BE-CLME+ Project: Promoting National Blue Economy (BE) Priorities Through Marine Spatial Planning in the Caribbean Large Marine Ecosystem Plus (GEF Project ID 10211)

Consultancy to Design, Pilot and Evaluate a Sea Moss Traceability Demonstration System In Saint Lucia

1.0 Background and Justification

1.1 The BE-CLME+ Project is a regional initiative aimed at promoting Blue Economy development in the Caribbean through Marine Spatial Planning (MSP), Marine Protected Areas (MPAs), the Ecosystem Approach to Fisheries (EAF), climate-smart sustainable fisheries value chains, and knowledge management in Barbados, Belize, Guyana, Jamaica, Saint Lucia and Panama. The Caribbean Regional Fisheries Mechanism (CRFM) is the Executing Agency, while the Development Bank of Latin America and the Caribbean (CAF) and the Food and Agriculture Organization of the United Nations (FAO) are the Global Environment Facility (GEF) Co-Implementing Agencies.

1.2 The 2026 - 2027 BE CLME+ Project Workplan and Budget was approved by the Regional Steering Committee on March 17, 2026, and calls for the implementation of at least one Blue Economy Strategy recommendation as part of the long term BE Strategy (Activity 1.1.2.3). In 2025, Saint Lucia developed a National Ocean Policy (NOP) Implementation Plan for the Fisheries and Aquaculture Sector (NOP-IPFA) which articulated the required steps, inputs, stakeholder involvement and resources needed to achieve the anticipated outputs and outcomes for the sector as defined in existing policies. The NOP-IPFA recommends actions that advocate for the adoption of instruments in aspects related to sanitary and phytosanitary standards (SPS), traceability, certification and quality control of seafood and mariculture products.

1.3 The Sea moss value chain is one of Saint Lucia's most dynamic emerging Blue Economy value chains. The sector expanded rapidly following the COVID-19 period, supported by international demand for natural, wellness and nutraceutical products. Production includes mainly *Eucheuma cottonii*, together with native *Gracilaria*, and the chain produces dried sea moss as well as gels, drinks, powders, capsules, cosmetics and other wellness products. The sector offers significant opportunities for coastal livelihoods, local value addition, small-enterprise development, and participation by women and youth.

1.4 Production and processing are concentrated particularly along Saint Lucia's Southeast Coast, including Praslin, Savannes Bay, Eau Piquant, Vieux Fort and coastal areas within or near the Pointe Sable Environmental Protected Area (PSEPA), with additional initiatives elsewhere on the island. The value chain extends from cultivation and harvesting through collection or aggregation, washing, drying, storage, processing, packaging and distribution to domestic, tourism and export markets.

1.5 Notwithstanding its growth, the sea moss value chain remains in transition from predominantly artisanal production toward a more structured, higher-value industry. The draft 2026 Value Chain Development Plan and Optimization Roadmap identifies important constraints related to post-harvest infrastructure, inconsistent quality management, food safety, certification, laboratory services, market diversification, sector data and institutional coordination. It specifically identifies uneven GMP/HACCP and traceability systems, the absence of a national sea moss standard, and incomplete

producer registration and traceability information as constraints to premium positioning and access to demanding markets.

1.6 The NOP-IPFA and the Value Chain Development Plan therefore identifies quality, standards, certification and traceability as a high-priority strategic area. It calls for pilot traceability and certification systems with selected producers and processors, progressive strengthening of quality systems, and an integrated producer registration, production and market information system. The Plan also emphasizes pilot implementation, learning and progressive scaling, with deliberate inclusion of small-scale producers, women, youth, cooperatives and other value-chain actors.

1.7 Against this background, the BE-CLME+ Project will support a demonstration project to design, implement and test a practical, affordable and scalable sea moss traceability model in Saint Lucia. The demonstration will establish traceability across selected real production and processing cycles and market pathways, generate evidence on technical and institutional feasibility, and provide practical lessons and a costed roadmap to inform the subsequent development of a broader national sea moss traceability system. The demonstration will be designed around Critical Tracking Events (CTEs) and associated Key Data Elements (KDEs)[1].

2.0 Objective of the Consultancy

2.1 The CRFM Secretariat seeks to engage a suitably qualified consulting firm or consortium to design, pilot and evaluate a practical, affordable and scalable traceability system that enables sea moss and selected sea moss products produced in Saint Lucia to be traced from the production site through harvesting, post-harvest handling, processing and distribution to the point of sale.

