

Terms of Reference

Supply, transport, installation, testing and commissioning of solar PV pumping system for 20 selected sites (2 separate lots) in Amhara and Oromia regions

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Since 2018, the GIZ project Green People's Energy (GBE) aims to improve the conditions for decentralised energy supply in selected sub-Saharan African countries with the participation of citizens and companies. Activities will focus on Ethiopia, Benin, Côte d'Ivoire, Ghana, Mozambique, Zambia, Senegal, Namibia and Uganda. In addition to country-specific measures, the initiative promotes renewable energy projects of common benefit across countries and strengthens partnerships between actors in Europe and Africa. For its operations in Ethiopia, GBE collaborates closely with its political partner, the Ethiopian Ministry of Water, Irrigation and Energy (MoWIE) as well as with the Energizing Development Ethiopia Project of GIZ/SNV (hereinafter: EnDev).

The main output areas of GBE in Ethiopian are as follows:

1. Promote small-scale renewable energy initiatives
2. Increasing vocational training capacities for solar PV
3. Promote use of solar PV energy for enhancing social services and production
4. Support decentralized, local energy supply and service provision initiatives

In this regard, GBE provides technical advice and support to a number of governmental institutions and non-governmental organizations, private institutions and enterprises, cooperatives and communities.

One of the deliverables of output 3 is the establishment of a demonstration cluster for 20 smallholder irrigation systems that are to be set up in close collaboration with the GIZ Green Innovation Center (GIC) project and its partner farmers.

Purpose of this activity is developing a scalable pilot solar PV irrigation system in 20 smallholder farms in Amhara and Oromia regional states. Based on the earlier conducted Solar Powered

Irrigation Systems (SPIS) market study and site assessment study (to be shared together with the request for bids), the Contractor will be required to supply, install, and commission the solar PV-powered pumping systems (hereinafter: solar pumping systems) for 20 sites (divided up in two separate lots), based on developed specification and BoQ and these TOR. The Contractor is further to provide trainings as well as after-sales service for six months. Details in section 2.

Therefore, experienced, and qualified companies are invited to bid for one or both lots. Bidders are to indicate for which lot(s) they are bidding.

Lot 1: Bure Woreda, West Gojjam zone, Amhara Regional State

Lot 2: Dodota Woreda, Arsi zone, Oromia Regional State

1. Objectives of Work

The objective of this assignment is to carry out the supply and subsequent transport, installation, testing, commissioning and service maintenance, end user training and final hand over of complete and fully functional solar PV pumping systems in the farmstead of pre-selected smallholder farmers in Amhara and Oromia Regional States. The Contractor is required to conduct the installation at least at two farms in the same kebele (i.e., per lot) in parallel.

2. Activities to be performed

Please refer to Annexes for detailed description of the specific products to be supplied and the following activities are to be done by the winning contractor.

- Supply of all solar pumping materials based on technical specification and BoQ
- Installation and commissioning of solar pumping materials in respective site
- End-user and trouble-shooting training to be provided to user farmers, extension workers at each site
- After sales service (user advice, maintenance) for 6 months after installation

a. Description of activities

a.1: Supply and transport of solar pumping system components based on technical specification

- Supply all materials (solar pump, pump controller and solar module with all accessories, cables, wires, connecting provisions, switching parts, protection devices and other relevant provisions) based on system design and technical specification.
- All materials shall comply with international quality standards, and meet the following warranty requirements:
 - 20 years on PV modules (performance not less than 80% of name plate output), and 10 years against manufacturing defects
 - 2 years warranty on pump controller
 - 2 years warranty on pump motor
 - 3 years for all other PV system components
 - 1 year on all other hydraulic components

The Contractor shall be responsible for managing the component warranties till the end of Contract.

