

# **Terms of Reference (ToR): Senior Bio Energy Expert for SREP- Supported Extended Biogas Project**

## **1. Introduction**

Nepal is one of six pilot countries identified for assistance under the Scaling-up Renewable Energy Program in Low Income Countries (SREP) by the SREP sub-committee. As one of three programs under the Strategic Climate Fund, SREP aims to demonstrate the social, economic and environmental viability of low carbon development pathways in the energy sector. In particular, the objectives of SREP in Nepal are to: (i) leverage complementary credit and grant co-financing, (ii) bring about transformational impacts through scaling up energy access using renewable energy technologies (RETs), poverty reduction, gender and social inclusiveness and climate change mitigation, and (iii) ensure sustainable operations through technical assistance and capacity building. The Government of Nepal (GoN) has designated the Ministry of Finance (MoF) and the Ministry of Energy, Water Resources and Irrigation (MoEWRI) as the focal points for SREP. MoEWRI has designated the Alternative Energy Promotion Centre (AEPC) as the lead agency for SREP-related activities. The Waste to Energy under SREP is considered an activity of Renewable Energy and hence the SREP supported projects are part of the Government's plan, and are being implemented by AEPC.

The SREP- Supported Extended Biogas Project, one of the SREP components aims to promote large off-grid biogas energy generation in the country where sponsors are commercial enterprises or municipalities. SREP seeks to deliver two primary categories of benefits from the use of its financial support: (i) increased access to renewable energy and (ii) increased production of renewable energy. The project consists of two components; Technical Assistance and Financing of Investments.

## **2. Background**

The Bio Energy section is looking for a dynamic Senior Bio Energy Expert to help the program enhance the productive applications and create a proper market of large biogas plants in different commercial firms and municipalities. The Senior Bio Energy Expert shall lead the technical sector related to large biogas in the project as well as guide the program officer, Municipal Waste to Energy Project Coordinator, Provincial Project Coordinator and Monitoring Officers of all Provinces and Technical Expert to achieve the set targets of SREP extended biogas project.

The production of biogas from biodegradable waste for heating and electricity generation to feed into the grid has become common practice in developed countries. Such practice could be transferred to low income countries like Nepal as well. This will be the larger size of the plants

as AEPC has some experience with the private sector entities and communities. But due to lack of adequate skill, technology and resources AEPC has not been able to accelerate such plants in desired manner. In industrialized countries with rich experience in waste management, incineration is recognized as the single most effective method for municipal solid waste (MSW) treatment as it reduce waste value by 90% and eliminates methane emission. However, the waste in South Asia including Nepal is characterized by a significantly higher density and moisture. The current and future waste treatment is greatly affected not only by population growth and consumption patterns, but also by the policies of the government, applicable funding from private and public sectors and community social awareness. The municipality wastes and wastes from various industries such as sugar factory, paper factory and brewery etc could be used in biogas plants.

Biogas promotion is seen as a comparatively successful and lucrative business in rural Nepal. In the urban and semi urban areas, a huge resource for biogas production is being wasted. Kathmandu city, for example, produces 660 g of solid waste per capita per day with 71% of organic waste. Landfill being the only destination of Municipal Solid Waste (MSW) in Kathmandu and most of the other big cities of Nepal, it is creating huge environmental problems. Production of biogas from municipal waste is an option to mitigate the ever growing demand for energy in Nepal. This waste has the potential to be converted into wealth by means of biogas which can contribute to energy production as a renewable energy source.

A set of guidelines for conduction of feasibility study and detailed feasibility study for commercial, institutional, community and municipal biogas plants have been prepared. Similarly, reporting formats for feasibility studies for all the four categories have been prepared.

### **3. Objectives**

The objective of this position is to support project manager to cater the technology (more focus on above 100 m<sup>3</sup> size plants other than GGC model where as below 100 m<sup>3</sup> and GGC model will be technically supported by program officer) related issues (internal technical assessment of each sub-projects before forwarding to International/Independent Technical Expert) and ensure quality assurance of each individual sub projects as well as to carry out the day to day activities vested by the project. S/he shall lead the technical sector related to large biogas in the individual sub-project as well as guide the program officer to achieve the set targets of SREP extended biogas project.

