Ministry of Environment

Project on Enhanced Transparency Framework (ETF) for Agriculture, Forestry and Other Land Use (AFOLU) sector in Sri Lanka

Terms of Reference (TOR) for Developing a Measurement, Reporting, and Verification (MRV) system with Android mobile uploading facility for AFOLU sector 1. Background

The Paris Agreement was adopted at the 21st session of the Conference of Parties (COP 21) to the United Nations Framework Convention on Climate Change (UNFCCC) in 2015 aiming to strengthen the ability of parties to respond and adapt to climate change and entered into force on 4th November 2016. The Agreement requires all parties to communicate associated national commitments via Nationally Determined Contributions (NDCs) Biennial Transparency Reports (BTR) etc

Ministry of Environment is the national focal point to the UNFCCC and the Paris Agreement. Sri Lanka has submitted Nationally Determined Contributions (NDCs) to the UNFCCC in July 2021, as national commitments to the Paris Agreement. All parties to the Paris Agreement committed to provide the information on efforts and tracking progress of national commitments through Biennial Transparency Reports (BTRs).

Article 13 of the Paris Agreement describes an Enhanced Transparency Framework (ETF) for Measurement, Reporting and Verification (MRV) to be developed by each party. Modalities, Procedures and Guidelines (MPGs) for the ETF have been developed at the COP 24 in Katowice. In order to develop an ETF for Agriculture, Forestry and Other Land Use (AFOLU) sector, a project is being implemented by Climate Change Secretariat of the Ministry of Environment in collaboration with the Food and Agricultural Organization (FAO) in Sri Lanka under the financial support of the Global Environment Facility. This project aims to assist the continuity of UNFCCC reporting process and strengthen Sri Lanka's MRV system in the AFOLU sector in order to fulfil Sri Lanka's climate transparency commitments and improve the level of climate-related decision-making at all levels.

At present, Sri Lanka has developed an integrated MRV system under the Climate Mitigation Action Support Project implemented through the Partnership for Market Readiness (PMR). Currently, it has been deployed at the Climate Change Secretariat (CCS) and is expected to be further enhanced by including a mobile application for data uploading facility.

Accordingly, The Ministry of Environment is seeking the service of a qualified IT consultant firm/team to design, and develop a web-based software solution including mobile application for climate change adaptation and mitigation related data uploading.

2. Objectives

The AFOLU MRV system aims to enhance data collection, reporting, and verification processes related to greenhouse gas emissions and Nationally Determined Contributions (NDCs) tracking for adaptation activities in the AFOLU sector in Sri Lanka.

The main objective is to develop a web-based software solution including a react responsive admin database with mobile uploading facility, to manage data related to AFOLU sector with analytical and reporting facilities.

3. Scope of Work

The scope of work for the IT Consultancy firm/team (IT service provider) encompasses the entire lifecycle of MRV system development, including but not limited to:

a) Requirement gathering and requirement analysis: Conduct a thorough investigation and analysis with the collaboration of the Climate Change Secretariat, Ministry of Environment and the team of consultants of ETF for AFOLU sector project to understand the specific needs and requirements for developing the web-based software solution for the AFOLU sector in Sri Lanka.

b) System design and architecture: Collaborate with the IT consultant for MRV of the ETF for AFOLU sector project / Climate Change Secretariat (CCS) for developing a comprehensive system and architecture that aligns with project objectives and international standards and report to the National Consultant for ETF of the AFOLU sector project.

c) Software development and testing: Collaborate with the team of national consultants of the ETF for AFOLU sector project facilitated by the IT consultant for MRV of the ETF for AFOLU sector project to create, test, and refine the data uploading analysis with the reactive responsive admin database to ensure functionality and accuracy while providing training sessions to the stakeholders when and where necessary, regarding data uploading.

d) Greenhouse gas inventory preparation: The system to be developed by modifying the existing source code needs to have the capacity to collect, store, and estimate the data/emissions following the IPCC guidelines and convert those to the reporting formats required by the UNFCCC.

e) Nationally Determine Contributions (NDCs) Tracking: Proposed system to be developed by modifying the existing source code must be able to collect, and store data relevant to adaptation strategies and generate reports to submit to the UNFCCC according to the guidance given in UNFCCC guidelines and instructions provided by the team of consultants of the ETF for AFOLU sector project.

