



TERMS OF REFERENCE

1. CONSULTANCY SUMMARY:

Title:	MRC PDIES Unique/Single Gate development (International Consultant)
Consultancy Type:	Framework Contract
Division/OC:	Technical Support Division
Duration:	50 days from 27 April 2026 to 31 December 2026
Duty Station:	Home-based and, if required, at the MRC Secretariat in Vientiane
Reporting to:	Technical Support Division Director, Chief Hydrologist and Database and Information System Specialist
Expected Deliverables:	MRC-IS PDIES Unique/Single Gate platform prototype with detailed technical design documents for regional and national linkages

2. GENERAL BACKGROUND AND OBJECTIVES OF THE CONSULTANCY

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 is the operational arm of the MRC. It renders technical and administrative services to the Joint Committee and the Council to achieve the MRC's mission in promoting and coordinating sustainable management and development of water and related resources for the countries' mutual benefit and the people's well-being.

The Technical Support Division (TD) takes lead in the MRC PDIES implementation and Reinvigoration on Data, Information, Modelling, and Forecasting. The quality assured data and information would be updated and integrated into MRC-IS databases, visualized and shared to MRC stakeholders and partners through Data Portal services¹, Water Status dashboard, MRC Web Services, Mobile Apps, etc.

Furthermore, the development of a robust MRC-IS PDIES single/unique gate will enable comprehensive management of all incoming and outgoing data flows, including required metadata validation. This will allow the organization to gain a clearer and more consolidated view of all information exchanges, in order to (1) better monitor and control information flows, and (2) generate statistics and insights on how data are being used.

In addition, this new unique/single gate will facilitate efficient tracking and recording of exchange from (1) the member country line agencies and NMCs through their National Information Systems (NIS), and (2) from the hydropower plants that sharing some operational data under the hydropower data sharing project (phase 1 and 2), ensuring seamless data and information exchange between national and regional levels. It will also enhance data quality, consistency, and accessibility; reduce duplication of efforts; improve transparency and accountability which will facilitate QA/QC activities; and support evidence-based decision-making across the MRC network.

On this connection, a complete migration of the MRC hydromet and environmental database (Aquarius systems) to private cloud platform will facilitate the linkages for seamless interconnections and secured access to authorized stakeholders as well as efficient backup and recovery mechanisms for availability of the services. Additionally, expanded ingestion workflows to integrate all the telemetry

¹ <https://portal.mrcmekong.org/home>

parameters to the unified Water Status Dashboard will greatly improve performance on both monitoring and forecasting services in the long run. Therefore, within this context, more workloads and activities need to be carried out is required.

3. EXPECTED RESULTS

For the tasked assignments, the expected results are as follow.

- **A fully functional MRC-IS PDIES single/unique gate** developed and integrated with the existing MRC-IS infrastructure, enabling seamless management of all incoming and outgoing data flows (from/to the line agencies of the 4 members countries and 2 dialogues partners and some hydropower projects located in the LMB).
- **Automated tracking and recording system** in place for all data transactions, supporting transparency and accountability in data exchange processes.
- **Enhanced interoperability** between national and regional information systems (NIS and MRC-IS), facilitating smoother data sharing and synchronization.
- **Improved data quality and governance**, with clear procedures for metadata documentation, data validation, QA/QC procedures, and access management.
- **User-friendly interface for both technical and non-technical users, supporting efficient submission of data request, validation, and retrieval of data and information**, allowing for:
 - Improved monitoring and control of data and information flows.
 - Generation of usage statistics and analytical insights on data access and utilization.
- **Capacity-building support** provided to MRC and NMC staff
- **Comprehensive technical documentation** (architecture, database schema, user manual, and maintenance guidelines) delivered upon completion to ensure proper use, maintenance, and sustainability of the new system.

4. REQUIRED TASKS AND RESPONSIBILITIES

Under direct supports from the Specialists and Technical Experts and overall supervision of the TD Director, the consultant is expected to perform the following assigned tasks.

MRC-IS PDIES Unique/Single Gate platform prototype with detailed technical design documents for regional and national linkages

- Provide consultancy services for designing the technical details of the MRC-IS PDIES Unique/Single Gate; to provide additional data management services and ensuring it integrates well with the existing systems and components
 - Develop an initial basic demo showcasing core features of the system, including
 - Support the managing of incoming and outgoing data flows, including required metadata validation, with a proper tracking system
 - Consider pre-QA/QC functionalities to ensure data quality before integration into MRC-IS repositories
 - Regional platform incorporating quality-assured dataset endpoints, supporting both pull-based and push-based secured integrations with national and regional sources
 - Facilitate metadata and information exchange services with MRC partners
 - Adopt a universal unique ID system for MRC data catalogues and common reference
- Draft technical documentations and handing-over the updated source codes to MRCS is required.

5. DELIVERABLES AND CONCRETE TIMELINES

The international consultant shall deliver the following outputs in close coordination with MRC and in full compliance with its existing information system and data standards (PDIES), and shall submit, as

part of the inception phase, a **detailed and time-bound work plan** specifying the deadlines for each expected result, taking into account the **total allocation of fifty (50) working days**, with all **outputs to be completed no later than the end of August 2026**.