- Transport of all materials, accessories, tools and qualified staff to the site within sufficient period before they are required for use in the works. All required materials need to be delivered on-stock within a maximum of 10 days from contract signing.
- The Contractor will be held responsible for any damage, however, caused during delivery, installation and manufacturing defects of the materials and replace them with equivalent quality within short period of time

a.2: Installation, testing and commissioning of solar pumping systems at respective sites

- At each lot, the Contractor shall install one complete solar pumping system to be approved by the supervising engineer and GBE. The pilot installations will benchmark the installation practice to be used, and will serve as the approved "blueprint" for the standard of installation
- Install all remaining pumping systems in respective sites and perform output test for each basic component (pump, pump controller, solar PV etc.) for performance evaluation.

Testing of the complete solar pumping system shall be done for at least one full sunshine day where all system components can be evaluated for their performances.

- Provide protection against theft and other kinds of vandalism for exposed parts such as solar PV module and pump controller installations (by securing the parts, for example, with anti-theft bolts and nuts)
- Preliminary hand-over of the sites to GBE and end-users and preparation of overall activity report that shall be submitted to GIZ in hard- and soft-copy
- Six months after the preliminary handover: Final handover to GBE and end-users and submission of a short service & maintenance report.

General requirement of the works

- All electrical terminations should be fully tightened, secured, and strain relieved as appropriate.
- All mounting equipment should be installed according to manufacturers' specifications
- All cables, conduit, exposed conductors, and electrical boxes should be secured and supported according to code requirements.
- PV array should be always free of shade, but at least between 8:00a.m. and 05:00p.m. all year round
- Water transport and delivery pipes including all outlets and fittings shall be properly and durably sealed and fixed.
- Pumps are to be suspended at least 1.5 meters above the bottom of the borehole or sump to avoid silting up of pump.
- Straining wire to be used for lowering all submersible pumps. At the borehole head, a bore-cap to be used to support the weight of the entire submersible installation on the borehole head
- Placement of signs and labels for electrical safety. All signs, labels and notices are to be made of weather resistant material and shall be properly secured by means which will not decay with moisture or sunlight over the period of the system lifetime.
- System performance tracking and reporting. Overall system performance guarantee of 6 months shall be provided, during which time average monthly water output from the solar PV pump system shall not drop below that of the specification performance level required. System efficiency indicators as measured during commissioning shall not show measurable decrease.

a.3 Training of end-users and woreda technicians

Conduct end-user training at each site or several end-users combined in small groups. Provision of a one-day end user training to farmers and woreda energy technicians with emphasis on how to use and on how to upkeep the different system components safely and in good working order, which includes but not limited to:

- Basic use of solar pumping systems and other features of system components – operating principles, basic operating modes and practices, safety issues, energy and power limitations of the solar pumping system.
- Basic fault diagnosis and key indicators of system or component failure (has to be easily understandable for rural farmers, such as: Item → problem → symptom → cause → action)
- Safety procedures and precautions, as well as contact information for queries and maintenance service
- The Contractor must provide the complete documentation of the products, operation and maintenance, as provided by the manufacturer to be handed over to the local woreda energy and agricultural offices.
- Basic operation and maintenance manuals for the solar PV power generator and the pump in Amharic/Oromifa to be developed and handed over to end-users.

a.4 After sales service and customer care

- The Contractor is to provide after-sales advisory and maintenance service for 6 months after installation of drip irrigation system. During this time, the contractor will take care of rectifying any defects, and inspect, maintain and service the installation as part of the contract. This includes stand-by advisory (via phone) for responding to questions from the customer regarding operation and troubleshooting related to the installed solar pumping system. When the preliminary handing over of the installations takes place, the Contractor shall submit its service & maintenance plan for the 6 months after-sales service period indicating on-site maintenance and off-site monitoring and advisory schedules.
- Furthermore, the Contractor shall respond in person to the solar pumping system down-time (which is not drought-related) that cannot be rectified by the customer within one week after being reported by the customer.

- The period of the six months after-sales services starts after the preliminary take-over of the installation by GIZ and ends with the final handover to GIZ.