f) Information system for adaptation: Information system has to be developed based on climate change adaptation priorities given by National Consultant for Adaptation of the ETF for AFOLU sector project.

g) Developing and Integration of Mobile Application: Mobile application has to be developed to facilitate uploading of relevant data according to given formats/templates leading to calculation of greenhouse gas emissions according to IPCC worksheets; similar facilitation is expected for adaptation related information as well. Further information in this regard will be provided by the Climate Change Secretariat, Ministry of Environment and the team of consultants of the ETF for

AFOLU sector project facilitated by the IT Consultant for MRV of the ETF for AFOLU sector project.

h) User training: Provide training to end-users to ensure the effective use of the react responsive admin database and analysis and report generating, under supervision of the National Consultants for ETF, Mitigation and Adaptation of the ETF for AFOLU sector project, facilitated by the IT Consultant for MRV of the ETF for AFOLU sector project. A comprehensive user manual has to be developed for the entire system including the mobile application.

i) Security and authentication: A separate detailed set of guidelines have to be developed for the users, including information relevant to strong security and authentications including different user levels for accessing the system.

j) Ongoing technical support and maintenance: Offer technical support and maintenance services to address system issues and updates until the contract agreement is valid.

k) Programming platform access: Source code and other back-end and front-end software infrastructure which will be needed for editing and reshaping the AFOLU MRV System including the information system have to be handed over along with the programming platform access to the Climate Change Secretariat of the Ministry of Environment.

l) Service Provider will be responsible for delivering the following functional specifications within the MRV system under the supervision of the consultant team of the ETF for AFOLU sector project and the Ministry of Environment.

i). Information gathering :

Develop the capacity to collect, manage and archive, the data and emission estimates applicable to the greenhouse gas inventory, and adaptation related activities including the assessment of climate risk and vulnerabilities and NDCs tracking.

ii). Data Validation:

Quality Control/Quality Assurance:

- Develop secure, automated validation mechanisms to ensure the quality and reliability of collected data.
- Implement data quality control measures to identify and rectify inconsistencies and errors.
- Establish real-time alerts for potential data anomalies and irregularities.

Validation Protocols:

- Design validation protocols for each data type, including checks for accuracy, completeness, and adherence to standardized formats.
- Integrate validation protocols with the data collection modules to enable seamless validation during the data entry process.
- Provide a user-friendly interface for data validators to review and approve/reject submitted data.

iii). Reporting:

- Comprehensive React Responsive Admin Dashboard for data analysis, report generation, and visualization
- Implement customizable reporting features to allow users to generate tailored reports based on specific parameters.

- Ensure user-friendly access to the dashboard by stakeholders, authorized by the Ministry of Environment.

iv. Compliance Reporting:

- Design features for generating compliance reports/ Reporting Tables aligned with IPCC and UNFCCC requirements and standards.
- Implement data encryption and security measures to protect sensitive information during the reporting process.
- Seamlessly integrate with existing data systems (when and where applicable).
- Implement robust security protocols and data privacy measures.
- Be scalable and flexible to accommodate future enhancements and changing requirements.
- Provide an intuitive user interface and a user-friendly user experience.
- Be compatible with various devices, platforms and data formats
- Provide continued services to update and maintain the database and data sharing services allowing flexible data sharing experience with the national and international entities authorized by the Ministry of Environment.

4. Duration of the Consultancy

Duration of the Consultancy service is 06 months with effect from the date of signing the contract.

5. Eligibility Criteria

The EOI is open to consultants who qualify the following eligibility criteria.

a). EOI can be forwarded by a consultancy firm, a consortium or a joint venture which individually or jointly has provided consultancy services in the Information Technology field during the period of last 10 years.

b.) An average turnover of the last 03 years of the Firm should be Rs.6 Mn. If a Consortium/JV, an average turnover of the last 03 years of the Lead Partner should be more than Rs. 4Mn.

6. Team Composition and required qualifications

IT Consultant firm/team requires a combination of skills in system development, ICT framework design, and integration with MRV systems. Accordingly, team composition and their qualifications should be as follows.

a) Team Leader Cum System Developer: (10 marks)

- A Degree or higher qualification in software engineering, Computer Science, Information Technology, or a related field.
- Proficiency in system development and database design and management (e.g., SQL, NoSQL).
- At least 08 years of experience in developing software systems/databases.
- Experience of at least 2 years in the Team Leader capacity in data management system development projects

b) ICT Framework Architect: (08 marks)

- A Degree or higher qualification in software engineering, IT business information systems, Information Technology, Computer Science, or a related field.
- Expertise in designing scalable and secure ICT frameworks.

