Part B - OFFER FORM ACTED OPT

Date: **18/11/2021**

Tender N°: **T/HIP2022/EmergencyMaterials/RAM/18-11-2021/005**

To be Filled by Bidder **(COMPULSORY)**

Details of Bidding Company:

1. Company Name: (_____)
2. Company Authorized Representative Name: (_____)
3. Company Registration No: (_____)
   No/Country/ Ministry
4. Company Specialization: (_____)
5. Mailing Address: (_____)
   Country/Governorate./City/St name/Shop-Office No
   a. Contact Numbers: (Land Line: _____ / Mobile No: _____)
   b. E-mail Address: (_____)

I undersigned _____, agree to provide ACTED, non-profit NGO, with items answering the following specifications, according to the general conditions and responsibilities that I engage myself to follow.

***This Tender leads to frame Work Agreement with a period of 12 months. The quantities mentioned are just an estimation (Quantities might vary).**

Lot 5: Solar Panels

Technical specifications.

1-Photovoltaic Modules:

- Mono type PV Module with power capacity of each panel not less than 430 Watt.
- Power Output Tolerance – PMax (%) ≤ +3.
- Minimum module efficiency @ STC ≥ 16 %.
- Anti-reflective Glass with Self-Cleaning Layer.
- Aluminum Frame
- Maximum Ratings; Operational Temperature -40 ~ +85 °C; Maximum System Voltage 1000 VDC; Max Series Fuse rating 15 A.
- PV panel manufacturer is certified according to ISO 9001 and ISO 14001.
- At least 10-year product warranty against defects from design, material, or workmanship.
- At least 25-year linear power warranty for min. 82% power output after 25 years, 90% after 10 years with power degradation of 0.7% per year.

- IEC 61215, IEC 61730, IEC 61701 & IEC 62716 Certifications.
- The PV cells must have IEC61215, IEC61730, CE, TUV, UL1703, IEC61646 certificate or equivalent.
- Anti-Potential Induced Degradation (PID) according to IEC 62804.
- Exposed to a Flash Test (Test results will be required)
- Separate connection box on the rear part with protection class IP65
- Terminals must be clearly marked with + and – for the corresponding connections (MC4)
- The module frame should be hot deep galvanized steel.
- The datasheet must cover all technical specifications including: Voc, Isc, WP at STC, current,/ Voltage curves for radiation levels (1000 W/m2, 800 W/m2, 600 W/m2, 400 W/m2, and 200 W/m2).
- Power tolerance of 0 /+5 watt.
- Module manufacturer should be one of the top 10 manufacturers.

2-Inverter:

- The invertor should be made in Europe or USA .
- Built in Solar Charge Controller Specifications:
- DC Voltage 24-volt.
- Rated current 60 A.
- Optional Data logger.
- Battery Charger has three steps of charging, bulk and floating
- Peck efficiency minimum 96%.
- Suitable to charge GEL batteries
- Overload and short circuit protection.
- Current and voltage ratings must be compatible with the PV array mentioned before.
- LCD display (volt, Ampere, and charging status).
- Certifications CE, or equivalent.
- The controller must have a minimum of (5 years) warranty.
- The Charge Controller should be made in Europe or USA.
- Pure Sine wave.
- Input DC voltage 48 volts.
- Output voltage 230 VAC.
- Output frequency 50 Hz.
- Rated power is 2000-3500 VA.
- Inverter efficiency minimum 92%.
- Outdoor Inverters (IP65) with LCD Display
- Ground Fault Indicator
- Noise Emission < 50 dB @ 1m
- THD < 3%
- Ambient Temperature Range -25 ~ +60 °C
- Over load and over volt protection with automatic restart.
- Short circuit protection.
- Suitable to use with refrigerators and motors.
- Working temperature -5-55 degree.
- Certifications: Certifications; TUV, CE, VDE 0126-1-1, VDE AR-N-4105, AS 4777-2, AS 4777-3, AS 3100, IEC 61727, EN61000-6-1, EN61000-6-3 and EN 50178 or equivalents.
- The inverters must be protected from direct sunlight and from direct impact of rainfall
- The inverter must have a minimum of three years' warranty.
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3-Batteries:

- Supply and install a battery bank of 200Ah, 12 Volt.
- Watt Hour Efficiency: >82%

