GREEN CLIMATE FUND

MARENA
Mauritius Renewable Energy Agency

UNDP
Empowered lives
Resilient nations

Green Climate Fund/United Nations Development Programme/Government of Mauritius

Terms of Reference for Consultancy Services to Undertake Feasibility Study for the Setting Up of a Floating Solar Photovoltaic (PV) Farm in Lakes and Reservoirs in Mauritius, under the GCF 'Accelerating the Transformational Shift to A Low-Carbon Economy in the Republic of Mauritius' project

TITLE:	International Consultant
SECTOR:	Renewable Energy
LOCATION:	Republic of Mauritius
DUTY STATION:	Mauritius Renewable Energy Agency and home based
DURATION:	40 working days (1 field mission - 20-person days and 20-person days home-based) over a period of 4 months
STARTING DATE:	15 January 2019
END DATE:	April 2019

A. Project titles:

GCF 'Accelerating the Transformational Shift to A Low-Carbon Economy in the Republic of Mauritius' project

B. Project Description:

With 84% of its primary energy requirements met from imported fossil fuels, Mauritius, like many Small Island Developing States (SIDS), is extremely vulnerable to energy shocks. The grid emission factor of Mauritius is extremely high at 1.01 tonnes CO_{2eq}/MWh due to the prevalence of imported coal (39%) and fuel oil (38%) in the electricity generation mix. Net greenhouse gas emissions are increasing at a rapid rate of 3% per year. The pressing need to significantly enhance Mauritius's energy independence and reduce greenhouse gas emissions is recognised in the country's Nationally Determined Contribution (2016), its Second National Communication to the UNFCCC (2010) and its UNFCCC Technology Needs Assessment (2014), as well as in a comprehensive suite of Government strategies and policies contained in the Long-Term Energy Strategy (2011-2025).

Following a broad consultative process led by the Ministry of Finance and Economic Development which is the National Designated Authority (NDA), the UNDP and backed by sound technical and financial analysis as well as considerable political will, Mauritius secured a grant from the Green Climate Fund to implement the "Accelerating the transformational shift to a low carbon economy" project which will remove the principal bottlenecks to investment in low-carbon development for: (i) grid-connected intermittent renewable energy; and (ii) mini-grid PV for the principal outer island, Agalega. The project will be implemented in a two-phase approach so as to reduce the implementation risks to the GCF and ensure that the second funding disbursement is contingent upon successful completion of the first phase.

Under component 1 of this project, the Ministry of Energy and Public Utilities (MEPU) will, with the assistance of the GCF, receive the necessary assistance to develop a fit-for-purpose legal and regulatory framework to allow the ambitious scale-up of renewable energy in Mauritius to increase the share of renewable energy (RE) generated from the actual value of 20% to 35% by 2025. GCF funding will also be used to develop a staffing plan/structure for MARENA that is aligned with the needs of the Long-Term Energy Strategy; to develop a secondment strategy that will allow experienced CEB and MEPU staff to work at MARENA for limited periods (e.g. 1-2 years), thereby building capacity quickly. With GCF support, MARENA will be empowered and fully operationalised to assist renewable energy (RE) investors, particularly Independent Power Producers (IPPs), in reducing the transaction costs and time delays currently associated with RE investments. MARENA will also provide technical oversight and policy planning support.

Under the mandate of institutional strengthening for renewable energy, the services of a consultant are required to carry out a feasibility study for the setting up of a Floating Solar Photovoltaic (PV) Farm in Tamarind Falls Reservoir.

B.1 Setting-Up of a Floating Solar Photovoltaic (PV) Farm in Tamarind Falls Reservoir

The solar irradiation potential in the Republic of Mauritius is on average 6.0 $W/m^2/day$ and is considered as quite good for solar PV projects. More than 60% of Mauritius receives more than this value; the southern central regions receiving less due to the presence of clouds on elevated regions. Of the types of renewable energy, the abundant solar energy is currently readily exploitable, and its corresponding exploitation system fastest to implement. Consideration for floating solar photovoltaic panels has been made taking into consideration the fact that many surface water bodies located in regions having plentiful sunshine and could be converted into power generation plants. The surface area of water surfaces like reservoirs, lakes, and exposed

water storage/treatment basins could be used to accommodate a floating solar PV farm and thus adding value to the previously unusable area.

B. 2 Objective

The objective of this assignment is to:

1. Carry out a feasibility study for the setting up of floating solar PV farms in lakes and reservoirs in Mauritius.;
2. Undertake an in-depth analysis for the setting up of floating solar PV at Tamarind Falls Reservoir.

