/materials and participating in meetings and/or conferences with multilingual attendees;
- Experience with and good knowledge of the Mekong riparian countries or similar tropical regions;
- Experience in working in a multicultural and international multiple partner environment;
- Excellent inter-personal skills and able to negotiate constructively shared position in a Mekong or/and Southeast Asia institution and cultural context;
- Fluent in English, verbal and written and strong analytical skills; and
- Compliance with all MRC's Rules and Regulation Regarding Consultancy Management and Contract Monitoring and Closure.

## **12. SIGNATURE BLOCK:**

MRCS:

Full Name: \_\_\_\_\_

Incumbent's Full Name: \_\_\_\_\_

Title: \_\_\_\_\_

Signature: \_\_\_\_\_

Incumbent's Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_