Bid Supplement Abstract

Reference Number	**10959510**
Title	Construction of Solar Powered Irrigation Pumps with AI Satellite Assisted Monitoring and Fertigation System (Package C), Castilla, Juban and Bulan, Sorsogon
Category	Construction Projects
Type	Addendum
Bid Supplement No.	10959510-01
Title	Construction of Solar Powered Irrigation Pumps with AI Satellite Assisted Monitoring and Fertigation System (Package C), Castilla, Juban and Bulan, Sorsogon
Area of Delievery/Location	
Delivery Period/Contract Duration	360 Day/s
Contact Person	EDEN KRIS SADANG CUYA
Description	Pls adopt new attched tech specs

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TECHNICAL SPECIFICATIONS (CIVIL WORKS)

1. STRUCTURE
   a) The structure shall be made from prefabricated assemblies. There shall be no welding/cutting on site.
   b) All structure materials will be made of high-tensile steel (420 MPA and higher), pre-coated with anti-corrosion coating.
   c) All parts that are designated to be installed underground shall be coated with Hot Deep Galvanization in accordance with ASTM A123 Standard.
   d) All metal parts that are designed to be installed above group shall be coated with ZAM-375 coating in accordance with ASTM A1046 standard.
   e) All bolts that are used to fix electrical components or hydraulic components shall be made from stainless steel 304.
   f) All bolts that are used to fix mechanical components shall be made from steel 8.8 or 10.4 and shall be coated with IRON ZINC coating.
   g) The structure shall include the foundation. Structure shall be designed to withstand winds with minimum of 280 kph (80 m/s) in accordance with Eurocode III. Bidder shall submit static wind calculation in STRAP (or equivalent) analysis software.
   h) Modules shall be mounted at height of no less than 2 meters above ground.

TECHNICAL SPECIFICATIONS (GOODS/SUPPLY)

1. PUMP
   a) For Solar Pump Fertigation System 10 has. Surface Water
      i. Surface self-priming centrifugal pump
      ii. Make and model
      iii. Country of origin
      iv. Capacity – 46 m3/hr (min.)
      v. Total dynamic head – 25meters (min.)
      vi. Efficiency – minimum 60 %
      vii. Speed RPM – 1450-3450
      viii. Impeller material-stainless steel or equivalent
      ix. Discharge size diameter in inches – 3"
   b) For Solar Pump Fertigation System 10 has. Submersible –10 m
      i. Dynamic water level - 10 m. (min)
      ii. Submersible borehole pump
      iii. Make and model
      iv. Country of origin
      v. Capacity – 46 m3/hr (min)
      vi. Pressure – 25 meters above ground level
      vii. Efficiency – minimum 60 %
      viii. Speed RPM – 1450-3450
      ix. Impeller material- pressed stainless steel
      x. Discharge size diameter in inches – 3" (min)
      xi. Maximum pump/motor diameter – 6"
   c) For Solar Pump Fertigation System 10 has. Submersible -30
      i. Dynamic water level – 30 m (min)
      ii. Submersible borehole pump
      iii. Make and model
      iv. Country of origin
      v. Capacity – 46 m3/hr. (min.)
      vi. Pressure – 25meters above ground level
      vii. Efficiency – minimum 60 %
      viii. Speed RPM – 1450-3450
      ix. Impeller material- pressed stainless steel
      x. Discharge size diameter in inches-3" (min)
      xi. Maximum pump/motor diameter -6"

d) For Solar Pump Fertigation System 20 has. Submersible -10
   i. Dynamic water level - 10 m (min)
   ii. Submersible borehole pump
   iii. Make and model
   iv. Country of origin
   v. Capacity – 92 m3/hr. (min)
   vi. Pressure – 25meters above ground level
   vii. Efficiency – minimum 60 %
   viii. Speed RPM – 1450-3450
   ix. Impeller material- pressed stainless steel
   x. Discharge size diameter in inches – 5" (min)
   xi. Maximum pump/motor diameter – 187mm

e) For Solar Pump Fertigation System 20 has. Submersible -30
   i. Dynamic water level - 30 m (min)
   ii. Submersible borehole pump
   iii. Make and model
   iv. Country of origin
   v. Capacity – 92 m3/hr. (min)
   vi. Pressure – 25meters above ground level
   vii. Efficiency – minimum 60 %
   viii. Speed RPM – 1450-3450
   ix. Impeller material- pressed stainless steel
   x. Discharge size diameter in inches - 5" (min)
   xi. Maximum pump/motor diameter – 187mm

2. WELL

   a) The water source is a submersible well pump, shallow tube well pump or a surface pump according to details above.
   b) Well Development for 70 m depth including Drilling, Geo Resistivity test, Pump test, installation of casing, screen and other materials

3. WATER MEASUREMENT
   a) A water meter with a Data output will be installed downstream of the filter to monitor operations and accumulate the pumped water level for the duration of the growing season.