2.2 The consultancy shall pursue the following specific objectives:

a. Establish baseline traceability conditions, practices, data flows and gaps across the sea moss value chain and market pathways.

b. Register participating producers, production sites, processors, aggregators and other relevant value-chain operators.

c. Guided by international/ regional best practice, develop standardized traceability protocols, including CTEs, KDEs, unique operator identifiers, batch/lot coding, chain-of-custody procedures and minimum data standards.

d. Develop or configure and test a simple low-cost digital/hybrid traceability system suitable for small-scale operators and capable of operating with paper/offline backup.

e. Introduce QR codes or other appropriate product identification mechanisms that link selected final products and batches to traceability records.

[1] CTEs are points in the value chain at which a product changes custody, location or form, or where data capture is necessary to preserve traceability. KDEs are the specific data elements—such as date, location, operator, quantity and batch/lot identifiers—that must be recorded at those events. The design must remain proportionate to the operating realities, digital capacity and costs faced by small-scale sea moss producers and processors.

f. Strengthen the capacity of producers, processors, government officers and other participating actors to apply traceability procedures and operate the demonstration system.

g. Demonstrate trace-back and trace-forward capability using actual sea moss production and processing cycles, including a verification exercise/mock recall.

h. Assess technical performance, costs, benefits, stakeholder adoption, food-safety and regulatory considerations, institutional requirements, gender and social inclusion considerations, and options for national scale-up.

3.0 Key Tasks include but are not limited to those listed below.

3.1 Prepare Inception Report, Work Plan and Schedule (Product 1): The firm/ consortium will prepare a detailed workplan outlining, amongst others, the team undertaking the work, schedule, key milestones, field activities, equipment and system-development requirements, training, testing and the management structure set out to ensure successful delivery of the consultancy outputs. In developing the workplan, the consultant should give careful consideration to relevant on-ongoing initiatives such as the FISHAdapt and GCAF Project to ensure that, as appropriate, activities are aligned, duplication of effort and stakeholder consultation fatigue are reduced.

Contingencies must be built into planning to allow the consultant to adapt to changing conditions. In preparing the workplan the consulting firm will participate in an inception meeting convened by the CRFM/PMU, with attendance from national focal point agencies upon commencement of the assignment to:

a. Review the process for the conduct of all activities within the scope of services;

b. Determine roles and responsibilities of the consulting team, national focal point agencies and the CRFM/PMU,

c. Discuss the basis on which this work will be implemented, and

d. Finalise the work plan and schedule. A final work plan and inception report (Product 1) on the outcome of the inception meeting will be prepared by the consultant and submitted to the CRFM/PMU for review and approval.

3.2 Undertake a Rapid Traceability Baseline/ Gap Assessment and Value Chain Mapping, and Prepare a Report (Product 2): The consultant will consultant with the Department of Fisheries and other relevant agencies to;

a. Review relevant project reports, national policies, standards, food-safety and export requirements, existing producer/processor registration arrangements, data systems and traceability practices.

b. Map the selected demonstration chain and market pathways from production site → cultivation → harvest → collection/aggregation → washing/cleaning → drying → storage → processing/value addition → packaging → distribution → market.

c. Identify actors, product and information flows, points of aggregation and transformation, current records and identifiers, traceability breaks, data ownership and access issues, digital/connectivity constraints, equipment needs, and regulatory or institutional gaps.

d. Confirm the demonstration sites and participants and establish baseline indicators against which pilot performance will be assessed.

The Rapid Traceability Baseline/Gap Assessment and Value Chain Mapping report should contain market pathways, participant registry framework and equipment/system requirements.

3.3 Design the Saint Lucia Sea Moss Demonstration Traceability Protocol (Product 3): Based on the baseline findings and guided by international and regional best practice, The consultant will prepare a standardized traceability protocol for the demonstration. The protocol shall define, *inter alia*, the CTEs and associated KDEs at each relevant stage; unique operator, farm/site and facility identifiers; batch/lot creation and coding rules; chain-of-custody and transfer records; data validation and correction procedures; roles and responsibilities; confidentiality and access arrangements; and standard operating procedures (SOPs).