### **4. Scope of Work (activities)**

The scope of work shall include following, but shall not necessarily be limited to the following:

- Lead the technical sector on biomass, large biogas and waste to energy including proposal writing, planning, budgeting and design execution of plans and activities within bio-energy section and SREP.
- Train the various actors in technical aspects of large sized plants and overall bio-energy;
- Support the sector during foreign technology acquisition;
- Prototype testing under field conditions, and
- Elaborate procedures for pilot scale field testing.
- Support in preparing short, medium and longer term plan and strategy for the dissemination of large Biogas and Waste to Energy portfolio development in Nepal.
- Build network with municipalities and coordinate with suitable municipalities to implement waste to energy projects.
- Explore and guide possible clients (developer, consulting and construction companies) on best available different technologies including electrification, multiple end uses and grid connection.
- Identify possible clients from commercial farms, hospitals, schools, hotels etc to promote large biogas in the commercial sector.
- Conduct programs to attract commercial enterprises and municipalities to implement waste to energy activities.
- Assist the Biogas section and the large biogas sector/team in day to day activities related to waste to energy including budgeting, planning and design and execution of activity plans.
- Regularly ensure adequate follow-up, monitoring and reporting of program activities through active coordination with monitoring and reporting team.
- Coordinate for information dissemination to companies and other relevant organizations or individuals.
- Assist in regular and general monitoring of the program activities, including Review of work and activity plans, and budget and work closely with staff related with monitoring and reporting.
- Work in close cooperation with other programs of AEPC and other rural energy programs/projects of AEPC and ensure teamwork and coordination.
- Coordinate with other on-going programs in Nepal that has direct and indirect implication with SREP activities in general and biogas activities in specific: general liaison for sector development; follow-up of the technological and other developments in the sector and providing inputs to improve the program.
- Support AEPC in implementing other clean cooking solutions related initiatives.
- Any other tasks assigned by Project Manager to support in SREP implementation.

## **5. Performance and Reporting Requirement (Deliverables)**

On this program, the bio energy expert takes key implementation responsibility to reach the targets of accelerating the waste to energy projects service delivery with better quality, comprising various technologies to enterprises, developers, and municipalities that benefit men

and women from all social groups, leading to more equitable economic growth via promotion of waste to energy technologies. The deliverables shall be but not limited to the following:

- Ensure that the targeted large biogas and waste to energy municipal projects are concluded within the SREP period.
- Ensure that municipal scale biogas plants are promoted in coordination between municipalities and private sector.
- Reports of potential clients of large biogas plants.
- Promotional materials for large biogas and waste to energy technologies.
- Memos and minutes as and when deemed necessary
- Match making events between national/international technology providers and pre-qualified companies organized.

## **6. Duration of Service**

The Expert will be assigned for the project period, i.e. 31<sup>st</sup> August, 2021 with a provision of renew of contract, in case of satisfactory performance. The expert is expected to work full time during office hours within Kathmandu valley with required travels outside Kathmandu valley within Nepal on project related matters

## **7. Senior Expert's required Qualification and Experience**

Candidate should have at least master's degree in Chemical/Mechanical/Civil/Agricultural/ Environmental Engineering or relevant discipline with minimum 7 years experience in total and 5 years experience in project implementation, planning, networking and coordination in renewable energy sector. Preference shall be given to those candidates having proven track record of working experience on large biogas sector.

### **The candidate should also have:**

- Demonstrated skills in large biogas and coordination, business plan preparation and networking are required.
- Demonstrated experience on working with different associations, municipalities in Nepal would be an advantage.
- Prior relevant practical work experience in the field of converting waste to energy; is an added advantage.
- Experience and knowledge in budgeting and reporting.
- Knowledge of specific gender issues in renewable energy and sensitivity to local culture and traditions in Nepal.
- Experience in designing and implementing private sector capacity building and in training national and sub-national staff.

- Ability to build and maintain relationships, particularly interacting productively, proactively, and comfortably with municipality staff, community leaders, government agencies, NGOs, private sector groups.
- Demonstrated strong written and oral communication, interpersonal and negotiation skills.
- Demonstrated computer skills in Microsoft Office Suite applications including Word, Excel, PowerPoint, and Outlook.
- Output/result and team work oriented
- Participated in relevant trainings
- Strong written and oral presentation skills in English and Nepali are required.

**8. Facilities and logistics to the expert by the Client:**

The Expert will be provided with the office space, computer with internet facilities, and office furniture. Necessary stationery, printing and copying facilities will also be provided by the Client.