4. FERTILIZATION
   a) A fertilizer tank with a volume of 30 liters (minimum) will be installed downstream of the system. The tank will be operated by means of a choke body (Pressure Reducer) that reduce that produces a pressure difference when entering the boiler and exiting it. The fertilizer is dissolves inside the tank by the water passing through it and injected into the irrigation line through a chemically durable PVC line.

5. WATER SUPPLY
   a) The water at the outlet of the head of the system will flow through a 110 mm (minimum) diameter LAYFLAT flexible pipe to the top of the area designed for flood irrigation

6. FLOOD POOL
   a) Filling the Flood pool with 2 LAYFLAT 51 mm diameter perforated secondary lines each 50 meter long, those will branch off from the central 102 mm diameter main pipes.

7. EQUIPMENT NEEDED
    a) Well pump
    b) Delivery pipe
    c) Water meter
    d) Fertilizer tank
    e) Delivery pipe valve
    f) 150m 4"/102mm Layflat pipe
    g) 100m of 3"/78mm Layflat pipe
    h) 100 m of 2"/51mm Layflat pipe with outlets for flooding
    i) Fittings and connectors for Layflat piping

8. MOTOR
    a) Make and Model
    b) Country of Origin
    c) Type
    d) Continuous HP rating at pump rated capacity and speed at least 20% above the maximum power requirement to drive the pump.
    e) Synchronous speed 1500-2900 RPM
    f) Variable frequency Hz
    g) Built-in thermal control automatic shut-off protection
    h) 40-meter-long suitable submersible power cable with connectors
    i) Adequate sealing
    j) Magnetic starter control

9. ELECTRICAL SYSTEM
    a) Solar Modules will be made of dual glass, bi-facial, using HJT technology with at least 15 years product warranty and 30 years output warranty.
    b) Solar modules will be from a manufacturer that is listed on Bloomberg Tier-1 list for at least 2 quarters before product submission and shall remain in Tier-1 for at least until the time of supply.
    c) Modules shall adhere to all applicable IEC standards including IEC-61215, IEC61730, IEC-60364.
    d) Module efficiency shall be no less than 22%.
    e) Total name plate capacity of the solar array shall be at least 200% of the name-plate power of the solar pump.
    f) Electrical distribution board shall be constructed from polyester and will have ingress protection level of IP-54 or higher. The electrical board shall have DC section and AC section, adequately separated, and clearly marked. The distribution board shall include water-proof SLD drawing.
    g) Solar pump shall be from designed working-point, considering water head, in-field required pressure, and other environmental condition.
    h) Solar pump shall be designed such that the designed working point, considering water head in-field required pressure, and other environmental conditions, shall provide a flow of 1.6 l/s for each hectare of irrigation.
    i) Solar irrigation inverters shall be from reputable European supplier with at least 10 years' experience in the development, manufacturing and service of variable frequency irrigation inverters.
    j) The inverters' rated ambient temperature shall be -10 to 50 deg C and operating temp of -10 to 60 deg C.
    k) Ingress Protection degree shall be at least IP54.
    l) The Inverter shall have digital outputs, Motor run Signal, alarm, analog inputs (10 or 15 VDC). At least 4 digital inputs, configurable as N.O. or N.C. for motor run/stop.
    m) Communication MODBUS RTU Bluetooth Smart (4.0)

10. DRAWINGS AND PERFORMANCE CURVES
    a) Cross Section Drawing
    b) Dimensional Drawing
    c) Performance Curve

Note:
"The Bidder shall supply with his bid the system and characteristics curves relating to pump head, capacity, efficiency and absorbed power."

11. ACCESSORIES PER UNIT
    a) Systems supplied will include all parts material and accessories needed to reach full operation

12. MOTOR CONTROLLER
    a) General Requirements
        i. Made by approved manufacturer, by EU/UK/USA brand
        ii. Country of Origin – EU/UK /USA
        iii. Reduced voltage combination circuit breaker and magnetic starter assembly
        iv. Three phases, 460V, 60Hz

13. MANUALS/CATALOGS AND WARRANTY PER SER
    a) One set operation, maintenance and repair manual
    b) One set parts catalog
    c) Standard brochures showing pump Performance curves for head, Capacity, efficiency and power
    d) Warranty - 12 months/2,000 hours

14. SATELLITE ASSISTED MONITORING SYSTEM
    a) A unique AI powered system using advanced algorithms will recommend methods of irrigation and fertigation, the system will analyze Data from climate sources, from satellites and daily water usage.
    b) Data integrated with proprietary dataset collected over 1500 growing seasons around the world to produce optimal recommendations.
    c) The system provides real time forecasted insights and fertigation recommendation based on plant stress, plant and fruit growth patterns, real time and forecasted weather conditions.

15. TRAINING, SKILLS DEVELOPMENT AND CAPACITY BUILDING
    a) The bidder is required as part of the contract to supply a training and skills development package by an international training institution acceptable to NIA, that may include foreign AID, GOV development agency, in the fields of - water quality, plant nutrition, fertilizers, fertigation management etc.

