RFQ Reference: 24/04/STAR-C/ISA-2024	Date: 23 April 2024

Subject: Supply, Installation, Testing & Commissioning (SITC) of equipment and instruments for setting up the STAR Centre in Ghana including one-year Comprehensive Maintenance Contract (CMC)

SECTION 1: REQUEST FOR QUOTATION (RFQ)

ISA kindly requests your quotation for the provision of goods, works and/or services as detailed in Annex 1 of this RFQ.

This Request for Quotation comprises the following documents:

Section 1: This Request Letter

Section 2: RFQ Instructions and Data

Annex 1: Schedule of Requirements

Annex 2: Quotation Submission Form

Annex 3: Technical and Financial Offer

Annex 4: Checklist for Submission of Bid

When preparing your quotation, please be guided by the RFQ Instructions and Data. Please note that quotations must be submitted using Annex 2: Quotation Submission Form and Annex 3 Technical and Financial Offer, by the method and by the date and time indicated in Section 2. It is your responsibility to ensure that your quotation is submitted on or before the deadline. Quotations received after the submission deadline, for whatever reason, will not be considered for evaluation.

The ISA recognizes the importance of valuing diversity and promoting inclusion in all our work programs and partnerships. The ISA highly values engaging with organizations and/or teams that reflect its geographical and diverse nature.

Thank you and we look forward to receiving your quotations.

Issued by: Vishal Pratap

Signature: _____

Name: Procurement Unit

Date: 23/04/2024

SECTION 2: RFQ INSTRUCTIONS AND DATA

Introduction	Bidders shall adhere to all the requirements of this RFQ, including any amendments made in writing by ISA. This RFQ is conducted in accordance with the ISA Financial Regulations and Procedures and ISA Procurement Manual Any Bid submitted will be regarded as an offer by the Bidder and does not constitute or imply the acceptance of the Bid by ISA. ISA is under no obligation to award a contract to any Bidder as a result of this RFQ. ISA reserves the right to cancel the procurement process at any stage without any liability of any kind for ISA, upon notice to the bidders or publication of cancellation notice on ISA website
Deadline for the Submission of Quotation	**14.05.2024 by 2300 HRS IST** If any doubt exists as to the time zone in which the quotation should be submitted, refer to http://www.timeanddate.com/worldclock/. For eTendering submission - as indicated in eTendering system. Note that system time zone is in EST/EDT (New York) time zone.
Method of Submission	Quotations must be submitted as follows: ☐ E-tendering ☒ Dedicated Email Address ☐ Courier / Hand delivery ☐ Other Click or tap here to enter text. Bid submission address: procurement@isolaralliance.org ▪ File Format: PDF files only ▪ File names must be maximum 60 characters long and must not contain any letter or special character other than from Latin alphabet/keyboard. ▪ All files must be free of viruses and not corrupted. ▪ Max. File Size per transmission: 10 MB ▪ It is recommended that the entire Quotation be consolidated into as few attachments as possible. ▪ The bidder should receive an email acknowledging email receipt.
Cost of preparation of quotation	ISA shall not be responsible for any costs associated with a Bidder's preparation and submission of a quotation, regardless of the outcome or the manner of conducting the selection process.
Supplier Code of Conduct, Fraud, Corruption,	All prospective suppliers must read the ISA Supplier Code of Conduct and acknowledge that it provides the minimum standards expected of suppliers to the ISA. The Code of Conduct, which includes **principles on labour, human rights, environment and ethical conduct** may be found at: https://isolaralliance.org/images/ISA%20Supplier%20Code%20of%20Conduct_14.4.2023.final%20version.pdf Moreover, ISA strictly enforces a policy of zero tolerance on proscribed practices, including fraud, corruption, collusion, unethical or unprofessional practices, and obstruction of ISA vendors and requires all bidders/vendors to observe the highest standard of ethics during the procurement process and contract implementation.
Gifts and Hospitality	Bidders/vendors shall not offer gifts or hospitality of any kind to ISA staff members including recreational trips to sporting or cultural events, theme parks or offers of holidays, transportation, or invitations to extravagant lunches, dinners or similar. In pursuance of this policy, ISA: (a) Shall reject a bid if it determines that the selected bidder has engaged in any corrupt or fraudulent practices in competing for the contract in question; (b) Shall declare a vendor ineligible, either indefinitely or for a stated period, to be awarded a contract if at any time it determines that the

