

## EXTENSION OF DATE FOR SUBMISSION OF REQUEST FOR QUOTATION (RFQ)

### Supply, Installation & Maintenance of Solar-Powered Processing & Irrigation Systems

**Date:** 13.05.2025

**RFQ Reference No.:** AA/GCA/42C/25-26/3597

#### 1. Background & Project Overview

Access to clean and decentralized energy is crucial for marginalized communities living in forest fringe areas, where reliable conventional energy sources are often unavailable due to challenging geographical conditions. Renewable energy, especially solar offers an opportunity to strengthen agricultural and non-agricultural livelihoods in these regions.

Aaranyak ([www.aaranyak.org](http://www.aaranyak.org)) is committed to biodiversity conservation and sustainable livelihoods. As part of its Community-Based Natural Resource Management (CBNRM) initiatives in the Kohora and Diring river basins in Karbi Hills, over 400 families from 10 villages have adopted sustainable and alternative livelihood models to reduce dependency on forest resources. Activities include agroforestry, horticultural farming, Non-Timber Forest Produce (NTFP) value addition, and eco-cultural tourism.

To scale up and sustain these initiatives, **solar-powered micro-irrigation and processing units** are required to:

- Mitigate the impact of erratic rainfall, food loss and unreliable grid power.
- Enable micro-irrigation using solar-powered lift pumps for sustainable farming.
- Improve processing, drying, and storage of agricultural and agroforestry products.
- Enhance efficiencies in value addition, packaging, and product quality under the Pirbi brand, a community-owned business cooperative.

This RfQ seeks qualified vendors for **supply, installation, commissioning, and maintenance** of:

#### Component A:

1. Supply of following energy efficient processing appliances in two different locations:
  - a. Electric slicer (for slicing fresh turmeric, ginger, potato etc.)
  - b. Electric dryer (for drying leaves including tea leaves, ginger, turmeric etc.)
  - c. Electric pulveriser/grinder (for grinding dried turmeric, ginger etc.)

#### Component B:

1. Setting up VFD based Solar direct drive powered two processing units in two different locations (to run electric dryer, slicer and pulveriser)
2. Solar-powered submersible and surface pumps (for irrigation).

## 2. Scope of Work

### 2.1. Component A: Processing Machinery

The vendor shall **supply, install, commission and O&M training** of following single phase, energy-efficient and semi-automatic appliances for value addition of agricultural and agroforestry products.

S.No.	Appliance	Power Rating (H.P)	Quantity	Minimum Processing Capacity
1	Electric Slicer (Ginger, Turmeric, Potato, etc.)	1 - 1.25	2	80-100 kg/h
2	Electric Dryer	2 - 4	2	40-60 kg/batch
3	Electric Pulveriser	1.25 - 2	2	20 kg/h

#### Mandatory Requirements across all the machines:

- **Energy Efficiency:** Optimized for solar-powered operation (low power, high output).
- **Material:** Food-grade stainless steel (SS 304 or SS 316) for hygiene & durability.
- **Safety Features:**
  - Overload protection
  - Automatic shut-off for overheating and during opening (when not switched off)
- **Ease of Maintenance:** Modular design for easy repair & availability of spare parts readily and timely.
- **Warranty:** Minimum 5 years on motor & critical components.
- **Certifications:** BIS, ISO, FSSAI (for food-related equipment).

#### Key Requirements for Electric Slicers (1 – 1.25 H.P.):

- Minimum Processing Capacity: 80-100 kg/h.
- Blade Type: High-carbon stainless steel, replaceable & rustproof.
- Adjustable Slicing Thickness: 1-5 mm

#### Key Requirements for Electric Dryer (2 – 4 H.P.):

- **Minimum Processing Capacity:** 40-60 kg/batch
- **Drying Technology:**
  - Solar direct drive compatible electric drying
  - Forced hot air circulation for even drying.
  - Temperature Range: 30°C to 70°C, digital control panel.
  - Humidity Control: Integrated moisture sensor for better drying efficiency.

#### Key Requirements for Electric Pulveriser/Grinder (1.25 – 2):

- Minimum Processing Capacity: 20 kg/h

***Adherence to the above aspects will lead to more weightage.***

## 2.1. Component B:

### 1. Solar Power plants (to run the processing loads)

A direct solar drive system (without battery backup) is required to power processing machines.

S.No.	Component	Quantity	Specification
1	Solar PV plant	2	6 kW each
2	Multidrive VFD (electric pulveriser and slicers running together or electric dryer alone)	2	4.5 kW each

#### Key Requirements for solar plants and VFD:

For optimal performance, reliability, and long-term sustainability, the following technical aspects should be considered while implementing the 6kW solar plant without battery backup:

#### 1. Solar PV Modules

- **Type:** High-efficiency half-cut bifacial solar panels (better performance in low-light and cloudy conditions, ideal for Assam).
- **Wattage per Panel:** Minimum 500 Wp to optimize space utilization.
- **Efficiency:**  $\geq 20\%$  module efficiency for higher energy yield.
- **Durability:** IEC-certified for high humidity resistance and PID-free performance.
- **Warranty:** 25 years performance warranty with  $\geq 80\%$  output at year 25.

