



Terms of Reference

Project Title: Design and Installation of Solar Pump Irrigation System

Location of the assignment: Sambour commune of Kralanh district in Siem Reap province.

1. Background

Live & Learn Cambodia, a local not-for-profit and non-governmental organization, hereinafter referred to as "LLC" desires to implement a sustainable and efficient irrigation system for a community providing water irrigation services to rice farmers in Sambour commune of Kralanh district in Siem Reap province. Currently the community is operating a water pumping services using multiple conventional pumps powered by several diesel generators. LLC attempt to provide support to the community to shift from conventional pumping system to solar pumping system which will help reducing costs of pumping and greening the environment. To achieve these objectives, LLC seeks to install a modernized pump irrigation system that utilizes solar energy for water extraction.

2. Budget

US\$ 19,900 inclusive of all relevant taxes and other expenses.

This budget covers all expenses incurred by successful bidders for works described in the below Scope of Work (Section 4) and Deliverables (Section 5).

3. Objectives

The primary objective of this consultancy is to provide comprehensive services for the design, supply, installation, and commissioning of a solar pump irrigation system. The system shall meet the specific irrigation requirements of the targeted community, ensuring optimal water delivery and efficient operation.

4. Scope of Work

The supplier shall perform the following activities:

4.1. Data Collection and Site Assessment:

- Conduct a comprehensive site survey to assess land characteristics, soil type, topography, water resources, and power availability.
- Collect data on irrigation needs, including crop water requirements, irrigation frequency, and desired flow rate.
- Gather information on existing infrastructure, such as water sources, electricity grids (if applicable), and potential locations for system components.

4.2. System Design:

- Develop a detailed design for the solar pump irrigation system, considering:
 - o Solar panel type, capacity, and tilt angle based on site sun exposure.
 - o Selection of a suitable pump (AC or DC) based on water depth, water requirements, and flow rate.
 - o Sizing of inverter (if required) to convert DC power (from solar panels) to AC power (for pump operation).
 - o Integration of control systems for automated operation and monitoring (optional).

4.3. Supply:

- Prepare a detailed Bill of Quantities (BOQ) for all system components, including solar panels, pumps, inverters, controllers, piping materials, and irrigation equipment.
- Recommend to LLC all system components based on the BOQ by selecting the most suitable equipment based on quality, performance, and cost-effectiveness.
- Manage the logistic process to ensure timely delivery of materials to the project site.

4.4. Installation and Commissioning:

- Implementation of the full installation of the solar pump irrigation system, including ground work.
- Ensure adherence to construction standards and best practices for solar panel installation, electrical connections, and other required constructions.
- Conduct performance testing of the complete system to verify functionality, water flow rate, and system efficiency.
- Provide training to the targeted group's personnel on system operation and maintenance procedures.

4.5. Documentation and Reporting:

- Prepare a comprehensive set of as-built drawings for the solar pump irrigation system.
- Develop an operation and maintenance (O&M) manual for the system, including troubleshooting guides and recommended maintenance schedules.
- Submit a final report summarizing the project scope, design rationale, equipment selection, installation process, performance testing results, and training activities.

5. Deliverables

- Site survey report and data analysis.
- Detailed design documentation for the solar pump irrigation system.
- Bill of Quantities (BOQ) for all system components.
- Equipment selection recommendations.
- Supply, install and oversee the installation of equipment and activities.
- As-built drawings and O&M manual.
- Successful installation and commissioning of a functional solar pump irrigation system meeting the irrigation needs.
- Completion of training for LLC personnels and community leaders on system O&M.
- Final project report.

6. LLC Responsibilities

- Provide the supplier with full access to the project site for data collection and site assessment.
- Facilitate communication and coordination between the supplier and relevant stakeholders.
- Obtain necessary permits and approvals for project implementation.
- Provide resources and personnel for system operation and maintenance after commissioning.

7. Supplier Qualifications

The selected supplier (firm) shall possess the following qualifications:

- Demonstrated experience in designing and installing solar pump irrigation systems.
- Expertise in solar power technology, pump selection, and irrigation system design.
- Strong understanding of irrigation principles and water management practices.
- Proven track record in project management, system installation and successful project delivery.
- Ability to work effectively with clients and stakeholders.

8. Project Schedule

The anticipated timeframe for this project is September 30, 2024. A detailed project schedule will be finalized by the supplier in collaboration with LLC team.

9. Confidentiality and IP

The supplier shall maintain the confidentiality of all LLC and donors' information obtained during and after the course of this project implementation.

All communications, documentations and materials used and produced under this project are subject to sole property of LLC and its donors.

10. Acceptance Criteria

The project will be considered successful upon:

- Completion of all activities outlined in the Scope of Work (Section 4).
- Delivery of all deliverables listed (Section 5).
- Approval of the deliverables by LLC.

11. Instruction to bidders

This is a quality-based method's procurement. Interested suppliers or bidders are invited to submit EOI with relevant supporting documents, such as firm profiles proofing relevant experience with tasks and deliverables, portfolio information, registrations, etc. Short listed bids or suppliers will be invited to submit a technical proposal, including approach of work to achieve deliverables, technical/engineering design, and work schedule, together with a brief feasibility study report and final bid for further evaluation.

12. Contact Information:

- Administrative information, please contact: Ms. Korm Navy through email fin.cambodia@livelearn.org
- Technical inquiries, please email to cambodia.office@livelearn.org

13. Application:

- Applications shall be submitted to procurement.cambodia@livelearn.org.

Only shortlisted supplier or bidders will be contacted for further discussion.

Deadline: 23 June 2024 (5:00PM)