	vendor has engaged in any corrupt or fraudulent practices in competing for, or in executing a ISA contract.
Conflict of Interest	ISA requires every prospective Supplier to avoid and prevent conflicts of interest, by disclosing to ISA if you, or any of your affiliates or personnel, were involved in the preparation of the requirements, design, specifications, cost estimates, and other information used in this RFQ. Bidders shall strictly avoid conflicts with other assignments or their own interests, and act without consideration for future work. Bidders found to have an undisclosed conflict of interest shall be disqualified. The ISA shall have the discretion to disqualify or proceed with a bidder who has disclosed a probable conflict of interest subject to further evaluation and review of various factors such as access to sensitive information which may confer unfair advantage as against other bidders. The decision on a probable conflict of interest shall be made in the best interest of the work of the ISA. Bidders must disclose in their Bid their knowledge of the following: a) If the owners, part-owners, officers, directors, controlling shareholders, of the bidding entity or key personnel who are family members of ISA staff involved in the procurement functions and/or the Government of the country or any Implementing Partner receiving goods and/or services under this RFQ. The eligibility of Bidders that are wholly or partly owned by the Government shall be subject to ISA's further evaluation and review of various factors such as being registered, operated and managed as an independent business entity, the extent of Government ownership/share, receipt of subsidies, mandate and access to information in relation to this RFQ, among others. Conditions that may lead to undue advantage against other Bidders may result in the eventual rejection of the Bid.
General Conditions of Contract	Any Purchase Order or contract that will be issued as a result of this RFQ shall be subject to the General Conditions of Contract ☐ https://www.isolaralliance.org/images/ISA_GTB.pdf
Special Conditions of Contract	☐ Cancellation of PO/Contract if the delivery/completion is delayed by 10 days ☐ Others [pls. specify]
Pre-bid Conference	Not Applicable
Eligibility	A vendor who will be engaged by ISA may not be suspended, debarred, or otherwise identified as ineligible by any UN Organization or the World Bank Group or any other international Organization. Vendors are therefore required to disclose to ISA whether they are subject to any sanction or temporary suspension imposed by these organizations. Failure to do so may result in termination of any contract or PO subsequently issued to the vendor by ISA. It is the Bidder's responsibility to ensure that its employees, joint venture members, sub-contractors, service providers, suppliers and/or their employees meet the eligibility requirements as established by ISA**.** • Bidders must have the legal capacity to enter a binding contract with ISA and to deliver in the country, or through an authorized representative. **Company registration certificate or any other document proving legal entity.** • The bidder must have the experience of supply of solar equipment's / hardware components. **Submit copy of work order or completion certificate** • The bidder must have annual turnover of more than **USD 100,000** - Please attach relevant documents.

Currency of Quotation	Quotations shall be quoted in USD
Joint Venture, Consortium or Association	If the Bidder is a group of legal entities that will form or have formed a Joint Venture (JV), Consortium or Association for the Bid, they shall confirm in their Bid that : (i) they have designated one party to act as a lead entity, duly vested with authority to legally bind the members of the JV, Consortium or Association jointly and severally, which shall be evidenced by a duly notarized Agreement among the legal entities, and submitted with the Bid; and (ii) if they are awarded the contract, the contract shall be entered into, by and between ISA and the designated lead entity, who shall be acting for and on behalf of all the member entities comprising the joint venture, Consortium or Association. Refer to Clauses 22 – 27 under Solicitation Process in the Procurement Manual (will be provided on request) for details on the applicable provisions on Joint Ventures, Consortium or Association.
Only one Bid	The Bidder (including the Lead Entity on behalf of the individual members of any Joint Venture, Consortium or Association) shall submit only one Bid, either in its own name or, if a joint venture, Consortium or Association, as the lead entity of such Joint Venture, Consortium or Association. Bids submitted by two (2) or more Bidders shall all be rejected if they are found to have any of the following: a) they have at least one controlling partner, director or shareholder in common; or b) any one of them receive or have received any direct or indirect subsidy from the other/s; or b) they have the same legal representative for purposes of this RFQ; or c) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about, or influence on the Bid of, another Bidder regarding this RFQ process; d) they are subcontractors to each other's Bid, or a subcontractor to one Bid also submits another Bid under its name as lead Bidder; or e) some key personnel proposed to be in the team of one Bidder participates in more than one Bid received for this RFQ process. This condition relating to the personnel, does not apply to subcontractors being included in more than one Bid.
Duties and taxes	The United Nations (privileges and immunities) Act, 1947 is applicable to ISA pursuant to a notification by the host country. Therefore, ISA is exempt from all direct taxes, except charges for public utility services, and is exempt from customs restrictions, duties, and charges of a similar nature in respect of articles imported or exported for its official use in India. All quotations shall be submitted net of any direct taxes and any other taxes and duties, unless otherwise specified below: All prices must: ☒ be inclusive of VAT and other applicable indirect taxes ☐ be exclusive of VAT and other applicable indirect taxes [according to project and applicable country agreement]
Language of quotation	English Including documentation including catalogues, instructions and operating manuals.
Documents to be submitted	Bidders shall include the following documents in their quotation: ☒ Annex 2: Quotation Submission Form duly completed and signed ☒ Annex 3: Technical and Financial Offer duly completed and signed and in accordance with the Schedule of Requirements in Annex 1 ☒ Company Profile. ☒ Registration certificate; ☒ Company Profile. ☒ Descriptive Literature: Bidders shall provide full technical details of products being offered, including technical sheets and pictures showing details and general views. Specific details of items offered should be clearly stated as standard catalogues may offer options; ☒ Documents showing that the bidder has minimum of five (5) years of relevant experience – proof **of purchase orders/ contract is to be submitted.** ☒ Documents showing that the bidder has an experience of design, supply, installation and commissioning of Grid connected/off grid Solar PV Power Plant and experience of rendering operation and maintenance services for Solar PV units.

