**Mekong River Commission**
**For Sustainable Development**

# TERMS OF REFERENCE

## 1. CONSULTANCY SUMMARY:

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|---|---|
| **Title:** | **Associate Modeller to support the maintaining and enhancing the MRC DSF modelling dataset and tools** |
| **Consultancy Type:** | Service Contract (SC) |
| **Division:** | Technical Support Division (TD) |
| **Duration:** | From 01 January 2022 to 31 December 2022 |
| **Duty Station:** | MRCS Office in Vientiane |
| **Reporting to:** | The incrumbant will be working under the overall supervision of the Director of TD, Chief Hydrologist and under the direct supervision of the Modellers |
| **Expected Deliverables:** | See section 5 |

## 2. INTRODUCTION AND BACKGROUND:

The Mekong River Commission (MRC) was established by the 1995 Agreement on Cooperation for the Sustainable Development of the Mekong River Basin, between the governments of Cambodia, Lao PDR, Thailand and Viet Nam. The role of the MRC is to coordinate and promote cooperation in all fields of sustainable development, utilisation, management and conservation of the water and related resources of the Mekong River Basin.

The MRC Secretariat (MRCS) is the operational arm of the MRC. It provides technical and administrative services to the Joint Committee and the Council to achieve the MRC's mission. Modelling Team (MT) under the MRCS Technical Support Division (TD) is responsible for conducting modelling activities and providing technical assistance to other division in modelling, assessment and analysis. It also provides other information and support for sustainable development, when required. To do so, the Decision Support Framework (DSF) system was developed aiming for MRC to have a transparent modelling system that could be used by each and any of the member countries (MCs) to study and check proposals and strategies for water resources developments.

MRCS Modelling Team (MT) was established in 1998 within the Technical Support Division to provide modelling service to other MRCS units. Since the start of implementation of the World-Bank-funded project of Water Utilization Programme in 2000, the MT have been involved intensively in the development and application of the Basin Modelling and Knowledge Base, also known collectively as the DSF with a set of the simulated Model such as: SWAT, IQQM and ISIS Model to support the studies within LMB related to water resources.

Reference is made to the Reinvigoration Information System, MRC BDS 2021-2030, SP 2021-2025 in particular the TD Multi-year WorkPlan 2021-2022 under the implementation of the endorsed design concept of reinvigorated MRC's data, information, modelling, forecasting and communication systems and the concept note of regional proactive planning exercise including the upgrade of MRC DSF with the integration of other potential tools. The MRC Secretariate has

been working on necessary documents for the preparatory process of upgrading MRC DSF which will start the implementation in 2022. In meantime this year 2021, MT is working on the update of modelling datasets received from MCs to expand the simulation till most recent as data available to support future MRC studies such as the Joint Study with China, Mekong Basin-wise Development Scenarios for Adaptive Basin Plan, and so on.

The envolvement of the MCs in all processes of above mentioned activities with MT through the Associate Modeller Programme will ensure the acceptable quality of MRC products and it will intensively maintain and enhance national modelling capacity and human resources at the national level.

Against the above background, the TD is seeking a competent national modelling expert from each MC to support the implementation of the modelling activities in 2022.

The key deliverables, with timelines, of the Task to be provided by the Consultant are listed in ***Section 5*** of this ToR.

**3. OBJECTIVES OF THE CONSULTANCY:**

The overall objective is to assist MT in updating MRC DSF datasets, models and tools and to support in process of improvement of DSF under the reinvigorated IS, proactive regional planning exercise and the implementation of national pilot projects on modelling and forecasting capacity in 2022. In addition, the associate modeller is expected to be resources person to support the national modelling activities after they complete the term and return to their respective countries.

The specific objectives of Associate Modeller are:

1. To assist MT in all modelling activities in particular the update/upgrade of MRC DSF modelling dataset and knowledge base (KB), model development and improvement including Quality Assurance and Control (QA/QC) and collecting additional modelling hydro-met data, hydropower data, irrigation data, and other water utilities, etc;
2. To assist MT and MCs in national modelling capacity building through the implementation of national pilot project on modelling and forecasting capacity of their respective countries;
3. To support all the process of modelling tasks in the reinvigorated IS, regional proactive planning exercise.
4. To enhance their knowledge and skills on operation of DSF/MRC Toolbox, DSF models, other potential models/tools such as eWater SOURCE, DRIFT, ArcGIS and so on through learning by doing approach with modelling application and case study guided by MT;
5. To gain further experiences on MRC DSF, analysis tools, and systems at both regional and national projects/activities and participate in relevant trainings/workshops organized by TD or other divisions;
6. To implement other technical-related works as assigned by TD Director and relevant supervisors.