- Supply of Valve regulated gel Batteries 100- 200Ah, 12Volt.
- deep cycle discharge solar type with a permissible repeated depth of discharge without damage with following specifications:
- 100 AH at C10.
- Minimum 2000- 2500 cycles at 50% depth of charge (25 Celsius and 10 hours discharge rate).
- Gel battery, free maintenance.
- Battery compatible with global standards, IEC60896-2 and international certificates, UL, CE, or equivalent.
- Self-discharge of 3% per month at 25 Celsius.
- Water Consumption: < 5Cm3 /Ah-Year (Operating Ambient Temperature (-10 to+45°C)

- Connectors: Appropriate Connectors for internal connection of the 24 cells in series must be submitted with the battery cells.
- Racks for installing the battery cells or an appropriate container must be delivered with (described in a separate item).
- All accessories and tools necessary for installing and connecting the battery block with the Charge Regulator as well as the appropriate electrolyte solution with the complete battery manual Have to be also delivered.

- The datasheet must cover all technical specifications including:
- Cycle life versus depth of discharge.
- Self –discharge characteristics.
- Physical size and weight.
- Details of material used in construction.
- Safety warnings.
- The batteries must have a minimum of one-year replacement warranty.

4-Charge controller:

- Input voltage range : 50-100VDC
- Output Voltage Range: 48-64VDC
- Nominal Power: 3000W
- Power conversion Efficiency: > 92%
- Control: MPPT, Over Charge and Deep Discharge Protection of the battery block.
- Input Protection: Against Over Voltage and Miss Poling
- Output Protection: Against Over Load and Short Circuit
- Operating Temperature at Full Load: -10- 45°C
- Input DC voltage > 120V.
- Nominal battery voltage 48 V.
- Power conversion efficiency > 98%.
- Four charging stages; Bulk, Absorption, Float, Equalization
- 3 years' warranty

5- Battery cabinet:

- no access from the rear.
- Cabinet shall be made of 2mm hot coated or galvanized steel; dust and vermin proof with protection degree IP65 at least.
- Thermal painted battery cabinet.

- This cabinet should be sized to hold batteries, inverter and protection switches according to IEC standards.

- 30% surplus space.
- The cabinet should have ventilation openings
- The cabinet should have a Cooling fan with temperature sensor.

- The cabinet should be locked for protection
- The design should be added and should be according to IEC standards
- Main supply lines enter from bottom
- include all structural elements required to install the switchboard including all bus bars, terminals, wiring, bolts, clamps, etc.
- The switchboard shall contain accessories made by one of the following manufacturers: ABB, or equivalent.
- 10 mm2 earthing wire shall be installed

- Cabinets shall be wall-mounted and of front door opening type

6- Mounting Structure:

- Supply and install of hot galvanized structure with appropriate foundation suitable to the dimension of the offered PV modules,
- the steel structure should be suitable for the solar panels so you can install solar panels without any need to make holes in the PV frames,
- The structure must be designed with suitable clamps and fittings for the PV.
- Till angle must be in the range of 25-30.
- The bases of the mounting structure should be made of M12 steel or more and implanted in concrete bases of 50 cm depth with 50*50 cm width. The distance between two bases of the structure legs should not be more than 2 meters. All the bases should joint then with a 10 cm high mattress of concrete using a net of steel.
- The Hot Deep Galvanized steel mounting structure should of 50mm*50mm tube profile with minimum 2.5 mm thickness for the front and rear legs and 40mm*40mm tube profile or U-shape with minimum 2.0mm thickness for the remaining profiles.
- Hot galvanized plate with 120mm*120mm*5mm(thickness) for fixing the PV mounting structure legs with the M12 from the concrete bases.
- PV modules must be facing south
- Distance between each two adjacent triangles must not exceed 2 meters.
- Distance between front and rear legs of the structure in each array must not be more than 3 meters.
- The mounting structure components are bonded together to guarantee potential equalization.
- The mounting structure is earthed according to internationally accepted standards.
- The mounting structure uses standardized profiles with plastic profile cover and mounting clamps for mounting the PV modules.
- Structure must withstand 130 km/h wind speed (approved certification is required).