	☒ Statement of satisfactory Performance (Certificates) from the top two clients in terms of Contract value in similar field, plus client's contact details who may be contacted for further information on those contracts;
Quotation validity period	Quotations shall remain valid for 90 days from the deadline for the Submission of Quotation.
Price variation	No price variation due to escalation, inflation, fluctuation in exchange rates, or any other market factors shall be accepted at any time during the validity of the quotation after the quotation has been received.
Partial Quotes	☒ Not permitted ☐ Permitted Insert conditions for partial quotes and ensure that the requirements are properly listed in lots to allow partial quotes
Alternative Quotes	☒ Not permitted
Payment Terms	☒ Within 30 days upon ISA's acceptance and receipt of invoice.
Conditions for Release of Payment	☒ Written Acceptance of Goods & Services, based on full compliance with RFQ requirements. ☒ 100% of goods charges after successful delivery and acceptance of goods. ☒ 100% of Installation & Commissioning charges after successful installation and commissioning ☒ 100% of training charges after completion of Training on Operation and Maintenance. ☒ 100% of Comprehensive maintenance charges after successful 1 year of installation and commissioning
Contact Person for correspondence, notifications and clarifications	**E-mail address: procurement@isolaralliance.org** Attention: Quotations shall not be submitted to this address but to the address for quotation submission above. Otherwise, offer shall be disqualified. Any delay in ISA's response shall be not used as a reason for extending the deadline for submission, unless ISA determines that such an extension is necessary and communicates a new deadline to the Proposers.
Clarifications	Requests for clarification from bidders will not be accepted any later than 2 days before the submission deadline. Responses to request for clarification will be communicated thru email.
Evaluation method	☒The Contract or Purchase Order will be awarded to the lowest price substantially compliant offer
Evaluation criteria	☒Full compliance with all requirements as specified in Annex 1 ☒Full acceptance of the General Conditions of Contract ☒Comprehensiveness of after-sales services ☐Earliest Delivery /shortest lead time ☐Others Click or tap here to enter text.
Right not to accept any quotation	ISA is not bound to accept any quotation, nor award a contract or Purchase Order
Right to vary requirement at time of award	At the time of award of Contract or Purchase Order, ISA reserves the right to vary (increase or decrease) the quantity of services and/or goods, by up to a maximum twenty-five per cent (25%) of the total offer, without any change in the unit price or other terms and conditions.
Type of Contract to be awarded	☐ Purchase Order ☒ Contract for Works ☐ Other Type/s of Contract [pls. specify]

Expected date for contract award.	30 May 2024
Publication of Contract Award	ISA will publish the contract awards valued at USD 100,000 and more on the ISA website.
Policies and procedures	This RFQ is conducted in accordance with ISA Financial Regulation and Procedures and ISA procurement manual
Other Provisions	The ISA is striving to achieve gender parity in all its activities. In this regard, female-owned organizations and/or teams with significant gender diversity are strongly encouraged to submit a proposal. The ISA recognizes the importance of valuing diversity and promoting inclusion in all our work programs and partnerships. The ISA strives to engage with organizations and/or teams that reflect its geographical representation and diversity.

