Terms of Reference (TOR)

Technical assistance to evaluate fisheries and aquaculture value chain and assess sustainable/renewable energy interventions for improving energy efficiency to reduce carbon footprint in the marine fisheries and aquaculture sectors

1.0 Background and Justification

The fisheries sector relies on the use of energy and to a great extent on fossil fuels which makes it highly sensitive to energy costs, especially taking into consideration fuel cost instability. While post-harvest's, processing's and distribution activities' demand for energy is significant, the catching sector, having few short-term alternatives to fossil fuels, is especially dependent on fuel and vulnerable to the fuel price fluctuations. Despite the challenges that the sector faces, including strong dependence on fossil fuels, small-scale fisheries are increasingly recognized for their contribution to sustainable food systems and the opportunities they present for sustainable development. There is a need to fully assess and understand the opportunities and challenges of applying renewable energy technologies in small-scale fisheries of the Caribbean to reduce carbon footprint, as an indispensable baseline assessment to inform next steps in renewable applications in the fisheries sectors of project countries.

It is important to identify specific areas of renewable energy interventions with demonstrable on-the-ground pilots, the application of knowledge and capacity acquired, and the generation of lessons and results that will facilitate replication and upscaling of the transition from fossil fuels to renewables/low carbon sources across the value chain in Caribbean fisheries and aquaculture sectors. Linked to this, given the potential negative impacts on biodiversity and ecosystems, would be development of a process to track the renewable energy options to be implemented at the selected facilities.

Among the many different value chains of the fisheries and aquaculture sectors of the Caribbean, there are points along some chains which may present a more favourable enabling environment for the demonstration of transition from fossil fuels to cleaner energy, thus presenting better chances of project success. These must be assessed, and criteria developed for a transparent selection process of those value chains that will receive project support. Selection will consider fisheries value chains which collectively will cover all 8 countries (Belize, Dominica, Grenada, Guyana, Jamaica, Saint Vincent and the Grenadines, St. Lucia and Suriname). There might be a fishery that is relevant for 3 countries, another that is relevant for another 3, and one that is relevant for the other 2 countries, while recognizing there may be overlaps of multiple fisheries between countries as well. The intention is to demonstrate that value chains of all 8 countries would be addressed, even if not the same value chains for all 8 target countries.

Fishers and aquaculturists in project countries do not possess sufficient knowledge on renewable and cleaner energy options and applications to assist in their decision to embark on the transition. Targeted and gender-responsive interventions must be implemented to impart knowledge to resource users in renewable energy options, suitability at different points of the value chain, initial transition costs and need for capital investment, rate of return to recover initial capital investment,

know-how in the installation of renewable energy technology, maintenance, and adaptability at small operational scales.

The Caribbean Regional Fisheries Mechanism (CRFM), established in 2003 as an institution of CARICOM, promotes and facilitates the conservation, management, and responsible use of the region's fisheries and other living marine and aquatic resources for the economic and social benefit of the people of the region. The CRFM is currently implementing the STAR-Fish – Sustainable Technologies for Adaptation and Resilience Project, which has been approved by Global Affairs Canada (GAC)[1], with the CRFM serving as the Project Executing Agency. The project is being implemented in ODA-eligible countries[2]. Its overall objective is to strengthen the resilience of Caribbean fisheries and aquaculture by promoting clean energy transition while advancing gender-responsive governance arrangements to support the adoption of renewable energy solutions and technologies.

The Consultant will work under the general direction of the STAR-Fish project coordinator to evaluate Caribbean fisheries and aquaculture value chains and assess sustainable/renewable energy interventions for improving energy efficiency to reduce carbon footprint in the marine fisheries and aquaculture sectors as part of the above-mentioned project; as per the terms and conditions outlined below.

2.0 Objective of the Consultancy

To evaluate Caribbean fisheries and aquaculture value chains and assess the opportunities for applying sustainable/renewable energy interventions to improve energy efficiency and reduce carbon footprint.