7- System Grounding:

- Supply, install, connect, test and operate Earthing system for each solar unit, which consists of two (16mm2 and 1.5M) electrical copper rods (spikes) connected in parallel using inspection manholes. These rods must be buried vertically in the ground, the distance between these rods must be at least 2.5 meters, the rods must be connected together with 16mm2 cable, and then the cable must be connected to the main grounding bus bar. All of the installed electrical equipment and the electrical cabinet must be grounded and using all necessary material and accessories to achieve resistivity of less than two Ohm.
- The system should be grounded using two copper electrical rods.
- copper rods should be 16mm diameter 1.5 m covered by painted concrete manholes, that installed (3-10) meters distance between each other.
- Each photovoltaic AL frame should be connected to the galvanized steel structure with 10 mm2 earthing wire at least.
- The mounting structure should be connected with 16 mm2 earthing wire at least to main earth bas-bar
- Inverter, controller, battery rack, and cabinet must be grounded using 10mm cross section cables.

- Earth resistance should be less than 5.0 ohm.
- Potential equalizer should be installed in each string; every earthing cable will be connected to that equalizer.
- Electrodes should be covered using concrete manholes

8- DC/AC connections:

- Should be Solar Type
- The DC/AC cable size should be identified.
- UV-resistant, resistant against water and oil
- Minimum 4 kV AC test voltage (50 Hz, 1 minute)
- Halogen-free cables
- Approved for a temperature range of -40°C-120°C (max. copper wire temperature)
- Flame retardant
- life expectancy greater than 25 years
- According TUV, VDE & UL Approved.
- DC cable: Double insulated, single core, rated DC voltage 1000V min
- AC cable: Double insulated, multi- core, rated AC voltage 0.6/1 kV
- DC cables should be inserted in conduits that buried 70 cm at least under finished base course
- AC cables should be inserted in conduits that buried 100 cm at least under finished base course

9- Cable Protection:

- All cables from PV strings to inverters, batteries to electrical loads must be inserted in cable protecting UV resistant conduits
- All cabling must be protected by corrugated metal cable trays

10- Main Distribution Board (MDB):

- Supply, install, connect, test and operate at least IP 40 for the main distribution boxes for each solar unit inside the Main Electricity cabinet, this will include installation of two plastic cabinets suitable for
- DC circuit breakers 25A DC CB for PV, 50A DC CB for Battery, 50A DC CB for inverter.
- And AC circuit breakers 10A main CB, Earth leakage.
- Suitable for outdoor use (IP65).
- Appropriately sized MCCB's, Short Circuit current protection, over voltage and frequency protection, surge arrestor (surge protection device) Type II, busbars and their coupling unit, casing spaces for cables, cable clamps/terminals, cable shoes, as used to form a complete unit based on IEC requirements.

11- Lightning Protection:

- Pulsar type or according to site Engineer supervision.

12 -Warning Signs:

- The electric warning signs should be installed on each component of the PV system (inverters, connection, and distribution boards, mounting structure, modules …etc.).

13-Accessories Required To Install The Solar Unit Parts:

- DC Breakers with suitable capacity to designed system for Battery bank and Solar input.
- AC main circuit breaker with 10A installed at the inverter output.
- AC Earth leakage40A\0.03mA.
- 2 units of AC circuit breakers 4A.
- Four power outlet sockets.
- 16 mm2 cable for earth with suitable length to cover the earth requirements in previous sections

- DC cable of cross section of 25 mm2 cable “Black” Battery connection.
- DC cable of cross section of 25 mm2 cable “Red” Battery connection.
- Solar cable of 4mm2 or with suitable capacity as per your location of combiner box. The solar cable shall be installed using appropriate conduit suitable to installation environment.
- AC cables of capacity (3x2.5mm2) isolated cable to be installed between outputs of inverter to AC CB in Electricity cabinet.
- Using (3/4 inch) or (1 Inch) Conduits UV-resistant for electrical cables between PV modules and the electrical cabinet. (For each solar system) and home distribution box. All cables

Solar Panel 860 Wp System

Design code: SP1

Price includes wages, material, accessories, supplying, fabrications, installation, and fixation in the desired location for every unit, where all materials must be of (TAKEN quality) or equivalent, or as specified type or class. The contractor should prepare a complete shelter unit, fully detailed to be approved by the Engineer and considered as a sample, before fabricating the remaining units. All material should match the specifications, detailed drawings, and Engineer approval.