ANNEX 1: SCHEDULE OF REQUIREMENTS

Recognizing the urgent need to support the developing country (ISA members) with high potential for solar technology deployment, the ISA Assembly agreed to establish an international network of STAR C (Solar technology Application Resource Centre). The overarching objective of the STAR C initiative is to provide solar technology and application resourcing services to Member Countries so that these countries can achieve the ISA's vision of scaled up and accelerated large scale deployment of solar energy to meet the respective countries' priority energy access, energy transformation and energy security needs.

ISA aims to a have number of STAR centres across the globe acting as a shared facility that provides capacity for deployment of solar energy applications and research, business modelling, incubation, training, standardization and testing engaging faculty members from different disciplines/institutes of excellence and provide/use shared facilities, labs, testing centres etc.

In order to equip these STAR Centres, ISA aims to procure equipment and instruments that help the centres to offer hands on training; act as a testing facility and setup a knowledge management centre.

Such centres are being created by ISA in **Ghana**. The host institution for the STAR Centre in **Ghana** is the **Ho Technical University.**

This RFQ is for Supply, Installation, Testing & Commissioning (SITC) of equipment and instruments for setting up the STAR Centre in **Ghana** including one-year Comprehensive Maintenance Contract (CMC).

A needs assessment and situation analysis were undertaken in **Ghana**, to identify the high growth sectors within solar energy technology, and the attendant training needs. **Large scale solar; Rooftop solar; solar mini-grids; and Solar Home System and other off-grid solar applications** are the four high growth sectors in Ghana. These sectors will drive solar training needs in the medium to long term and require trained technicians and engineers to size, install, operate and maintain solar systems for socio-economic development, especially in rural and peri-urban areas. The current solar training and testing facilities as well as the solar curriculum was evaluated for gaps through secondary research and primary stakeholder interviews with the private sector companies, industry bodies, government, and academia.

The major findings were the need for understanding of the various solar components, design, sizing, installation, operations, and maintenance. According to the evaluation of the needs and gaps, a list of solar equipment has been suggested for the STAR C to prioritize in its implementation. A detailed list of the technical specifications is provided:

Recommended Technical Specifications for Goods

Subject: Supply, Installation, Testing & Commissioning (SITC) of equipment and instruments for setting up the STAR Centre in **Ghana** including one-year Comprehensive Maintenance Contract (CMC).

Recommended Technical Specifications for Goods

#	Description of Supply Items	Quantity	Model/Make/Specification (for reference)	Functional Requirement
1	Solar PV module:515/525/530Wp mono-crystalline	10	The module must satisfy all the IEC/IS regulations issued by the national authority in Ghana.	The modules convert solar photovoltaic energy to electricity.
2	Polycrystalline/CIGs module: 100/200 Wp	1 module each of polycrystalline and CIGS module-		This would mainly be for display or academic training purposes so that trainees are aware of the existing

#	Description of Supply Items	Quantity	Model/Make/Specification (for reference)	Functional Requirement
		whatever is available		technologies in the country and other markets
3	Module mounting structure for flat RCC roof (Ballast Type)	1	GI coated structure	The mounting structures provide support and optimum tilt angle to satisfy ideal conditions for module power production.
4	Mounting structure (elevated type) 1 to 2 kW	1		A different mounting structure other than Ballast type is recommended considering different surface type for mounting of modules
5	Array combiner box with fuse 1 IN -1 out with SPD	1	System with appropriate protective devices like Fuses, MCB and SPDs. The AJB must satisfy all the IEC/IS regulations issued by the national authority in Ghana.	The AJB or array combiner box collects DC power from PV strings.
6	AC DB with SPD Class 2,with CB (5kW, 1Ph)	1	System with appropriate protective devices like MCB and SPDs. The ACDB must satisfy all the IEC/IS regulations issued by the national authority in Ghana.	The ACDB is a device that acts as a protective medium between the inverter and the load.
7	Mounting Structure for corrugated tin/tiled roof with slope (for mounting at least 2 solar panels)	1	Made of Aluminium or GI coated steel	To display the way solar panel can be mounted on a sloped roof
8	5 KVA hybrid inverter/ set of equipment	1	The inverter brand must satisfy all the IEC/IS regulations issued by the national authority in Ghana -Should have the capacity to export power to grid (with an option to turn off the grid export), charge the battery bank from PV solar and Electricity both with option of priority setting. - Should be compatible with VRLA Battery and LiFeO4 both - Three-phase connection (single-phase optional if three-phase system not common)	For exporting solar energy into the grid, charging the battery with solar energy and running the load using solar energy/energy stored in the battery. The solar panels and battery storage supplied should be compatible with this Inverter.