3.0 Scope of Work

Under the general direction of the STAR-Fish Project Coordinator and in close collaboration with the CRFM/PMU, the Consultant will be responsible for the following tasks:

3.1 **Inception and Planning**

- Participate in a briefing session with the CRFM/PMU to review the Terms of Reference and obtain clarification and direction as required.
- Within five (5) days of the inception meeting, prepare an inception report and work plan clearly outlining methodology, timelines and approach to engagement.

[1] The Global Affairs Canada (GAC), under the leadership of the Minister of Foreign Affairs; the Minister of Export Promotion, International Trade and Economic Development; and the Minister of International Development, is responsible for advancing Canada's international relations, including, inter alia: Developing and implementing foreign policy; Fostering the development of international law, international trade and commerce; Providing international assistance (encompassing humanitarian, development, and peace and security.

[2] Belize, Dominica, Grenada, Guyana, Jamaica, Saint Lucia, Saint Vincent and the Grenadines, and Suriname.

- Ensure the Workplan explicitly details how Environmental and Social Safeguards (ESS) will be mainstreamed, including: stakeholder engagement, consideration for Indigenous Peoples, gender sensitivity (women, youth, persons with disabilities), and culturally appropriate consultation tools accounting for language and literacy. The inception plan must reference the CRFM ESS Policy, ESS Checklists, and Global Affairs Canada's ESS Guidelines.

3.2 Energy Use and Cost Analysis

- Assess energy costs linked to production, processing, and distribution across fisheries and aquaculture value chains.
- Identify fossil fuel dependency hotspots and opportunities for renewable energy integration.
- Disaggregate energy cost and socio-economic data by gender where possible.
- Map stakeholders to include women's organizations, Indigenous Peoples, small-scale fisher groups, and local councils.
- Document consultations with participation records disaggregated by sex, age, and group affiliation.

3.3 **Technology, Policy, and Finance Review**

- Undertake detailed examination of technology, national policies and financing available to support the application of renewable/low carbon energy technology.
- Identify challenges and opportunities for integrated sustainable energy uptake.
- Review national and regional policies, incentives, and financing mechanisms.
- Identify barriers to access for women, youth, Indigenous Peoples, and vulnerable operators.
- Assess environmental risks of proposed technologies, including waste and battery disposal, and recommend circular economy approaches.

3.4 **Value Chain Selection and Prioritization**

- Develop objective and transparent criteria for selecting value chains for interventions.
- Evaluate appropriate fisheries and aquaculture value chains for sustainable energy interventions such as:
    - Solar photovoltaic systems for ice plants, cold storage, and fish processing facilities.
    - Solar-powered or hybrid refrigeration/freezing units for post-harvest handling and transport.
    - Energy-efficient motors, pumps, and aeration systems for aquaculture operations.
    - Introduction of hybrid/electric engines or trials of alternative fuels (e.g., biofuels) for vessels in small-scale fisheries.
    - Energy-efficient lighting, insulation, and building retrofits for landing sites, processing plants, and community facilities.
    - Waste-to-energy or biogas systems for processing by-products where feasible.

- Apply participatory ranking methods and select at least **four (4)** fisheries/aquaculture value chains across the eight project countries.
- Ensure criteria account for socio-economic vulnerabilities, gender balance, and Indigenous communities.
- Apply Free, Prior, and Informed Consent (FPIC) where Indigenous communities may be affected.
- Conduct preliminary environmental screening of proposed value chain interventions to identify risks such as habitat disruption or pollution.

3.5 **Stakeholder Engagement and Capacity Building**

- Facilitate national and regional workshops to present findings and validate interventions.
- Build capacity on renewable energy options, transition costs, ROI, installation, and maintenance.
- Ensure workshops are gender-responsive, inclusive, and accessible to women, youth, persons with disabilities, and vulnerable groups.
- Ensure the use of culturally sensitive and plain-language tools to maximize understanding.
- Document workshop participation disaggregated by gender, age, and group affiliation.