**4. EXPECTED RESULTS:**

Based on the above objectives of the assignment, the key expected outputs of this consultancy are as follows:

- QA/QC of the collected historical hydro-meteorological data, as well as national socio-economic development data, dam operation data, water supply, and consumption data in the respective country to be ready for modelling works;
- The support on the update of SWAT-IQQM and other relevant models for entire Mekong Basin with recent time-series (1985-2020) and other relevant datasets.
- The support on the implementation of national pilot project in 2022 to produce acceptable products, and the support on the maintenance and enhancement of the national modelling knowledge at national level;
- The support on the update/upgrade of MRC DSF through exploring the potential tools and the involvement in the processes of the regional proactive planning exercise.
- The lesson learnt and the technical reports for the case study from the intensive capacity building including the presentations.

**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 1 January 2022 through 31 December 2022. Noted that some assignments will be started in the specific peiord and parell with other tasks, while some assignments will be started after the completion of other tasks.

| No. | Deliverables and Expected Quality | Number of Working Months | Deadline |
|---|---|---|---|
| 1 | QA/QC of the collected historical hydro-meteorological data, as well as national socio-economic development data, dam operation data, water supply, and consumption data in the respective country to be ready for modelling works | 2 | 30 March 2022 |
| 2 | The update of SWAT-IQQM/SOURCE models for entire Mekong Basin with recent time-series (1985-2020) and other relevant datasets | 3 | 31 December 2022 |
| 3 | The support to the implementation of national pilot project in 2022 to produce acceptable products and national modelling knowledge are maintained and enhanced in national level | 2 | 30 November 2022 |
| 4 | The support to the update/upgrade of MRC DSF through exploring the potential tools and the involvement in the process of the regional proactive planning exercise | 2 | 31 December 2022 |
| 5 | The report for the lesson learnt and the technical report for the case study from the intensive capacity building including the presentations | 3 | 31 December 2022 |
| | **Total Number of Working Months** | **12** | |

## 6. REQUIRED TASKS AND RESPONSIBILITIES:

Required tasks and responsibilities for the Consultant are summarised below:

- Assist MT in Quality Assurance and Control (QA/QC) of collected data, gap filling and preparing data in a correct format including AQUARIUS products.
- Communicate and collect additional data from respective country to update modelling datasets.
- Assist MT in updating Knowledge Base (KB) both of Time series and Spatial data.
- Assist MT in model set up, calibration and validation process with updated datasets
- Submit his/her monthly work plan and provide inputs to MT's Work Plan;
- Participate in all training activities organized by the MRC and MT as required;
- Assist MT in the technical activities as request through providing the technical support on modeling implementation work (National Pilot Project by MCs, Joint Study with China, Proactive Regional Planning..etc) including capacity building to national events.
- Prepare the monthly progress reports, and the final reports of lesson learnt and case study.
- Other tasks as assigned by MT and TD.

## 7. PAYMENT MODALITY:

The payment will be made in monthly basis with acceptable reporting quality.

## 8. INTELLECTUAL PROPERTY RIGHTS (IPR):

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 TD, Chief Hydrologist and under the direct supervision of the Modellers.

## 11. QUALIFICATIONS AND REQUIREMENTS:

The incumbent must have the following qualifications:

- Bachelor's Degree or higher in field of Water Resources Modeling, Hydrology and Hydrodynamic Modeling, Water Resources Planning and Management, or equivalent/related fields.

- Preferably former trainee of the previous MRC Toolbox or DSF training conducted by MRCS Modeling Team.
- Preferably at least five (5) year of experience of working in river basin and water resources modeling, planning and management, hydrology, or aquatic environment or related field.
- Proven capabilities and skills in activities of mathematical modeling, hydrological analysis, and environmental impact assessment etc.
- Demonstrated ability to work in an international environment, communication skills, teamwork.
- Good knowledge about activities of the MRC in general and the Information and Knowledge Management Programme in particular is a valuable asset.
- Excellent computer skills are preferable;
- Good command of spoken and written English and good presentation and reporting skills.

**12. SIGNATURE BLOCK:**

**MRCS:**

**Full Name:** Winai Wangpimool

**Incumbent's Full Name:** _____

**Title:** Director of TD

**Signature:** W.Winai

**Incumbent's Signature:** _____

**Date:** 21/10/2021

**Date:** _____