#	Description of Supply Items	Quantity	Model/Make/Specification (for reference)	Functional Requirement
			- 5000 W AC output, capable to provide backup power in case of grid-failure - Min. 5000 W PV power to be connected	
9	Battery system	1	Cell chemistry: LiFePo4 - Min. 4000 Wh usable storage capacity at 100% DOD) -Min. 4000 cycles - system voltage and integrated BMS compatible with the installed battery (or hybrid) inverter (certified by manufacturer of inverter)	Storage of power as a backup mainly during power outage Note- The complete solar hybrid system must be installed at a designated place and meet the functional requirement.
10	Micro inverter 1 kW	2		This would mainly be for display or academic training purposes
11	1Cx4sq.mm Solar DC cable	50	KEI/Apar/ RR Make	1Cx4SQ.MM DC cable is used to interconnect modules and input towards AJB.
12	1Cx4sq.mm copper cable	50	KEI/Apar / RR approved Make	All the panels and the structure should be connected together to protect it from short-circuiting, lightning etc.
13	CABLE, 3CX4 sq.mm PVC copper cable	30	KEI/Apar / RR approved Make	3CX4 SQMM cable is used to connect inverter to LT panel
14	1CX6sq mm cable	80 meter	KEI/Apar / TPSSL approved Make	1CX6 sq mm cable is an protective earthing cable used to protect the system from short-circuiting, lightening etc
15	AC/DC earthing copper panels	2	Copper panels	All the AC/DC devices should be earthed for protection, all the AC earth points are connected together similarly for DC.
16	Earthing kit, 1.5m 14mm cu bonded rod	3	Copper rod	The earth cable has to be earthed to the ground by copper rod for discharge of excess power arising due to short-circuiting.
17	Lightning arrestor (1.5M Height)	1	Copper rod	A lightning arrestor offers protection to the modules from lightning.

#	Description of Supply Items	Quantity	Model/Make/Specification (for reference)	Functional Requirement
18	Installation Kit	1	Discom approved Make	Contains nut, bolts, casing, cable tray, cable tie, conduit and lugs of appropriate size and number to complete the installation of the above 5 kW Solar Hybrid Power System
19	Generation and energy meter	1	The meter must satisfy all the IEC/IS regulations issued by the national authority in Ghana.	The generation meter provides info on the current generated by the solar system. The energy meter provides the total net consumption by the load after import and export to the grid.
20	Solar Power Generation and Training System	1	The system must satisfy all the IEC/IS regulations issued by the national authority in Ghana.	The system is a composite testing and training kit which comprises voltmeters, multi-meters and ammeters along with 4 nos. 250Wp solar panels, 4 nos. 100Ah battery, 1kVA inverter and control panel for experiments.
21	Junction boxes		6	100 x 100 x 40 mm (LxWxH) approx., surface mounting (for work board)
22	Cable tray	10 meters		Helps to properly route the cables without any physical damage
23	MC4 Y-plug and connector	50 pcs	Include all type of MC4 connecting pairs	Used for connecting solar module to one another in series and parallel
24	Z, T and C, U clamps	3 of each clamps type		To lock module with each other , to mount cable tray , conduit piped
25	Digital multimeter	6	TRMS values, capable of measuring AC (750 V) & DC (1000 V) voltages, DC current 10 A, continuity/resistance, fused for current measurements, overvoltage CAT III 1,000 V and CAT IV 600 V. Lower-cost instruments are suitable for work board exercises	To measure voltage, current, resistance and continuity testing