Construction of Solar Powered Pump with Fertigation System Locations				
REGION	PROVINCE	MUNICIPALITY	SYSTEM	DESCRIPTION REMARKS
Region 5	Sorsogon	Castilla	Pandan Solar Pump Irrigation Project 1	Construction of Solar Powered Pump with AI Satellite – Assisted Monitoring and Fertigation System of 1 unit 10-12.5 HP for 20 hectares and Well Development for 71 m depth including Drilling, Geo Resistivity test, Pump test, installation of casing, screen and other materials.
Region 5	Sorsogon	Castilla	Pandan Solar Pump Irrigation Project 2	Construction of Solar Powered Pump with AI Satellite – Assisted Monitoring and Fertigation System of 1 unit 10-12.5 Hp for 20 hectares and Well Development for 71 m depth including Drilling, Geo Resistivity test, Pump test, installation of casing, screen and other materials.
Region 5	Sorsogon	Castilla	Pandan Solar Pump Irrigation Project 3	Construction of Solar Powered Pump with AI Satellite – Assisted Monitoring and Fertigation System of 1 units 7.50-10 Hp for 10 hectares and Well Development for 50 m depth including Drilling, Geo Resistivity test, Pump test, installation of casing, screen and other materials.
Region 5	Sorsogon	Juban	Binanuanan Solar Pump Irrigation Project 1	Construction of Solar Powered Pump with AI Satellite – Assisted Monitoring and Fertigation System of 1 unit 10-12.5 Hp for 20 hectares and Well Development for 71 m depth including Drilling, Geo Resistivity test, Pump test, installation of casing, screen and other materials.
Region 5	Sorsogon	Juban	Binanuanan Solar Pump Irrigation Project 2	Construction of Solar Powered Pump with AI Satellite – Assisted Monitoring and Fertigation System of 1 units 7.50-10 Hp for 10 hectares and Well Development for 50 m depth including Drilling, Geo Resistivity test, Pump test, installation of casing, screen and other materials.
Region 5	Sorsogon	Juban	Binanuanan Solar Pump Irrigation Project 3	Construction of Solar Powered Pump with AI Satellite – Assisted Monitoring and Fertigation System of 1 unit 10-12.5 Hp for 20 hectares and Well Development for 71 m depth including Drilling, Geo Resistivity test, Pump test, installation of casing, screen and other materials.

Region 5	Sorsogon	Bulan	Antipolo Solar Pump Irrigation Project	Construction of Solar Powered Pump with AI Satellite – Assisted Monitoring and Fertigation System of 1 unit 7.5-10 Hp for 10 hectares and Well Development for 50 m depth including Drilling, Geo Resistivity test, Pump test, installation of casing, screen and other materials.
Region 5	Sorsogon	Bulan	Nasuje Solar Pump Irrigation Project 1	Construction of Solar Powered Pump with AI Satellite – Assisted Monitoring and Fertigation System of 1 unit 7.5-10 Hp for 10 hectares and Well Development for 50 m depth including Drilling, Geo Resistivity test, Pump test, installation of casing, screen and other materials.
Region 5	Sorsogon	Bulan	Nasuje Solar Pump Irrigation Project 2	Construction of Solar Powered Pump with AI Satellite – Assisted Monitoring and Fertigation System of 1 unit 10-12.5 Hp for 20 hectares and Well Development for 71 m depth including Drilling, Geo Resistivity test, Pump test, installation of casing, screen and other materials.
Region 5	Sorsogon	Bulan	Inararan Solar Pump Irrigation Project 1	Construction of Solar Powered Pump with AI Satellite – Assisted Monitoring and Fertigation System of 1 unit 10-12.5 Hp for 20 hectares and Well Development for 71 m depth including Drilling, Geo Resistivity test, Pump test, installation of casing, screen and other materials.
Region 5	Sorsogon	Bulan	Inararan Solar Pump Irrigation Project 2	Construction of Solar Powered Pump with AI Satellite – Assisted Monitoring and Fertigation System of 1 unit 10-12.5 Hp for 20 hectares and Well Development for 71 m depth including Drilling, Geo Resistivity test, Pump test, installation of casing, screen and other materials.
Region 5	Sorsogon	Bulan	Inararan Solar Pump Irrigation Project 3	Construction of Solar Powered Pump with AI Satellite – Assisted Monitoring and Fertigation System of 1 unit 10-12.5 Hp for 20 hectares and Well Development for 71 m depth including Drilling, Geo Resistivity test, Pump test, installation of casing, screen and other materials.

Region 5	Sorsogon	Bulan	Calomagon Solar Pump Irrigation Project	Construction of Solar Powered Pump with AI Satellite – Assisted Monitoring and Fertigation System of 1 unit 7.5-10 Hp for 10 hectares and Well Development for 50 m depth including Drilling, Geo Resistivity test, Pump test, installation of casing, screen and other materials.