Towards sustainable energy for all in Mozambique: Promoting market-based dissemination of integrated renewable energy systems for productive activities in rural areas

Terms of reference for the installation of Solar PV and waste-to-energy systems

Date: 12 October 2021

1. Project background information

In Mozambique, the rural electrification rate reached only 27% as the extension of electricity grids has proven to be technically difficult, very costly and sometimes an inefficient solution due to the remoteness and sparse population density. The agricultural sector -one of the most important sectors of the economy- faces serious challenges in accessing electricity and other forms of modern energy forcing it to rely on expensive diesel, firewood and/or charcoal for its operations. Even though it has been estimated that Mozambique has a potential of 7 GW on renewable projects, the use of modern energy for productive uses is still very limited. As such, the United Nations Industrial Development Organization (UNIDO) – as an implementing agency of the Global Environment Facility (GEF) – and the Government of Mozambique are implementing the project "Towards sustainable energy for all in Mozambique: Promoting market-based dissemination of integrated renewable energy systems for productive activities in rural areas" which seeks – among other outcomes – to demonstrate the technical feasibility and commercial viability of renewables in productive sectors including agriculture and agro-food processing industries.

2. Project objective and description

Through its 3 technical components, the project will support the market-based adoption of integrated renewable energy systems (solar PV for irrigation and waste-to-energy) in small to medium-scale farms and rural agro-food processing industries in Mozambique. The components are the following:

1. Establishment of a conducive policy and regulatory environment - the project will enhance the regulatory and policy environment in order to promote the involvement of the private sector in the development of integrated RE systems for rural areas.

2. Capacity building and knowledge management- the project will improve and develop the capabilities and knowledge of market players and enablers in the RE sector including relevant government officials (national and provincial level) as well as representatives from financial institutions, private sector, universities and vocational training institutions.

3. Technology demonstration and scaling up - the project will demonstrate the technical and financial feasibility of RE technologies in agricultural activities located in rural areas, specifically: solar PV water pumping and biogas/biomass usage in agro-food processing industries through the installation of demonstration projects. The objectives of these projects, besides delivering GHG emission reductions, include generating case studies and best practices on the use of RE technologies in agro-food processing industries that have high replication potential across Mozambique. In this regard, UNIDO/GEF is offering a grant to support these demonstration projects in rural Mozambique to mitigate the high up-front costs required for such investment projects.

3. Scope of the supply - Equipment and technical services

This Terms of Reference (ToR) aims to contribute to increased efficiency, productivity and sustainability of farmers through the adoption of renewable energy systems (solar PV and waste-to-energy). Proposals are expected from interested entities and project developers who are willing to provide counterpart funding to realize the project. Proposal to be submitted must comply with the following criteria:

a) Installation of solar PV and waste-to-energy systems. Each individual renewable energy project must be able to deliver at least 20 kW of installed capacity (for solar systems) and/or up to 50m^3/day of biogas production (waste-to-energy systems) i.e.: (i) Support to the agriculture Value-Chain (Solar water pumping & irrigation, Conservation or Agro-Processing); (ii) Solar PV systems to support commercial productive activities (Water supply systems, solar roof-top system, digital platforms for rural communities, water heating systems, battery charging, etc.); (iii) Waste-to-Energy SFystems (Biomass/Biogas anaerobic digester Systems);F

b) Waste-to-energy projects can access a grant amount up to 55% per kW of installed capacity while solar PV projects can access a grant amount up to 40% per kW of installed capacity. Internationally recognized average capital costs[1] of renewable energy technologies are available through recognized publications like the International Renewable Energy Agency publication[2] in application of computed costs within the range of international cost for renewable projects within the project area.

c) Individual smaller capacity projects or a bundle of smaller projects at different rural or peri-urban locations in Mozambique will also be considered as long as the projects are linked to productive uses, especially agriculture and agro-processing industries;

1 Solar PV module cost between 0.019 – 0.04 cent per kWh
Biogas production cost between USD 0.22 and USD 0.39 per m^3

2 https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2021/Jun/IRENA_Power_Generation_Costs_2020.pdf

d) The proposed project should provide documented proof of the availability of the renewable energy resource that will be used, either by internationally recognized renewable energy resource maps or local on-site measurements;

e) The plant design, the quality of equipment, construction or installation as well as the operation and maintenance of the system must ensure a life time of at least 15 years. The solar pump should have a lifetime of 10 years while the PV Panels should have at least 20 years;

f) The proposed project must include a training programme for counterparts and the general public as part of efforts to build capacity on the technology and project in the country. The training must be at least 2 days long and will target 20 participants in the country; and

g) For waste-to-energy projects, the feedstock can come from a single source or a mixture of sources which are compatible. Besides, the proposal should include a management plan for the digestate and effluent;