#	Description of Supply Items	Quantity	Model/Make/Specification (for reference)	Functional Requirement
26	Spare fuses for above multimeter	30	30 of each type of fuse in multimeter	Maintenance for multimeters
27	Insulation resistance tester	1	Capable of measuring insulation resistance at 250 V, 500 V and 1000 V, isolations-resistance measurement to 20 GΩ, resistance measurement 0,01 Ω - 20 kΩ, AC voltage measurement 0 - 500 V AC, overvoltage CAT IV 600 V	Insulation testing in the context of solar energy typically refers to assessing the electrical insulation of components within a solar power system, such as solar panels, inverters, and associated wiring. Ensuring proper insulation is crucial to prevent electrical faults, short circuits, and to maintain the safety and efficiency of the solar installation
28	Compass	5	Basic, low cost, pocket size compass, of type used by walkers	Compass is used for locating geographical direction. They are critical instruments to ensure appropriate alignment of module to true south or north direction
29	Electrician's tools kit	5 sets	Set of electricians' insulated hand tools, screwdrivers, pliers, cable cutter, cable stripper, 1000 V insulation, standard IEC EN 60900	
30	Adjustable spanners	3	Maximum opening: 30 mm	To tighten nut-bolts
31	Spanner set	2	For nuts and bolts widths 6 - 22 mm (recommended range)	To tighten nut-bolts
32	Screwdriver set for precision mechanics	2	For single slot and Philipps screws: 6 different standard sizes	To drive screws and assemble items
33	Long tape measures	3	Also called builder/surveyor’s tapes, 20m or more, fibreglass tape (not steel), chalk Line metric	Measurements on site
34	Allen key with ratchet	2	Key sizes : 1.5 - 10 mm approx.	To open/ tighten allen nut bolting system
35	Cordless screwdriver with bits	2	18V or higher, XR Li-Ion Brushless Self-Drilling Screwdriver, High – Torque	for screwing and light drilling, quality manufacturers recommended

#	Description of Supply Items	Quantity	Model/Make/Specification (for reference)	Functional Requirement
			2000rpm up to 6.15mm with spare battery.	
36	Drilling Machine	1	Cordless 18V or higher, XR Li-Ion Brushless hammer drill, two speeds (0-7650/0-28,050rpm),up to 13mm chuck size, Battery capacity (5Ah), Max Torque (68 Nm) with spare battery.	For heavy drilling especially through concrete walls
37	Angle grinder	1	Cordless 54V or higher, Brushless motor, Battery capacity (9Ah), speed 9000rpm with spare battery.	To cut mounting structure, and especially for installation on tiled roof
38	Set of drilling bits (for wood, steel, and stone	2 set each		
39	Hole saw set (or 20mm hole saw minimum)			To drill PVC conduit size holes for passing conduit pipes
40	Crimping tool kit	2	MC4 2.5,4, and 6mm	To crimp MC4
41	Crimping tool (lobster)	1	H Crimping tool (Model: HAK19A)	To crimp the lugs to the cables
42	Caulking gun / glue gun	2	Drip-Free Caulk Gun Adjustable 24:1 or 12:1 Thrust Ratio 1/10 Gallon Cartridge	To apply sealant or adhesive to secure roof attachments and seal penetrations.
43	PPEs	20 sets	Safety goggles, hand gloves, safety boot, appropriate clothing, safety harness, Hard hat, ear protection, first aid kits	To train the users on using the safety gears while handling the solar power system and other electrical system
44	Electrical Conductivity Meter	2	Apure A10 EC	
45	Dip line with probe	2	Modern Geotechnical Services (MGS)	To determine borehole or tube well water levels; such as Static water head, Dynamic water head.
46	Electrical insulation tape	8 pcs.	Red, Black, Blue, Green – 2 pcs of each colour	
47	DC circuit breaker with fuses	8 pcs	4 each of single and double pole	
48	DC Lamp with cable and switch	4 pcs	The lamp should be of high durability.	