3.6 **Knowledge Products and Communication**

- Develop knowledge-sharing materials on renewable energy opportunities, including case studies and success stories.
- Ensure alignment with the STAR-Fish Communications Strategy by coordinating with the PMU for wide dissemination of results.
- Ensure products highlight gender-specific barriers and opportunities, Indigenous knowledge, and equitable access to renewable benefits.
- Outreach campaign delivered through inclusive communication channels (e.g., local radio, community forums), to ensure knowledge products raise awareness among women, youth Indigenous peoples and marginalized groups.

3.7 Reporting

- Produce draft and final technical reports consolidating findings, recommendations, and safeguards compliance.
- Include annexes with stakeholder engagement records, gender analysis, and ESS compliance checklists.
- Explicitly document safeguards screening, stakeholder engagement outcomes, grievance redress issues, and social inclusion indicators.

4.0 Expected Deliverables:

Deliverable 1: Inception Report and Work Plan

- Methodology, work schedule, and engagement plan following the inception meeting.

- Outline how ESS will be mainstreamed, including Indigenous Peoples' considerations, gender and disability inclusion, and culturally sensitive consultation tools.

Deliverable 2: Energy Use and Cost Report

- Analysis of energy consumption patterns and fossil fuel dependency across value chains.
- Identification of challenges and opportunities for renewable energy uptake.
- Data disaggregated by gender where possible.
- Stakeholder mapping including women's groups, Indigenous Peoples, and vulnerable actors.
- Socio-economic impacts documented with consultation records disaggregated by sex and age.

Deliverable 3: Technology, Policy, and Finance Report

- Comprehensive review of renewable/low-carbon technologies, national/regional policies, and financing mechanisms.
- Identification of barriers limiting access to technologies and finance for women, youth, Indigenous Peoples, and vulnerable groups.
- Assessment of environmental risks such as waste management and pollution.
- Recommendations for inclusive financing models and circular economy approaches.

Deliverable 4: Value Chain Selection Report

- Transparent criteria and justification for value chain selection.
- Documentation of participatory process leading to selection of at least four (4) value chains across project countries.
- Criteria accounting for gender, socio-economic vulnerability, and Indigenous territories.
- Application of FPIC where Indigenous communities are affected.
- Preliminary environmental screening results for selected interventions.

Deliverable 5: Workshops and Knowledge Products

- National and regional validation workshops convened with documented outcomes.
- At least three communication/visibility products developed (two country-specific and one regional synthesis).
- Workshops designed to be gender-responsive, inclusive, and accessible to women, youth, Indigenous Peoples, and persons with disabilities.
- Knowledge products capturing gender-differentiated findings and Indigenous knowledge, using outreach channels accessible to marginalized groups.

Deliverable 6: Final Technical Report

- Consolidated report covering energy analysis, technology/policy/finance review, value chain selection, and stakeholder engagement outcomes.
- Recommendations for scaling renewable interventions.
- Dedicated section on safeguards compliance, including screening, grievance outcomes, and gender/social inclusion indicators.
- Annexes including ToR, Inception Report, Mission/workshop reports, ESS Compliance Checklist, and stakeholder engagement records.

5. ROLES AND RESPONSIBILITIES

The consultant is responsible for execution of the main activities and accomplishing the Expected Results and Deliverables as outlined above.

In the conduct of the assignment the Consultant will be supported by the Project Coordinator, ESS Specialist and CRFM Secretariat, which will provide overall guidance on implementation of the contract. The CRFM Secretariat will assign staff who will work closely with the team at all times. The CRFM Secretariat will also assist in the circulation of documents for regional level review, and support the finalization of all documents produced.