3. Responsibilities of the Contractor

- 3.1. Based on its installation material selection, the contractor shall submit datasheets and other technical details of the complete solar pumping system.
- 3.2. The Contractor shall perform the works in accordance with the contract.
- 3.3. The Contractor shall be fully responsible for all materials delivered and works executed by the Contractor as well as for health & safety precautions in connections with the works. This encompasses any precautions to be taken in response to the current COVID19-pandemic. GIZ GBE cannot assume any responsibility for any injury or death of any of the installation staff or others in and around the installation area and for the damage of any equipment, tools or materials that may be caused during the execution of the works under this ToR.
- 3.4. The Contractor will be responsible for the safe transport and off-loading of the complete batch of drip irrigation system material for each site and sign off a delivery note together with the beneficiary (farmer).
- 3.5. There will be a quantity and quality control of all commodities, prior to loading and at unloading of the goods at the destination. This quantity and quality control will be performed by a recognized supervision engineer hired by GIZ GBE.
- 3.6. The contractor must inform the supervising engineer in good time - at least 3 days in advance - about when the inspection can be performed. The contractor must ensure that GBE or its authorized supervising engineer is afforded any assistance he/she requires in order to perform his work. GBE or its authorized supervising engineer has the right to reject the goods, wholly or in part, which fail to conform to any or all of the specification criteria.
- 3.7. Communicate with selected farmers to prepare the land for installation of the solar pumping system.

- 3.8. The Contractor shall be responsible for all acts and omissions of the sub-contractors, of any of the Contractors' agents or employees or of any other performing any of the works under this TOR.
- 3.9. The Contractor is responsible for ensuring his own transport, i.e., of his staff, tools, and any other equipment he may bring, to and from the sites throughout the whole installation process.
- 3.10. The Contractor is responsible for the replacement of any components at his own costs that are damaged during the transport, off-loading or installation process.
- 3.11. The Contractor delegates one staff member entitled to sign and stamp any delivery note, take-over forms and testing commissioning protocol at the end of the installation.
- 3.12. The Contractor shall submit work plan that demonstrates that the installation can be done at 2 sites (farmsteads) in parallel i.e., at the same time.
- 3.13. The Contractor shall follow-up on the systems status from the installation up to the end of the after-sales service period, provide service & maintenance as well as re-operationalizing of a malfunctioning system within a period of one week after notification.
- 3.14. The contractor should make use of global positioning devices (GP) to exactly locate the coordinates of the farm per the supplied drawing.

4. Place of assignment – see Annex III.

5. Required team composition and assessment criteria– see Annexes IV and V

6. Time schedule

Bidders have to guarantee that they will conduct transport and installation of the systems **at least at two sites in parallel at each lot/kebele.**

The overall work to and on site together with submission of the activity report shall take place within **30 days after order placement.** However, this depends on the completion of prior works to be done (well drilling, water storage tanker construction, irrigation systems installation). GIZ

GBE and the solar pumping systems supplier will agree on suitable dates in case the indicated time-frame do not work out.

7. Remuneration

Payment related issues and contractual agreement shall be concluded according to the prevailing GIZ rules regulations and guidelines.

Advance payment can be provided ahead of the start of the works based on GIZ procurement rules regulations and guidelines.

A retention payment of 5% of the contractual payment will be withheld until the end of the six months after-sales-service period (which is to start after preliminary hand-over).

8. Management of Assignment

The Contractor is accountable to the GIZ-hired supervising engineer and to the regional office of GIZ Energy Programme Ethiopia. The Contractor is further accountable to - and should keep informed the other GBE experts based in Addis Ababa including the Country Project Manager of GIZ GBE.

9. Bidding remarks

- Interested bidders have to indicate for which lot they want to submit a bid. They can submit a bid for one or both lots. Following the technical and financial assessment of the offers, the lots will be allocated to the one or two technically and financially best ranked bidders.
- Bidders have to submit a technical proposal, including their company profile, solar pumping systems installation experience, CVs of proposed staff and other documents as stated in Annexes VI and V to GIZ.
- Bidders have to submit a technical proposal and **separate financial proposal** with the proposed pricing for the lot / lots they are bidding for, encompassing all supplies and services and using the templates in Annex I & II as well as the summary sheet in Annex VI.