Deliverables and expected quantity / quality	Expected time (days) ²	Deadline
<p>1. Inception report</p> <ul style="list-style-type: none"> • Clear understanding of MRC’s existing information system and data governance framework • Detailed methodology for the design, development, and integration of the single portal • Work plan, timeline, milestones, and risk mitigation measures <p>2. System integration and technical design documentation</p> <ul style="list-style-type: none"> • Technical architecture of the single portal and its secure integration with MRC’s existing information system • Description of security protocols, authentication, authorization, and data exchange mechanisms • Data flow diagrams and interoperability specifications 	10	April /May 2026

² The consultant may propose a reasonable or suitable number of days for each activity to the deliverables

<p>3. Secure data exchange and logging module</p> <ul style="list-style-type: none"> • Development of a secure data reception mechanism for external stakeholders • Automated recording and logging of all data exchanges • Unique identification system enabling precise tracking of received datasets and data availability • Audit trail ensuring traceability and accountability of all data submissions <p>4. Data validation and quality control module (PDIES compliance)</p> <ul style="list-style-type: none"> • Automated verification of incoming data against MRC’s data standards (PDIES) • Validation checks for completeness, consistency, historical continuity, and metadata availability • Quality control reports highlighting errors, gaps, and non-compliance issues • Mechanisms to provide feedback to data providers on data quality <p>5. User-friendly interface for data requests and submissions</p> <ul style="list-style-type: none"> • Development of a first-level intuitive and user-friendly interface accessible to all categories of users • Online forms and workflows for: <ul style="list-style-type: none"> ○ Submitting data to MRC ○ Requesting data from MRC • Clear guidance and validation messages to support users during data submission <p>6. User profile registration and management tool</p> <ul style="list-style-type: none"> • Development of a user registration and profile management module • Secure storage of user profiles, including user type, organization, and access rights • Role-based access control to ensure appropriate use of the portal <p>7. Statistical and monitoring module</p> <ul style="list-style-type: none"> • Development of a statistical dashboard to monitor portal usage • Indicators including: <ul style="list-style-type: none"> ○ Number of visits and sessions ○ Number and types of users ○ Volume and types of data exchanges • Exportable reports to support monitoring and decision-making 	<p>23</p>	<p>Sep 2026</p>
--	-----------	-----------------

<p>8. Testing, validation, and user acceptance</p> <ul style="list-style-type: none"> • Functional, security, and performance testing of all portal components • Support to user acceptance testing (UAT) with MRC and selected stakeholders • Resolution of identified issues and system optimization <p>9. Source code and technical deliverables</p> <ul style="list-style-type: none"> • Delivery of all source codes used for the development of the single portal • Clean, documented, and reusable code compatible with MRC's IT environment • Transfer of ownership of the developed code to MRC <p>10. Technical and user documentation</p> <ul style="list-style-type: none"> • Comprehensive technical documentation describing: <ul style="list-style-type: none"> ○ System architecture ○ Interfaces ○ Modules and tools developed • User-friendly manuals explaining how to use the portal for data submission and data requests • Documentation designed to serve as training material for future capacity-building activities <p>11. Final report</p> <ul style="list-style-type: none"> • Summary of activities conducted and deliverables achieved • Description of challenges, lessons learned, and recommendations • Final validated versions of all documentation, source code, and tools 	17	Dec 2026
Total	50	

6. PAYMENT MODALITY

This position is paid based on daily rates upon satisfactory submission of works delivered. The consultant is required to submit an invoice with supporting documents for each payment. DSA and relevant travelling expenses, if incurred, will be provided in accordance with the MRC guidelines.

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.

7. INTELLECTUAL PROPERTY RIGHTS

Intellectual property rights - IPR: Information, data, database, documents, and 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. DECLARATION OF NON-FRAUDULENCE AND PROTECTION OF PERSONAL DATA

The Subscriber 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.

9. WORKING ARRANGEMENT

The assignments will require the consultant to work remotely from his/her home country and some time at the MRC Secretariat or its Member Countries, with frequent communication with the personnel of TD in Vientiane Office.

- 9.1. Director supervisor: TD Director
- 9.2. Communication line: Communication with the personnel of Database and Information System Specialist and Chief Hydrologist.

10. QUALIFICATIONS AND REQUIREMENTS

The following are minimum requirements for a successful consultant for the position.

- A postgraduate degree (or a bachelor's degree with two additional years of practical working experience) in computer science or a related field
- Proven work experience in developing websites for international organisations, with specific reference to river basin or knowledge-based organisations is preferable
- Knowledge and understanding on MRC Procedures, especially the PDIES TGs, and data and information management workflows demonstrated through prior experiences on database design and information systems integrations, development, and management
- Knowledge on metadata standard and QA/QC procedures
- Solid technical skills in modern web development technology stacks and frameworks (MVC/MVVC/MVT)
- Minimum of 10 years' professional experience in advanced web programming skill sets
- Working experience on cloud platform, especially AWS services, including Lamda, SQS services, Kubernetes, etc. an assets
- Proven work experience within Southeast Asia, and/or a solid knowledge of local and regional's social, economic, cultural, and political structures an assets
- Knowledge of natural resources management / environmental awareness in the communication context is desirable
- Excellent interpersonal and cross-cultural communication skills
- Good sense of initiative and sound judgment
- Excellent command and written of English language is required.

11. SIGNATURE BLOCK

MRC Secretariat

Division: Technical Support Division

Name: Director Vathana Kol

Signature: _____

Date: _____

Consultant: _____

Date: _____