C. Scope of Work

Duties and Responsibilities

The assignment would comprise of the following activities:-

1. Conduct and overall assessment the potential for accommodating floating PV on the major lakes and reservoirs in Mauritius, taking into consideration power output per unit area (excluding Tamarind Falls Reservoir);

2. Assess comprehensively the potential for implementing floating solar PV at Tamarind Falls, taking into consideration, but not limited to, the following aspects:

   Technical Aspects:

   a. The exact location on the water surface and surface area of the Tamarind Falls reservoir available for constructing a 2 MWp (scalable) Floating Solar PV farm;
   b. Access to grid;
   c. Technical standards applicable for the technology proposed and identification of potential suppliers;
   d. Cyclone risks;
   e. Construction risks in water.

   Environmental aspects: pollution of water and incidence on fauna;

   Social Aspects: possible impacts on fishing;

   Economic and financial aspects:

   a. In-depth LCOE analysis;
   b. Rate of return analysis; and
   c. Cost of electricity generated by floating solar PV compared to conventional solar PV and other RE technologies.

3. Review relevant policies and regulations and recommend how Floating Solar PV in Mauritius can be streamlined in local legislation; and

4. Provision of training on the basics of floating solar PV (technology concepts, installation requirements, design considerations, benefits and drawbacks etc.) to the relevant staff of MEPU, MARENA and CEB.

C.1 Workshops

For the purpose of the assignment, a one-day Dissemination Workshop shall be conducted by the Consultant.

D. Expected Outputs and Deliverables

The Consultant shall be remunerated in accordance with the following time schedule and deliverables. All reports will be submitted in draft (for comments) and then in final version. Submission of draft reports in English will be required within two weeks after mission in Mauritius. The consultant will have 1 week for amendments and submission of the final version of the reports.

	Activity	Tentative date	Fee (%)	Means of verification
1	Produce an approved assignment work plan.	January 2019	10%	Approved assignment workplan.
2	Assess the overall potential for accommodating floating PV on the major lakes and reservoirs in Mauritius, taking into consideration power output per unit area (excluding Tamarind Falls Reservoir);	January 2019	30%	Approved report on assessment of potential and recommendations for setting up floating solar PV on lakes and reservoirs in Mauritius.
3	Assess comprehensively the potential for implementing floating solar PV at Tamarind Falls, taking into consideration, but not limited to, technical, environmental, social, economic and financial aspects (Refer to Section C.2)	February 2019	40%	Approved report on comprehensive assessment of the potential of solar PV at Tamarind Falls, taking into consideration, but not limited to, technical, environmental, social and

	Activity	Tentative date	Fee (%)	Means of verification
				economic and financial aspects.
4	Provision of training on the basics of floating solar PV (to the relevant staff of MEPU, MARENA and CEB)	February 2019	10%	Approved preliminary report on capacity needs Capacity needs assessment in floating solar PV and training materials/training report
5	Review relevant policies and regulations and recommend how Floating Solar PV in Mauritius can be streamlined in local legislation	April 2019	10%	Approved policy recommendations for streamlining Floating Solar PV in local legislation.
Total			**100%**	

E. Reporting

All deliverables shall be in **English** and submitted in appropriate format, in MS Word and in PDF as per requirement of the Client to the following address:

Mr Shakil Beedassy, Project Coordinator , Accelerating the Transformational Shift to a Low-Carbon Economy in the Republic of Mauritius at shakil.beedassy@undp.org

Copied to:
Prof S. Rughooputh, CEO, Mauritius Renewable Energy Agency at ceo@marena.org

And Manusen RAGGOO, Project Manager, Accelerating the Transformational Shift to a Low-Carbon Economy in the Republic of Mauritius at manusen.raggoo@undp.org

The project manager will be responsible for further distribution. The deliverables should be of high quality in form and substance and with appropriate professional presentation. The consultant should fully comply with the requirements of UNDP in terms of content and presentation and respect UNDP GCF visibility guidelines, since unsatisfactory performance may result in termination of contract.

F. Duration of the Work

The International Consultant shall be required for 40 working days (1 field mission - 20-person days and 20-person days home-based) over a period of 4 months as from January 2019.

G. Duty Station

During the field-based part of the assignment, the consultant will be based as relevant at the Mauritius Renewable Energy Agency (MARENA), Port Louis.

H. Competencies

H. 1 Corporate Competencies:

- Demonstrates commitment to UNDP's mission, vision and values;
- Displays cultural, gender, religion, race, nationality and age sensitivity and adaptability;
- Ability to train and work effectively with counterpart staff at all levels and with all groups involved in the project; and
- Highest standards of integrity, discretion and loyalty.

