

## **Terms of Reference: Biogas Technical Expert for the Uganda Biogas and Electric Cooking Project (UBEP)**

### **1. Background**

In Uganda, traditional biomass primarily wood and charcoal remain the dominant source of energy, with over 90% of households depending on it. This heavy reliance contributes to deforestation and indoor air pollution resulting in serious health risks, particularly for women and children, who are most exposed to smoke during cooking. Recognizing the urgency to shift to cleaner alternatives, the Government of Uganda, through the Ministry of Energy and Mineral Development (MEMD), launched the Uganda Biogas and Electric Cooking Project (UBEP) in 2025 with support from the African Development Bank (AfDB). UBEP aims to expand access to clean cooking by investing in biogas plants and electric cooking appliances, consolidating existing efforts into a unified program that supports Uganda's Vision 2040, the National Development Plan (NDP) and updated Nationally Determined Contributions (NDCs).

UBEP directly contributes to several Sustainable Development Goals improving health (SDG 3), promoting gender equality (SDG 5), expanding access to modern energy (SDG 7), mitigating climate change (SDG 13), and protecting ecosystems (SDG 15). It also aligns with the African Union's Agenda 2063 and Uganda's Country Strategy Paper (2022–2026), which prioritizes sustainable infrastructure for industrial growth. The Program supports the African Development Bank's broader strategies, including the New Deal on Energy for Africa, Mission 300, the Ten-Year Strategy (2024–2033), and the Climate Change and Green Growth Action Plan.

In this regard, the Government of Uganda (GoU) is inviting applications for the position of a Biogas Technical Expert to oversee the implementation of the biogas component of the UBEP project. This component aims to establish 47 biogas plants in public institutions, including schools, open markets, and farming communities.

The Biogas Expert will play a vital role in providing technical support and guidance in the planning, design, construction, and management of the biogas plants under UBEP project. The role will be structured through the Project Management Unit (PMU) established under the Ministry. In addition, the expert will be responsible for overseeing the training of local artisans and ensuring full compliance with environmental and social standards, working in close collaboration with other relevant project stakeholders.

### **2. Responsibilities:**

The Biogas Expert will undertake the following key responsibilities:

- Conduct needs assessment and requirements definition, followed by site selection and validation.
- Develop standardized designs for the biogas plants, ensuring alignment with site-specific contexts.

- Conduct feasibility studies for all proposed biogas sites, including an assessment of feedstock availability and site conditions.
- Ensure all biogas plants are designed and operated in compliance with the established Environmental and Social Safeguards.
- Conduct Environment and Social Impact Assessments (ESIAs) for each biogas site prior to construction, working closely with the Environmental & Social Safeguards (ESS) Officer and other relevant actors.
- Provide technical guidance throughout the construction and installation of biogas plants, ensuring adherence to design specifications and safety standards.
- Oversee testing of components of the biogas plant, commissioning, operation and maintenance of biogas plants, providing recommendations for optimization, sustainability and scale-up. In the Operation and Maintenance (O&M) context, the Expert shall in the final phase support the project in the recruitment process of at least one O&M Service Provider to support the plants for at least 18 months post-commissioning.
- Work closely with the Service Provider delivering training for local artisans and biogas companies to ensure best-in-class training programs, integration of outputs at project-level and overall high quality of training outcomes.
- Facilitate training sessions and capacity building workshops to build local capacity for biogas management.
- Establish a M&E framework to assess the performance of the biogas plants and prepare reports on progress, challenges and outcomes related to plants development and operation.
- Engage and collaborate with MEMD, local communities and other stakeholders to ensure the successful implementation of biogas initiatives.
- Support MEMD team and plant operators in assessing and compiling key findings from business models adopted, to support optimization opportunities.
- Compile periodic reports on performance for the project and plant performance
- Support the coordination of stakeholders for the biogas plants
- Develop necessary knowledge and awareness material for biogas technology from the Project taking into consideration the plants installed, to support MEMD efforts in awareness creation.

### **3. Qualifications of the Consultant:**

#### **Academic Qualifications:**

- Have a Bachelor's degree in renewable energy, engineering, environment, agriculture, natural resource science, or a relevant field;
- Preferably have a minimum of Master's Degree in a relevant field of Engineering, Environmental Science, Renewable Energy, Biogas Technology, Natural Resources, Energy/Energy Economics, or a related field;

- Professional training qualification and experience in Biogas Technology is required.
- Training in management of energy and environment systems is an added advantage.

### **Experience (General)**

- Biogas plant design: demonstrate ability and knowledge in design various types of digesters taking into consideration local context conditions.
- Biogas plant management: demonstrate ability to start-up biogas plants, enhance substrate mix formulation, and biogas plant process surveillance.
- Business model development: demonstrate incorporation of local context in creating business models for public sanitation, agro-industries, and waste management facilities (include examples of those that have worked).
- Engage in sharing expert knowledge, capacity building: demonstrate involvement in capacity building, raising awareness and knowledge dissemination in biogas technology to various entities/groups i.e. biogas plant operators, researchers, investors, and practitioners.
- Demonstrate proven knowledge in financial modelling and management.
- At least 8 years of proven experience in biogas plant design, construction and operationalization of biogas plants, particularly in institutional and community settings such as schools, markets, and farming communities.
  - Strong understanding of biogas technologies, including different types of digesters (e.g. fixed dome, tubular digesters) including selection, optimization, and operational requirements based on site conditions and waste availability.
  - Experience implementing biogas projects in developing countries, preferably in East Africa. Specific experience in Uganda is an added advantage.
  - Demonstrated experience in project management, monitoring and evaluation, and knowledge of E&S safeguards related to biogas projects.
  - Knowledge of regulations, legislation, local conditions, and environmental policies, particularly in East Africa / Uganda.
  - Proven track record of implementation of training for local communities, various stakeholders, artisans, technicians, and biogas enterprises on the design, construction, and maintenance of biogas plants.
  - Proven ability to design and conduct capacity-building programs tailored to local communities.
  - Experience in setting up and conducting monitoring and evaluation frameworks for biogas plants, including data collection, performance tracking, and reporting on system efficiency and impact.

- Hands-on experience conducting ESIA's for biogas and related projects, ensuring compliance with relevant environmental and social safeguard standards.
- Work collaboratively with government bodies, regulatory authorities, and community stakeholders to facilitate project implementation.
- Excellent communication and interpersonal skills, with the ability to engage and collaborate with diverse stakeholders.
- Experience working with MDBs/DDFIs or international donor-funded projects (AfDB, WB, FCDO, etc.).

#### **4. Duration of Assignment**

The assignment will commence at completion of the selection process and upon contract signing. The contract with the selected firm, expected to start in 1<sup>st</sup> April, 2026 will last for a period of three (3) years. A precise work program, job schedule and appointment instrument(s) will be agreed upon with the Responsible Officer, MEMD – in consultation with the Coordinator, Project Management Unit on commencement of the assignment.

#### **5. Confidentiality**

Any information provided by AfDB, other financiers, project sponsors, or by any other source concerning any AfDB project or activity will be considered confidential and proprietary in nature and should not (except as required by law) be disclosed by the Consultant to any third party.