The protocol shall include a CTE/KDE matrix, standardized forms/templates, data dictionary/standards, batch identification system and procedures for trace back and trace forward. It shall be designed to accommodate different market pathways and selected value-added/packaged products.

3.4 Develop or Configure a Low-Cost Digital/Hybrid Traceability Prototype (Product 4): The consultant will develop or configure a simple proof-of-concept system rather than a complex proprietary platform. At minimum, the prototype shall support operator and farm/site registration, batch creation, recording of CTE/KDE data, custody/product transfers, transformation of batches, QR or other suitable batch/product identification, trace-back and trace-forward queries, basic dashboard/reporting functions, and paper/offline backup. The system shall also be usable on readily available devices and should minimize recurring costs and vendor lock-in.

The traceability prototype shall incorporate an internally managed unique batch/lot identification and QR-code generation mechanism. QR codes shall be generated from and linked directly to the traceability database, allowing participating operators to print product or batch labels without dependence on a third-party QR-code subscription service. The system shall maintain the relationship between each QR code, the associated batch/lot identifier, and the relevant traceability records, including where batches are aggregated or transformed.

The consultant shall document system architecture, user roles, data fields, security/access controls, backup/export procedures, maintenance requirements, source/configuration files as applicable, and user guidance. All data and technical materials developed for the assignment shall be handed over to CRFM and the Department of Fisheries.

3.5 Submit Equipment Specifications including estimated cost and at least 3 suppliers; and Implement the Field Demonstration (Product 5): Based on the approved baseline assessment (3.2) and guided by 3.3 (Traceability Protocol) and 3.4 (Traceability Prototype), finalize specifications for minor equipment and consumables required for the implementation of the traceability field demonstration. The CRFM/PMU will be responsible for the request for quotations and the procurement of these equipment These may include QR labels[2], label printers, weighing scales,

[2] For the demonstration of the traceability database, **generate unique batch/lot IDs and QR-code images internally**, with the QR code pointing to the relevant batch record. This substantially reduces recurring costs and avoids vendor dependency.

tablets/mobile devices and other basic traceability equipment. In coordination with CRFM/PMU and national counterparts, the consultant will deploy the system with selected participants and follow real batches of sea moss from identified cultivation sites through harvest, post-harvest handling, processing/value addition and packaging to selected distribution/market endpoints. The demonstration shall test and report on the different relevant product and market pathways and document implementation issues, user compliance, data completeness and equipment/system performance. Equipment procured under this consultancy shall follow the applicable project procurement rules and shall be handed over, with an inventory, to the Department of Fisheries at the end of the assignment.

3.6 Conduct a Mock Recall to Test Traceability: The consultant will coordinate a mock recall in collaboration with the Department of Fisheries, relevant agencies and producers to test the operational performance of the demonstration system by randomly selecting one or more finished products/batches and conducting documented trace-back and trace-forward exercises. The test shall assess, at minimum, record completeness, accuracy and consistency, ability to link transformed or aggregated products to source batches, time required to complete tracing, data gaps, user adherence, system performance and corrective actions. Where feasible, the exercise should simulate a product withdrawal/recall scenario to demonstrate how the traceability records could support food-safety or market-response functions. The consultant should identify and record what worked well, process gaps and corrective actions.

3.7 Evaluate the Demonstration and Prepare a Costed National Scale-Up Roadmap (Product 6): Following the mock recall and traceability test, the consultant will conduct a final participatory evaluation involving producers/farmers, processors, buyers/market actors, government agencies and other relevant stakeholders. The evaluation will assess the technical performance, usability, affordability, costs and benefits, adoption barriers, regulatory and food-safety implications, institutional ownership, data governance, equipment and maintenance requirements, gender and social inclusion, and sustainability.

The consultant will then prepare a costed National Sea Moss Traceability Scale-Up Roadmap that sets out recommended short-, medium- and longer-term actions; institutional roles; governance and coordination arrangements; priority investments; capacity-building needs; interoperability with producer registration, standards, Good Manufacturing Practices/Hazard Analysis and Critical Control Points (GMP/HACCP), certification and market-access initiatives; financing options; performance indicators; and a phased approach for expansion beyond the demonstration. As an annex to the Roadmap the consultant will include a summary report of the Traceability Verification and Mock Recall, including performance metrics, identified gaps and corrective actions.