- At least 05 years working experience in ICT framework in system development projects.
- Experience in serving as ICT Framework architect in at least 3 data management system development projects

c). Environmental Data Analyst: (06 marks)

- Master's degree in Environmental Science, Ecology, or a related field.
- At least 10 years of experience in environmental management
- At least 05 years experience in data analysis including environmental data interpretation.

d). Geospatial Specialist: (06 marks)

- A degree or higher qualification in Geo-spatial technologies, Geographic Information Systems or a related subject with web GIS applications or a related field.
- Proficiency in GIS software (e.g., ArcGIS, QGIS).
- At least 05 years of experience in mapping and spatial analysis.
- Proven working experience in similar capacity .

e). Security Specialist: (05 marks)

- A degree or higher qualification where cybersecurity or Information Security is taught as a subject.
- Proven experience of 5 years in securing databases and ICT systems.
- Experience in serving in projects developing data management systems.

f). System Integration Engineer: (05 marks)

- A degree or higher qualification in software engineering, Computer Science, Information Technology, or a related field.
- At least 5 years of proven experience in integrating different data management systems.
- Experience of serving in system integration in Data management projects
- Preference will be given for familiarity with international MRV standards

H). Communication and Training Coordinator: (05 marks)

- A degree or higher qualification in Communication/IT Business information systems, or a related field.
- Strong communication and training skills in Sinhala/Tamil & English languages - At least 03 years of experience in similar capacity.
- At least 05 years of working experience in IT related communication/training /Coordination

1). Quality Assurance and Testing Specialist: (05 marks)

- A degree or higher qualification in software engineering, Computer Science, Information Technology, or a related field.
- Proven expertise in quality assurance and testing methodologies.
- At least 05 years of experience in similar capacity.
- At least 03 years of experience in projects ensuring the reliability of databases.

7. Quality Assurance and Testing Procedures

The Consultant should describe their quality assurance and testing processes to ensure the reliability and accuracy of the MRV system with respect to the IPCC guidelines available online. This should include methodologies for quality assurance and testing.

8. Deliverables for the MRV system and Payment.

a) An Advance Payment

i. An advance payment of 20% of the contract value in Sri Lankan Rupees shall be made within 14 days from the date of signing the contract agreement upon submission of an advance payment guarantee issued by any commercial bank which is approved by the Central Bank of Sri Lanka. The advance payment will be fully set off by the Client in equal first 03 installments. ii. The advance payment guarantee shall be valid 180 days from the date of issued and it should be unconditional, on demand guarantee.

(b) Payments shall be done based on the deliverables as follows.

Sq. No	Deliverables	Time Frame	Payment Instalment
1	a. Submission of project inception report with work plan b. Submission of infrastructure specifications and system requirement specification document. b. Submission of a system prototype	Within 02 months from the date of agreement signed	20%
3	On successfully implement/release of the AFOLU MRV system including the mobile uploading facility	Within 04 months from the date of agreement signed	30%
4	Provide assistance to conduct a User Acceptance Testing (UAT) for confirming quality assurance	Within 05 months from the date of agreement signed	10%
5	Submission of Draft user manual/training materials for GHG inventory software, database and the mobile application for approval	Within 05th month	20%
6	Provide training to end-users		
7	Functional specifications related to data collection, uploading via mobile application, validation, report generation according to UNFCCC requirements and archiving with soft copies		
8	Other related documents and softcopies requested by the Client. (All source code used in this project including, user name / passwords and other relevant information of web hosting (if any)		
9	On successfully handing over the Printed comprehensive Training Materials with soft copies.	On or before the date of completion of the Consultancy	20%

9 . Facilities provided by the Procurement Entity

a. Necessary Guidance and formats required to develop data templates.

b. Necessary approvals from external database holders and entities who are providing data

c. Access to the existing IMRV system of the Ministry of Environment along with the source code and permission for appropriate modifications with the approval of the Ministry.

d. Web hosting facility required will be provided by the Ministry of Environment