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INDIVIDUAL CONSULTANT PROCUREMENT NOTICE

Date: **03rd June 2020**

TITLE OF CONSULTANT: Individual Consultant (IC) to undertake Feasibility Study for Installation of a Solar PV System at Botswana Meat Commission (BMC) in Lobatse, Botswana

COUNTRY: BOTSWANA

DESCRIPTION OF ASSIGNMENT: Undertake Feasibility Study for Installation of a Solar PV System at Botswana Meat Commission (BMC) in Lobatse, Botswana

PROJECT NAME: Promoting the Production and Utilization of Biogas from Agro-Waste in South Eastern Botswana
PROJECT NUMBER: 00101976
SUPERVISION: Biogas Project Management Unit

Proposals with reference should be submitted in a sealed envelope clearly labelled, "***Individual Consultant (IC) to undertake Feasibility Study for Installation of a Solar PV System at Botswana Meat Commission (BMC) in Lobatse, Botswana"*** should be submitted at the following address no later than **16th JUNE 2020 at 12:00pm (Botswana Time),** to:

The Resident Representative
United Nations Development Programme
P.O. Box 54
Gaborone

or by email to: procurement.bw@undp.org

Any request for clarification must be sent in writing, or by standard electronic communication to the address or e-mailed to enquiries.bw@undp.org UNDP Botswana will respond in writing or by standard electronic mail and will send written copies of the response, including an explanation of the query without identifying the source of the inquiry to all prospective facilitators.

NOTE: *Consultancy firms/companies interested in applying for this assignment are free to do so provided they submit a CV of only one qualified consultant and present its bid in a manner that would allow for evaluation of the bid in accordance with the evaluation criteria specified in these solicitation documents. That is, the experience required is that of the individual whose CV would have been submitted by the company rather than that of the company. Further, if the submitted bid wins, the ensuing contract will be between the UNDP and the company/firm, not the individual.*

1.0 BACKGROUND

The Botswana Meat Commission (BMC) abattoir, Lobatse Plant, is extremely vulnerable to frequent energy shocks because 100% of its primary energy requirements are met directly from the grid and other fossil fuels sources. The pressing need to significantly enhance BMC's energy independence and reduce greenhouse gas emissions is also recognized in the Botswana's Nationally Determined Contribution (2015) to the UNFCCC Paris Agreement. The Government of Botswana (GoB) intends to achieve an overall emissions reduction of 15% by 2030 and ensuring an addition of 25% of renewables energy into the country's energy mix. The BMC is also taking steps to play a key role in contributing to the set target. In considering the above, the Government of Botswana (GoB), through the Department of Energy (DOE), in collaboration with the United Nations Development Programme (UNDP) are implementing a project titled "Promoting production and utilization of Biogas from Agro-waste in South-Eastern Botswana (Biogas Project)". The Biogas Project seeks to facilitate low-carbon investments in the production and utilization of biogas from agro-waste in South-Eastern Botswana. The project aims to assist the government through the following three components:

1. Institutional strengthening and capacity development;
2. Facilitation and establishment of biogas plants; and
3. Setting up of utilization and knowledge platforms.

As part of the BIOGAS project, a preliminary feasibility study conducted in January 24th 2019 recommended that construction and installation of a medium scale biogas digester would be a viable and favorable option to address the environmental issues and also improve energy security of the abattoir. Installation of the recommended biogas plant will also contribute to energy efficiency of the plant as it will generate approximately 10%, of the total amount of electricity and heat required by the BMC Lobatse plant. In support of BMC efforts to contribute to climate and renewable energy targets, enhancing its own energy security and strengthening Institutional capacity. the need for a detailed feasibility study was recommended. The study will identify best suitable technology to address the above-mentioned issues. It is therefore, against the foregoing that the services of an individual consultant are required to carry out a detailed feasibility study for the installation of a Solar Photovoltaic (PV) Plant at the BMC abattoir in Lobatse. The PV plant will complement the proposed biogas plant and ensure availability of reliable and clean energy sources. Of the types of available Renewable Energy Technologies (RETs) and the abundant solar energy resource readily exploitable. Botswana receives over 3200 hours of sunshine per year with an average insolation on horizontal surface of 21MJ/m^2, one of the highest rates of insolation in the world and that could be readily converted into power. The available surface area at BMC premises could also be used to accommodate the recommended solar PV system thus adding value to the previously unused area.

2.0 OBJECTIVES, SCOPE OF WORK, AND RESPONSIBILITIES

Objective

The main objective of the study is to conduct a thorough investigation to determine the feasibility/viability of utilization of solar photovoltaic (PV) system for electricity production at BMC Lobatse Plant. The study is required to assess in detail the potential for implementation of a solar PV system capable of feeding loads at the abattoir as well as feed-back electricity into the national electric grid.