3.8 Conduct Practical Capacity Building and Training of Trainers and Prepare Report (Product 7): As appropriate, and in consultation with ongoing national sea moss initiatives such as the FISHAdapt and GCAF projects, the consultant will prepare and deliver practical training using the actual protocols, forms, devices and products used in the demonstration. The training shall cover the purpose and benefits of traceability; operator/site registration; farm and harvest records; CTE/KDE capture; batch/lot identification; chain of custody; sea moss aggregation, and transformation; QR/product identification; use of the digital/hybrid system; data quality; and trace-back/trace-forward procedures.

Guided by the stakeholder identified along the sea moss value chain including but not limited private and public sector agencies such agencies with responsibility for export, commerce, standards and quality assurance, seamoss farmer groups and associations, and retail companies, a Training-of-Trainers approach shall be applied to strengthen continuity after the consultancy. The training report shall include a gender-disaggregated participant list, assessment of learning, training materials/manual and recommendations for refresher support.

3.**9 Prepare Communication/Knowledge Products and Final Technical Report (Product 8)**: The consultant will provide concise technical content and communication materials documenting the demonstration approach, results and lessons learned for CRFM/PMU review and onward dissemination; and prepare a Final Technical Report consolidating the assignment, including the methodology, participation, results, system performance, constraints, lessons learned, sustainability considerations, limitations and recommendations. The report shall reference all final protocols, manuals, system documentation, datasets, templates and other handover materials.

4.0 Expected Outcomes and Deliverables

4.1The consultant is expected to deliver the following deliverables:

Product 1:	Inception Report, Work Plan and Schedule, including confirmed demonstration scope, sites and participants selection approach and consultancy methodology.
Product 2:	Sea Moss Traceability Baseline/ Gap Assessment and value Chain Map
Product 3:	Saint Lucia Sea Moss Traceability Protocol including SOPs, CTE/KDE Matrix, standardised forms and batch/lot identification system
Product 4:	Operational low cost digital/hybrid traceability prototype, database,QR/batch identification mechanism, system documentation and user guide
Product 5:	Operational field demonstration with documented traceable batches of sea moss and selected value added/packaged products, including equipment deployment and implementation records
Product 6:	Final Evaluation Report and Costed National Sea Moss Traceability Scale-up Roadmap with the outcomes of the Traceability Verification and Mock Recall as an annex
Product 7:	Capacity Building package comprising of training materials, Training of Trainers delivery, gender disaggregated participants records and Training Report
Product 8:	Communication/Knowledge products and Final Technical Report

5.0 Project Schedule and Milestones

5.1 The assignment is expected to be completed within a maximum period of eight (8) months from contract signature. The consultant shall propose a detailed sequencing of activities in the Technical Proposal and confirm it at inception. The following schedule is indicative and may be refined at inception without changing the substantive outputs.

Deliverable	Output due at end of month	Payment
Product 1:Inception Report, Work Plan and Schedule	0.5	15%
Product 2: Sea Moss Traceability Baseline/ Gap Assessment and value Chain Map; and **Product 3**:Saint Lucia Sea Moss Traceability Protocol including SOP package	2.5	20%
Product 4:Operational low cost digital/hybrid traceability prototype.	3.5	15%
Product 5: Operational field demonstration report; and **Product 7** Capacity Building package	6.5	15%
Product 6: Final Evaluation Report and Costed National Sea Moss Traceability Scale-up Roadmap with the outcomes of the Traceability Verification and Mock Recall as an annex	7.5	25%
Product 8: Communication/Knowledge products and Final Technical Report	8	10%

6.0 Coordination and Institutional Arrangements

6.1 The consultant will work under the overall direction of the CRFM Secretariat/ BE CLME+ PMU and in close coordination with the Department of Fisheries of Saint Lucia. The assignment should also engage, as relevant, Export Saint Lucia, the Saint Lucia Bureau of Standards, producer organisations/cooperatives, processors, exporters, market actors and public and private stakeholders.

6.2 With guidance from the Department of Fisheries, the consultant shall coordinate the demonstration with ongoing national initiatives related to sea moss sector development, producer registration, standards, GMP/HACCP, certification, food safety, market access and marine spatial planning to avoid duplication and to improve prospects for institutional uptake and scale-up.

7.0 Reporting requirements

All deliverables shall be submitted electronically in English and in editable formats. Reports shall be provided in Microsoft Word; presentations in PowerPoint; tabular datasets in Excel/CSV or another agreed open format; and technical/system files in appropriate editable or exportable formats.