H.2 Functional Competencies:

Knowledge Management and Learning

- Shares knowledge and experience; and
- Actively works towards continuing personal learning, acts on learning plan and applies newly acquired skills.

H.3 Development and Operational Effectiveness

- Ability to perform a variety of specialized tasks related to Results Management, including support to design, planning and implementation of program, managing data, reporting;
- Ability to provide input to business processes re-engineering, implementation of new system, including new IT based systems;
- Analytical and design skills of Floating Solar PV or other RET projects for governmental or private institutions;
- Ability in undertaking feasibility studies for governmental related bodies;
- Ability to report analytical outputs in a clear, concise manner to a non-technical audience;
- Ability to maintain appropriate records / uphold quality assurance integrity
- Strong drafting, presentation and reporting skills, excellent written communication skills;
- Ability to administer budgets; and
- IT competencies in Word, Excel, Power Point and internet.

H.4 Leadership and Self-Management

- Focuses on result for the client and responses positively to feedback; and
- A good personality with strong leadership skills.

I. Qualifications of the Successful Individual Contractor

Education:

- Postgraduate degree (Masters) in Power/Electrical Engineering, or other related fields in combination with an appropriate first degree. PhD is an advantage.

Experience:

- More than 10 years' experience in the Renewable Energy sector (on grid or off-grid) including review of relevant legislation associated with RE.
- At least 5 years of experience in undertaking feasibility studies, design of renewable energy systems;
- Experience in carrying out or having been directly involved in at least one assignment of a nature and complexity close to the present assignment would be an advantage
- Experience in dealing with government owned or private utility companies; and
- Experience in dealing with utilities (public or private) and in engaging stakeholders from diverse backgrounds.

Language:

- Fluency in English (both written and verbal) is a must. Knowledge of French is an asset.

J. Scope of Price Proposal and Schedule of Payments

The financial offer should be quoted as a lump sum amount, all-inclusive (professional fee, insurance, all travel costs, per diem, etc.). In general, UNDP should not accept travel costs exceeding those of an economy class ticket. Should the consultant wish to travel on a higher class he/she should do so using their own resources.

The contract price is fixed regardless of changes in the cost components. In the case of unforeseeable travel (additional mission for example), payment of travel costs including tickets, accommodation and terminal expenses should be agreed upon prior to travel between UNDP and Individual Consultant and will be reimbursed.

Payments will be effected based on deliverables as per above.

K. Recommended Presentation of Offer

The following documents are requested:

a) Duly completed **Letter of Confirmation of Interest and Availability** using the template provided by UNDP;

b) **Personal CV**, indicating all past experience from similar projects, as well as the contact details (email and telephone number) of the Candidate and at least three (3) professional references;

c) **Technical offer: Brief description** of why the individual considers him/herself as the most suitable for the assignment, and a **methodology** on how they will approach and complete the assignment;

d) **Financial Proposal** that indicates the all-inclusive fixed total contract price, supported by a breakdown of costs, as per template provided by UNDP.

L. Criteria for Selection of the Best Offer

Individual consultants will be evaluated based on the following methodology:

Cumulative analysis

When using this weighted scoring method, the award of the contract should be made to the individual consultant whose offer has been evaluated and determined as:

a) Responsive/compliant/acceptable, and

b) Having received the highest score out of a pre-determined set of weighted technical and financial criteria specific to the solicitation.

Short-listing criteria:

Criteria	Max. Point
Education	15
Relevant technical experience in the area of floating solar PV systems	15
Experience in the Renewable Energy sector (on grid or off-grid).	10
Experience in conducting review of legislation	10
Experience in economic analysis with respect to RE sector	10
Experience in dealing with government owned or private utility companies	10
Experience in delivering specialised training	10
Experience of working with international funding agencies	5
Language (English mandatory/French is a plus)	5
Suitability of technical approach	10
TOTAL max.	**100**

Candidates scoring a minimum of 70% of the maximum marks on the above criteria will be short-listed.

The financial offers will be evaluated giving the lowest price proposal 30 marks and marking the other more expensive proposals reverse proportionally to the cheapest offer.

The final scoring of short-listed candidates will take into account the technical score and the financial score:

Criteria	Weight	Max. Point
• Technical score	70%	70
• Financial score	30%	30

The candidate ranking highest shall be selected.

M. Approval

This TOR is approved by:

Signature

Name and Designation Shakil Beedassy, Project Coordinator (GCF Project)

Date of signing 15/11/18