3.0 SCOPE OF WORK

The Individual Consultant will gather information and develop a detailed feasibility study for utilization of solar PV system for production of electricity at BMC, Lobatse Plant in South-Eastern Botswana. The consultant will undertake the following but not limit him/herself to:

i. Conduct and overall assessment of the potential for accommodating roof-top mounted or stand-alone solar photovoltaic system at BMC Lobatse abattoir, taking into consideration power output per unit area.

ii. Assess comprehensively the potential for implementing a solar PV system at BMC Lobatse abattoir taking into consideration, but not limited to, the following aspects:

2.1 Technical Aspects;

- **a.** Identification of the exact location(s) on the surface area available for constructing a scalable solar PV system – (Site Assessment, Resource Assessment)
- **b.** Accessibility to the grid
- **c.** Technical standards applicable for the proposed type of technology
- **d.** Consumer Load profiling
- **e.** Preliminary Technical layout
- **f.** Preliminary energy yield assessment (Determine total amount of electricity to be produced from the proposed solar PV system;
- **g.** Extreme weather events
- **h.** Construction risks

2.2 Environmental Aspects

- **a.** Environmental Scope – Pollution and disturbance of the surrounding environment
- **b.** Geotechnical Assessment

2.3 Economic and Financial Aspects;

- **a.** Determine the Capital Expenditure (CAPEX) and Operational Expenditure (OPEX) of the proposed technology type
- **b.** In-depth Levelized Cost of Energy (LCOE) analysis;
- **c.** Internal Rate of Return (IRR) analysis;
- **d.** Determine the Return on Investment (ROI) for proposed system;

iii. Review relevant Botswana energy policies/regulations and plans (e.g. Draft Botswana National Energy Policy, building permits, generator license, grid connection authorization, land-use/zoning, construction/electrical codes)

iv. Present most economic options for the implementation of a solar PV system, e.g. Grid back-up or storage back-up;

v. Articulate clearly significant components in each project development phase of the proposed technology (e.g. Design Phase, Installation Phase and Operation Phase)

vi. Determine the reduction in CO_2 emissions from proposed installation of solar PV system;

vii. Prepare a management, maintenance and operation plan to ensure sustainability of the system.

a. Training Workshop

For the purpose of the assignment, a two-day training workshop shall be conducted by the consultant for the relevant personnel from the Department of Energy (DOE), Botswana Power Cooperation (BPC), Botswana Energy Regulatory Authority (BERA), Botswana Meat Commission (BMC) and other relevant personnel/stakeholders identified. The objective of the workshop is to develop capacity through training of personnel responsible for operation and maintenance of the system to familiarize them with the proposed technology.

4.0 EXPECTED OUTPUT AND DELIVERABLES

Item	Activity	Tentative date	Deliverable	Means of Verification
1.	Produce a workplan and detailed methodology inclusive of reasonable timelines		Inception report comprising of a comprehensive assignment workplan, detailed methodology and timelines.	Approved Inception Report
2.	**a.** Review relevant policies and regulations and recommend how the solar PV system technology at BMC Lobatse abattoir can benefit from local legislation frameworks		Comprehensive and concise report on legislative review	Approved Draft Report
	b. Assess comprehensively the potential for implementing solar PV system at BMC, taking into consideration, but not limited to, **all technical**, **environmental**, **social**, **and financial aspects**		Comprehensive report on the assessment of the potential of solar PV system at BMC, comprising of technical, environmental, social, economic and financial components	

	c. Preparation of a comprehensive operational management plan, maintenance and ensure sustainability of the system beyond commissioning		Comprehensive Operational Management Plan, and Maintenance Plan *(Scheduled and non-scheduled)*	
3.	Conduct an in-depth capacity needs assessment relevant to the proposed technology and provide appropriate training on the basics of the proposed technology to relevant personnel of BMC, BERA, BPC, DOE and other identified relevant stakeholders		**a.** Preliminary report on capacity needs assessment in solar PV systems	Approved Capacity Needs Assessment Report
			b. Training materials/training report	Conducted Training
4.	Consolidation of comments, feedback, reviews and other significant inputs into the draft report to produce a final Feasibility Study Report		Final Feasibility Study for Installation and Commissioning of Solar PV System at Botswana Meat Commission (BMC), Lobatse Plant.	Approved Final Feasibility Study

All graphics to be included in the reports should be of a professional high standard and quality. They shall be presented in either A4 or A3 format in the report. Maps shall also be digitized in a format compatible with ArcGIS and with Metadata. All reports should be accompanied by an electronic copy.

5.0 COORDINATION OF THE FEASIBILITY STUDY CONSULTANCY

With the support of the Project Management Unit (PMU) and the Project Steering Committee (PSC), the Technical Reference Group (TRG) will oversee the work of the consultancy from start to finish. The consultant will be required to submit all submissions to the Project Manager – Biogas Project. The technical work of the consultancy submitted will be shared with the Technical Reference Group (TRG) for review and approval. The consultant will present all submissions of the assignment to the TRG. The Technical Reference Group will provide comments and approval on whether to proceed to the next stage on all reports within one (1) week of submission.