6. REQUIRED SKILLS AND EXPERIENCE

In addition to the Key technical professional staff outlined above, additional specialist expertise in the team to cover relevant aspects in support of the consultancy would be viewed favourably.. The estimated key expertise requirements for performance of the services are:

Sustainable Energy Specialist

- At least a Master's degree in Renewable Energy Engineering, Energy Systems Management, Environmental or Mechanical Engineering, or a closely related discipline.
- Professional certification or training in energy auditing, renewable energy systems design, or sustainable energy management would be an asset.
- At least five (5) years' experience working in renewable/sustainable energy technologies
- Experience in evaluating energy costs linked to production in fisheries value chains and identifying challenges and opportunities (minimum 3 assignments)
- Demonstrated experience in conducting:
    a. Energy audits or cost analyses in productive sectors (fisheries, aquaculture, agro-processing, or similar).
    b. Feasibility studies and technical assessments of renewable energy technologies such as solar PV, hybrid refrigeration, waste-to-energy, or biofuel applications.
    c. Policy and financing reviews in renewable energy, including assessment of regulatory frameworks, incentives, and blended finance mechanisms.
- Experience in examination of technology, national policies and financing available to support the application of renewable/low carbon energy technology (minimum 3 assignments)
- Work experience in the Caribbean region is an advantage
- The Sustainable Energy Specialist should possess suitable/appropriate qualifications in energy management, engineering and/or related areas

Fisheries Value Chain Specialist

- At least a master's degree in Value Chain Management, Fisheries Economics, Agricultural Economics, Agri-business Management, Natural Resource Economics, Fisheries Resources Management, or other relevant and related fields
- At least five (5) years' experience working with fisheries value chains
- Demonstrated knowledge of Caribbean fisheries management policy and policy development

- Experience in reviewing fisheries operations and fisheries value chain analysis (minimum 3 assignments);
- Work experience in the Caribbean region is a requirement
- The Fisheries Value Chain Specialist should possess a degree in fisheries management, living marine resources management, marine/maritime economics and/or related areas

7. REPORTING

The Contractor will prepare an inception report, progress report and final reports. The progress report will be submitted as part of deliverable four (approximately mid-term of the contractual period). The final technical report should include methodologies used to deliver the various outputs, with lessons learned and recommendations for follow-up action, and include final technical deliverables in publisher-ready format. The report should be produced in Microsoft Word for Windows format and submitted electronically to the CRFM Secretariat.

8. LOGISTICS

All logistical arrangements pertaining to travel by the Consultant and any workshop participants are the responsibility of the Consultant. The CRFM guidelines for all travel and workshop expenses must be followed.

9. DURATION

The consultancy should be conducted over 8 months and must be completed no later than the end of August 2026.

10. COST OF THE CONSULTANCY

The budget included in this section details the level of effort estimated for the activities programmed in this consultancy.

Table 1 – Consultancy Budget (CAD)

CONCEPT	Months (estimated)	(CAD)
Consulting Fees	8	$90,000.00
Reimbursable Expenses (Travel and other costs)		$20, 000.00
Total	**CAD$1.44 = US$1**	**$110,000.00** **US$76,389.00**

The Consultant will receive the maximum of CAD 90,000.00 for professional fees and up to CAD 20,000.00 for Reimbursable Expenses (travel and other expenses), as it is expected that the consultant will be required to travel in the execution of this consultancy. The Consultant will be required to present receipts (airline boarding passes, hotel, airport and ground transfers, incidentals) for the travel and other expenses.

11. DISBURSEMENTS

The disbursement of consultancy fees will be made according to the payment schedule and the satisfactory submission of deliverables as described in Table 2. The final payment to the Consultant shall be conditional upon terms of Deliverable 5 having been met, in addition to having reconciled reimbursable expenses with the CRFM.

Table 2 – Payment schedule

DELIVERABLE	DATE	% of Contract	Contract Value CAD
Deliverable 1: Inception report with Work Plan	January 2025	10%	9,000
Deliverable 2: Energy use and Cost Report	March 2026	20%	18,000
Deliverable 3: Report on technology, national policies and financing available to support the application of renewable/low carbon energy technology	May 2026	30%	27,000
Deliverable 4: Report on selection of fisheries and aquaculture value chains for sustainable energy interventions	June 2026	30%	27,000
Deliverable 5: Final technical report	August 2026	10%	9,000

12.0 APPLICATION AND SELECTION PROCEDURE

12.1 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.

12.2 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.

12.3 Please submit your application in PDF format by **11 November 2025** to jobs@crfm.int and secretariat@crfm.int.