No.	Description	Unit	Estimated Quantity.	Unit price in ILS Excluding VAT)	Estimated Total price in ILS Excluding VAT
1	PV Modules 430Wp, Tier1, top 10	Pcs	2		
2	Hot Galvanized steel profile 25cm*25cm *2mm using Aluminum Rail, Tilt angle 32degree	L.S	1		
3	off grid-inverter, pure sine wave, 3KVA /2400W capacity with built in MPPT	Pcs	1		
4	Battery bank12V\200Ah	Pcs	2		
5	PV cables 1 X 6mm2 Cupper Cables for connections between PV module (30meter of Black and Red)	L.S	1		
6	Galvanized steel 1.5mm steel cabinet with Air filter + fan + Temperature sensor/Locked by mater key locks.	L.S	1		
7	DC cables 1 X 16mm2 Cupper Cables (battery bank with inverter. (Approx. 15m)	L.S	1		
8	PV cables 1 X 6mm2 Cupper Cables for connections between PV modules	L.S	1		
9	DC safety circuit breaker (Main): Two poles DC MCB (20A) +DC Surge Arrestor	Pcs	1		
10	DC safety circuit breaker Two poles DC MCB 63A	Pcs	1		

11	AC circuit breaker with earth leakage	Pcs	1		
12	Earthing system Copper spikes 16MM +20meter of 16 mm2 cable for grounding Earth	Pcs	1		
13	Conduits ¾ inch for cables (20 Meter for the Unit)	L.S	1		
14	MC4PV panels connectors	L.S	1		
15	Lighting protection with earth lighting rods	Pcs	1		
16	Warning Signs -single line diagram	L.S	1		
	Total Price (ILS)				

Solar Panel 1290 Wp System

Design code: SP2

Price includes wages, material, accessories, supplying, fabrications, installation, and fixation in the desired location for every unit, where all materials must be of (TAKEN quality) or equivalent, or as specified type or class. The contractor should prepare a complete shelter unit, fully detailed to be approved by the Engineer and considered as a sample, before fabricating the remaining units. All material should match the specifications, detailed drawings and Engineer approval.

No.	Description	Unit	Estimated Quantity.	Unit price in ILS Excluding VAT)	Estimated Total price in ILS Excluding VAT
1	PV Modules 430Wp, Tier1, top 10	Pcs	3		
2	Hot Galvanized steel profile 25cm*25cm *2mm using Aluminum Rail, Tilt angle 32degree	L.S	1		
3	off grid-inverter, pure sine wave, 3KVA /2400W capacity with built in MPPT	Pcs	1		
4	Battery bank12V\200Ah	Pcs	4		
5	PV cables 1 X 6mm2 Cupper Cables for connections between PV module (30meter of Black and Red)	L.S	1		
6	Galvanized steel 1.5mm steel cabinet with Air filter + fan + Temperature sensor/Locked by mater key locks.	L.S	1		
7	DC cables 1 X 16mm2 Cupper Cables (battery bank with inverter. (Approx. 15m)	L.S	1		
8	PV cables 1 X 6mm2 Cupper Cables for connections between PV modules	L.S	1		
9	DC safety circuit breaker (Main): Two poles DC MCB (20A) +DC Surge Arrestor	Pcs	1		

10	DC safety circuit breaker Two poles DC MCB 63A	Pcs	1		
11	AC circuit breaker with earth leakage	Pcs	1		
12	Earthing system Copper spikes 16MM +20meter of 16 mm2 cable for grounding Earth	Pcs	1		
13	Conduits ¾ inch for cables (20 Meter for the Unit)	L.S	1		
14	MC4PV panels connectors	L.S	1		
15	Lighting protection with earth lighting rods	Pcs	1		
16	Warning Signs -single line diagram	L.S	1		
	Total Price (ILS)				

Summary of Prices					
No.	**Description**	**Unit**	**Estimated Quantity.**	**Unit price in ILS Excluding VAT)**	**Estimated Total price in ILS Excluding VAT**
1	Solar Panel 860 Wp System.	Pcs	5		
2	Solar Panel 1290 Wp System.	Pcs	5		
	Total Price (ILS)				
Total in words: _____					

BIDDER'S REMARKS:

1. _____
2. _____

BIDDER'S TERMS AND CONDITIONS:

1. Valid of the offer: _____ (recommended: 6 months)

2. Terms of delivery: _____
3. Terms of payment: _____

Name of Bidder's Authorized Representative: _____

Authorized signature and stamp: _____

Date: _____

END OF LOT 5