6.0 DUTY STATION

Lobatse and Gaborone, Botswana

7.0 QUALIFICATIONS AND EXPERIENCE

7.1 EDUCATION

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

7.2 EXPERIENCE:

- Minimum of 10 years' experience in the Renewable Energy sector (on grid or off grid) including review of relevant legislation associated with RETs.
- With at least 5 years of experience in undertaking feasibility studies, design of renewable energy systems especially solar PV projects;
- Experience in carrying out or having been directly involved in at least one assignment of similar nature and complexity close to the present assignment;
- Experience in dealing with government owned or private utility companies;
- Experience in analytical and design skills of various Solar PV systems or other RETs project for governmental and private institutions; and
- Experience in dealing with utilities (public or private) and in engaging stakeholders from diverse backgrounds.

7.3 COMPETENCIES:

7.3.1. Corporate Competencies

- Demonstrates commitment to UNDP's mission, vision and values
- Display 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.

7.3.2. 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.

7.3.3. 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;
- Ability to undertake feasibility studies for governmental related institutions and bodies
- Ability to report analytical outputs in a clear, concise manner tot 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

7.3.4. Leadership and Self-Management

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

8.0 DOCUMENTS TO BE INCLUDED WHEN SUBMITTING THE PROPOSALS

8.1 Technical Proposal

Provide a brief concise methodology on how they will approach and conduct the proposed assignment.

8.2 Financial Proposal

The financial proposal will specify the daily fee of the individual consultant based on the number of days worked, cost of travel and daily subsistence fees. Each action item must be clearly costed. The financial proposal shall specify a total lump sum amount, and payment terms around specific and measurable (qualitative and quantitative) deliverables. Payments are based upon output, i.e. upon delivery of the services specified in the Terms of Reference (TOR). In order to assist the requesting unit in the comparison of financial proposals, the financial proposal will include a comprehensive breakdown of this lump sum amount (including professional fees, travel, per diems, accommodation, and number of anticipated working days).

8.3 Personnel CV

Detailed personnel CV including past experiences in similar projects with names and traceable contacts of three (3) referees should be included.

9.0 DURATION OF THE WORK

The consultant to proposed however, the consultancy work shall not be undertaken in a period exceeding three (3) months.

10.0 TRAVEL

All envisaged travel costs must be included in the financial proposal. This includes all travel to join duty station/repatriation travel. In general, UNDP should not accept travel costs exceeding those of an economy class ticket. Should the Expert/Individual Consultant wish to travel on a higher class he/she should do so using their own resources. In the case of unforeseeable travel, payment of travel costs including tickets, lodging and terminal expenses should be agreed upon, between the respective business unit and Individual Consultant, prior to travel and will be reimbursed.

Should the consultant be based outside Botswana, most of the work will be done remotely. Most of the communication will be done via email and/or skype. The consultant will only be required to travel to the duty station for:

1. Field data collection
2. Presentation of the inception, draft, and final reports and
3. To conduct a training workshop

11.0 EVALUATION

Only those candidates who obtained at least **70%** in each of the steps of the technical evaluation process will be considered for financial proposal evaluation.

- **Stage 1:** Preliminary evaluation of the proposals will be based on **[yes/no]** response as per the table below. If the response is **'no'** for any of the 3 criteria, the consultant will be disqualified from further evaluation.
- **Stage 2:** Technical capability of the Consultant to deliver the required consultancy outputs evaluated on a scale of 0-100 points wherein the qualifying mark is **70%.** The criteria to be used are shown below:

Criteria	**Weight**
Technical Evaluation	
Criteria A: Relevant qualifications (academic & technical, minimum Masters)	*YES/NO*
Criteria B: Adequate relevant work and/or professional experience (Minimum 10 years)	*YES/NO*
Criteria C: Complete Consultancy package submitted (Technical and Financial Proposal)	*YES/NO*
Criteria D: **Context** – Comprehensive, clear understanding and concise knowledge of consultancy of RET project development. Demonstrable understanding of RET and feasibility studies and related issues in the SADC region.	20
Criteria E: **Relevant Professional /Work Experience** – Demonstrate extensive relevant work experience in RET feasibility studies with focus on utility scale solar PV projects	30
Criteria F: **Technical Competence/ Methodology/Approach** – Clear and detailed methodology of how the assignment will be undertaken. Demonstrable competence on the subject matter and clear responsiveness to the Terms of Reference (TORs)	30
Criteria G: **Presentation & Packaging** – Demonstrate good writing, interpretation and communication skills.	20

12.0 PAYMENT SCHEDULE

Payment shall be made following the suggested schedule as below:

a. **40%** upon APPROVAL of the Draft Report by the TRG.
b. **30%** upon completion of training
c. **30%** upon APPROVAL of Final Report by the TRG.