All reports shall follow applicable CRFM guidelines for publications and reports and shall clearly identify methods, sources, limitations and recommendations.

The consultant shall provide CRFM and the designated national authority with all final datasets, databases, forms, system configuration/source files as applicable, user documentation, training

materials, QR/batch coding structures and other materials developed exclusively under the assignment.

All reports, studies, plans, source/configuration files, technical data, specifications, training materials and other material prepared under the consultancy shall be the property of CRFM, subject to the terms of the consultancy agreement.

The consultant shall provide concise progress updates at intervals agreed during inception and participate in technical review/touch-base meetings with CRFM/PMU and national counterparts.

8.0 Acceptance Criteria

8.1 Payments will be authorized once the CRFM, CAF and FAO accept the products specified by the TOR. The CRFM will have up to three weeks to provide written comments/recommendations to the consultant(s) reports. Unless previously determined, the CRFM and FAO will generally accept the deliverables once the consultant or consulting firm confirms the following: (i) receipt and additional inclusion of comments/recommendations in a revised version and (ii) provision of date for presentation of the revised versions of the submitted deliverables. The consultant(s) are expected to include these comments two weeks after receipt.

9.0 Consultant's Effort and Required Skills

9.1 This consultancy has been estimated to require a maximum of eight (8) months.

9.2 The consulting team must consist of experts who will provide the skill mix as detailed in the scope of services presented below:

Team Leader/ Traceability and Value Chain Specialist:

- An advanced university degree (Master's level or higher) in fisheries/aquaculture, food science, supply-chain/value-chain management, agricultural economics, natural resource management, food safety, quality management, or a closely related discipline.
- At least seven (7) years of relevant professional experience in fisheries/aquaculture or agri-food value chains, including traceability, quality systems, food safety, certification, market access or supply-chain improvement.
- Demonstrated experience designing or implementing traceability systems based on chain-of-custody, batch/lot identification, Critical Tracking Events and Key Data Elements, or comparable traceability frameworks.
- Experience working with small-scale producers and processors and translating technical requirements into practical SOPs and training tools.
- Experience in the Caribbean and/or Small Island Developing States is highly desirable.

Information Systems/ Digital Traceability Specialist:

- A degree in information systems, computer science, data management, software engineering or a related field, or equivalent demonstrated professional experience.

- At least five (5) years of relevant experience developing or configuring digital data-capture, traceability, inventory, supply-chain or comparable information systems.
- Demonstrated ability to design low-cost, user-friendly systems that support mobile use, offline or hybrid workflows, QR/barcode identification, database management, reporting and secure data export/backup.
- Experience preparing system documentation, user manuals, data dictionaries and technical handover materials.

9.3The team should demonstrate access to food-safety/quality assurance expertise, including practical knowledge of GMP/HACCP, product standards, certification and laboratory/testing considerations relevant to food or aquaculture value chains.

9.4 The team should also demonstrate competence in participatory stakeholder engagement, training and gender/social inclusion so that the demonstration is accessible to women, youth, cooperatives and small-scale operators.

10.0 Application and Selection Procedure

10.1 Interested consulting firms are invited to submit their Technical and Financial Proposal outlining observations on these Terms of Reference, understanding of the objectives of the assignment, details of methodology to be applied, proposed work plan and timeline, personnel to be involved, skills and *Curriculum Vitae* of all proposed team members, declaration of availability, declaration of no conflict of interest, and tax-inclusive price proposal with details of professional fees for team members, logistics, travel, printing, and all other associated costs.

10.2 Technical and Financial Proposals will be evaluated using a Quality and Cost-Based Selection procedure, in which the Technical Proposal can be awarded a maximum of 70% of the evaluation score and price a maximum of 30% of the evaluation score.

10.3 Please submit your application in PDF format by 18 December 2026 to **jobs@crfm.int** and **secretariat@crfm.int.**

Budget Breakdown

Cost Item (Description)	**Cost (USD)**
Professional Fees	90,400
Travel, Field missions and traceability equipment: To cover at least 2 field missions to Saint Lucia: (1) In-country stakeholder consultations (2) National validation workshops, training and field demonstration (airfare, accommodation, meals, workshop costs). Procurement of traceability demonstration equipment	22,600
Total Budget	**113,000**