4. Conditions for accessing the grant support

a) GEF/UNIDO grant support to the proposed project will be based on incremental cost reasoning[3] which has to be justified and verified. UNIDO reserves the right to determine costs of the proposed project that can be considered to be incremental;

b) The proposed project must be able to show to be commercially viable and must have high replication potential in Mozambique;

c) This request for proposals is open to private and public entities, NGOs, community organizations etc.;

d) The project developer should be able to provide the complete set of legally required documentation for any project permitting or licensing by the Government, where ever necessary;

e) The applicant must have fulfilled the required legal obligations regarding registration, taxation, and other legal charges in its home country if applicable for this project. The applicant must not be sanctioned by the UN and considered ineligible based on the lists such as the Consolidated United Nations Security Council Sanctions List (CUNSCSL), World Bank's Listing of Ineligible Firms & Individuals, and lists of sanctioned/suspended vendors maintained by UN organizations.

f) The applicant must not be involved in investments, sales or manufacturing of anti-personnel landmines, cluster bombs as well as other weapons and ammunitions, or in production or sales of tobacco;

g) The UNIDO/GEF grant support is directed to catalyse early implementation of the investment projects in RE. Therefore, those projects who have already completed the

3 Incremental cost reasoning should justify the value added of providing the grant funding to that project.

technical and financial feasibility studies, but are in need of financial support to advance further will be preferred.

h) Project to be supported could comprise of a single or bundle of smaller projects at same demographical location, as long as the projects are implemented in small-to-medium industries.

i) The applicant must not be involved in investments, sales or manufacturing of anti-personnel landmines, cluster bombs as well as other weapons and ammunitions, or in production or sales of tobacco;

j) The applicant must comply with the UN sanctions, UN Security Council Resolutions, and international conventions and treaties;

k) Incremental costs to be supported by the UNIDO/GEF project through investment grant could be a combination of services and equipment supply depending on the needs of the project. The potential beneficiary will have to provide a reasonable justification of the incremental costs and the utilization of UNIDO/GEF grant to add value to the project

l) The project developer should provide the CVs of key technical personnel that will manage the proposed project as well as proof of sound economic basis, the capacity to repay loans, required security and counterpart funding;

m) The duration for RE project implementation should be not more than 1 year from the date of signing the grant agreement with UNIDO.

n) Preference will be given to projects that will engage personnel with at least 40% participation of women that are directly involved in the most critical implementation and revenue generating activities.

5. Time schedule

A time schedule for the implementation should be developed by the Contractor including delivery, start up and training of personnel. Delivery of the equipment to the project site should be within 6 months after the signature of the contract. The overall duration of the contract is 12 months.

6. Reporting

Progress reports shall be submitted to UNIDO in accordance with the provisional time schedule. The reports should be provided in English; the format and number of copies are given in the contract.

1. Inception report, elaboration of the plan of action for the contract execution in collaboration with UNIDO including feasibility studies, equipment selection with justification and the work plans with related timetable. The inception report should be submitted within a month after the signature of the contract.

2. Progress reports, confirming progress of project to date (each quarter) and including a copy of the bidding documents, purchase orders and related invoices associated with the purchase of parts, equipment and services.

3. Final report, upon completion of the work describing all the works performed under the contract including commissioning and project documentation.

7. Guarantee requirements

The developer/investor must guarantee the quality of all the work as specified in this ToR. The developer/investor guarantees that engineering design, specifications, technical documentation and other documents, which are the basis of the proposed biomass energy system, are in accordance with the project objective. The developer/investor must also guarantee that the machinery, equipment and all other technological components will be new, of recent conception, without any defect or malfunction, and that the time for the technical guarantee will be at least 12 months, starting from the date of the commissioning. If second-hand refurbished equipment is included in the proposal (like wind turbines), written guarantee should be provided by the developer.

8. Submission date for proposals

Interested parties, that satisfy the above requirements, should submit their proposals in line with attached Annex I- UNIDO Template for submission of renewable energy project proposals, and Annex II -Scope of supply and Services, and Annex III - Bill of Quantities of the equipment and supplies. Display name of tender: RFx No. 1100161767

Proposal should be submitted via provided e-mail account **RFx1100161767@unido.org** as soon as possible but not later than **19 November 2021.**

9. Evaluation criteria

This ToR is issued with the aim of selecting demonstration projects to contribute to increased efficiency, productivity and sustainability of farmers through the adoption of renewable energy systems (solar PV and waste-to-energy). Successful project proposals will be selected based on the qualification criteria and the evaluation criteria listed as followings:

1. Alignment with the project's objective stated in Section 2;
2. Compliance with the technical services in Section 3;
3. Showing a high potential on bringing benefits to consumers by meeting their energy demands;
4. Demonstrate a high potential of ensuring sustainability and commercial viability;
5. Promote gender, environmental and social benefits;
6. Provide solutions to issues affecting rural areas and vulnerable populations; and
7. Demonstrate a high replicability and scaling-up potential.

10. Grant contribution by bidder(s)

Selected bidder(s) shall provide detailed financial statements of cost evidencing committed co-financing amount that has been utilized for the project as described in the offer submitted by the bidder and accepted by UNIDO during project execution.