#### 2. Mounting Structure

- **Material:** Galvanized iron (GI) with minimum 80-micron hot-dip galvanization for corrosion resistance.
- **Thickness:** 2.5 mm or more for structural stability in high wind and humid conditions.
- **Tilt Angle:** Optimized for Assam's latitude ( $22^{\circ}$ – $26^{\circ}$ ) to maximize solar gain.

#### 3. VFD System

- **VFD Capacity:** 4.5 kW multidrive VFD to manage multiple loads (electric dryer, slicer, pulverizer, etc.).
- **Input Voltage:** MPPT-based inverter supporting 450V–750V DC from solar PV.
- **Protections:** Overvoltage, surge, short circuit, and overload protection.

#### 4. Energy Management & Safety

- Smart MPPT Controller for real-time solar power optimization.
- AC & DC Surge Protection Devices (SPD) for safety against lightning.
- Earthing & Lightning Protection System to ensure operational safety.
- Remote Monitoring System for real-time performance tracking.

## 2.3. Solar-Powered Irrigation Pumps with flow meters

To address water availability issues in farming and agroforestry, vendors shall provide:

Fixed and portable **Submersible (dipped in flowing stream)** sub-HP Pumps (Including Solar System)

<u>S.No.</u>	<b>Pump Capacity (H.P.)</b>	<b>Quantity</b>	<b>Minimum Discharge at 20m head</b>
1	0.25	NA	2,000 L/h
2	0.5	05	4,000 L/h
3	0.75	NA	6,000 L/h

#### **Key Requirements for Solar Water Pumps:**

- Pumps must be IP68-rated (submersible) and IP55-rated (surface).
- Minimum efficiency: 50% for motor-pump combination.
- Dry-run protection to prevent damage in case of low water levels.

#### **3. Installation & Commissioning**

- The vendor shall conduct a site assessment before installation.
- Installation must include wiring, mounting, and commissioning of all components.
- Training local operators on safe usage and routine maintenance.

#### **4. Operation & Maintenance (O&M)**

The vendor must provide:

- 5 years O&M contract for solar power plants and 2 years for the appliances and 5 years for motor (preventive & corrective maintenance).
- Response time: 24 hours for service response and 2-3 days for onsite repairing and maintenance support.
- Spare parts availability for 5 years.
- A detailed orientation training for end-users or operators to understand how to use and maintain the technology.
- A refresher training after a mutually decided period to revise the know-how as well as address any operational challenges that the users must have faced.

#### **5. Warranty & Quality Standards**

- Solar Panels: 25-year performance warranty (minimum 80% output at 25 years).
- VFD, Pumps & Processing Equipment: Minimum 5-year warranty on VFD and pumps & 2 years on the appliances with 5 years on motor.
- Compliance:
- BIS/ISO/IEC standards for electrical & mechanical components.
  - **Food safety standards** for processing equipment (FSSAI certification).

#### **6. Project and Item Delivery Locations**

**Location 1:** Kohora Karbi Anglong (Lat: 26°34'16.06"N; Long: 93°24'10.41"E)

**Location 2:** Diring, Karbi Anglong (Lat: 26°34'32.41"N; Long: 93°27'48.99"E)

**Note:** 5 solar water pumps will be portable and shifted to another location based on requirement under the project area in the Kaziranga Karbi Anglong Landscape.

## 7. Bid Submission Requirements

Interested vendors must submit a detailed proposal consisting of the following sections:

1. **Company Profile** (Experience in similar projects).
2. **Technical Proposal** (Specifications, compliance with standards, O&M plan).
3. **Financial Proposal** (Itemized cost, GST, installation charges).
4. **Delivery Timeline** (From purchase order to commissioning).
5. **References** (Minimum two similar projects executed in the past three years).

**Note:** *Please note that a solar plant system integrator can bid for both solar power plant and processing machinery (separately in a single bid document) provided that they fulfill O&M support requirements. However, OEMs of processing machinery can submit the bid for only the required processing equipment and the quantity required. The bid submitted should be inclusive of transportation and operations' training cost (if any) to the identified users of the systems.*

## 7. Bid Evaluation Criteria

S.No.	Criteria	Weightage (%)
1	Technical compliance	30%
2	Price competitiveness	30%
3	Experience & references	10%
4	O&M support & warranty terms	30%

## 8. Deadline & Submission Details

**Last Date for Submission:** 17 May 2025

**Submission Mode:** email to [admin@aaranyak.org](mailto:admin@aaranyak.org) CC : [royjayanta@aaranyak.org](mailto:royjayanta@aaranyak.org)

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