#	Description of Supply Items	Quantity	Model/Make/Specification (for reference)	Functional Requirement
49	Spare Cable	**Solar Cable:** 4 sq mm- 20 m 6 sq mm – 20 m **Battery Cable** 16 sq mm – 20 m 25 sq mm- 20 m		For hands – on training to participants
50	Flipchart board with paper, markers, coloured pencils etc.	Triangular stand, cork board, A3 paper – 20 pcs Markers- 20 pcs (Red, Blue, Black, Green with spare ink bottles) Coloured pencils- 20 Pcs of multiple colours		
SOLAR HOME SYSTEM				
1	Solar Charge Controller MPPT	1	Nominal Power range 400 W Nominal Voltage (PV Input) max 42 VDC (if designed as 24 VDC system a DC/DC converter will be needed to ensure that standard 12 VDC appliances/loads can be used. Converter can be included into load distribution box if cooling is sufficient under load.) Nominal PV Input Current range 5-20 A Nominal Voltage (Load Output) 12 VDC Nominal Current (Load Output) min 25 A Nominal Battery Voltage range 12…24 VDC (autodetect feature mandatory) Operating Temperature range 0…50 °C MPPT Technology 3-Way Battery Charging Profile or better (battery voltage setpoints according to used battery chemistry in 2.0)	A Maximum Power Point Tracking (MPPT) solar charge controller is used to optimize the efficiency of energy harvesting from solar panels. It adjusts the electrical operating point of the solar panels, ensuring that they operate at their maximum power output
2	VRLA AGM Battery for Cycling Solar applicationsTotal	2	Nominal Voltage 12 VDC Nominal Capacity (C10) min 100 Ah Charge Cycles at 50%	-

#	Description of Supply Items	Quantity	Model/Make/Specification (for reference)	Functional Requirement
	capacity min 2.4kWh @ c10 including interconnection, cable, screws, isolator, and cable to Battery Fuse and from Fuse to Inverter--> Charge controller		DoD min 1400 Maintenance Free, AGM (has to be a solar battery suitable for daily dis/charge cycles)DC Battery Fuse	
3	PV Modules Total min 300Wp, Voltage suitable for Charge Controller, Inverter	2	PV saline protection (IEC 61701) if location is close to the sea Nominal Power per PV Module min 150 W (when using multiple PV Modules they have to be the same manufacturer and model) Open Circuit Voltage (STC) max 42 VDC Bypass diodes min 3 Reverse Current min 15 A Voltage Capability min 1000 VDC IP Class Junction Box min IP65 Temperature Range -40…85°C Cell Efficiency min 18% Power Tolerance max 5% MC4 Compatible Connectors Monocrystalline or Polycrystalline Technology	-The whole system should be installed on a display board with full functionality to display the arrangement and workability of all the components. The Panels should be installed out in the sun
4	Micro inverter 1 kW	1		Conversion of DC output to AC output
5	Fan (60-75 Wp)	1	Easy to assemble and operate and conforming to	Mainly for display/academic training purpose
6	Bulb	6		Mainly for display/academic training purpose. Spare Bulbs has also been considered.
7	TV (30 to 55 Wp)	1		Mainly for display/academic training purpose
OUTDOOR SOLAR LIGHTINING				
1	Solar Street Light Kit	1	Park lamp for public areas and paths, 12W high efficiency LEDs, 1620 lumens, incl. lamp bracket, module mounting structure, top of pole mount battery box, solar charge	-

#	Description of Supply Items	Quantity	Model/Make/Specification (for reference)	Functional Requirement
			controller with time program function, 80Wp module, 60Ah sealed battery	
2	Lamp post for Street Light Kit	1	Lamp post 5 metres heigh with accessories for ground assembly, corrosion safe (anodized)	-
3	Scaffold complete assembly	1	TÜV certified; 5,30 m working height, 200 kg/m² load according to DIN EN 1004-1; movable with castors	-
4	Scaffolding Elevator Console with Pulley	1	Compatible with scaffolding system, load capacity: minimum 200 kg; rope and attachment to pull up batteries and PV modules to train part exchange	-
5	Ladder	1	6 m working height with stair function, aluminium, must withstand up to 150kg	-
DISPLAY OF THE SYSTEM INSIDE THE TRAINING LAB				
1	Display Stand and Table	For Hybrid system, Solar Home System, Solar Power Generation and Training System and training tables for providing hands on training on using various equipment to participants	testing tables and display board of adequate size to mount the indoor training equipment and display for giving hands-on training to the trainees. Refer to the indicative picture below: 	The system should be displayed on a display board put on a table with caster wheels ensuring the stability of the display arrangement with an option to easily move as well.

Solar PV testing equipment for STAR C in Ghana

#	Description of Supply Items	Quantity	Model/Make/Specification (for reference)	Functional Requirement
1	Vernier Calipers	1	Stainless steel digital calipers 150mm / 6 inches. • Weight: ~260 gm • Dimensions: 25 x 9.4 x 2.5 cm	Vernier calipers are precision measuring instruments used in various fields for accurately measuring the dimensions of objects. Vernier calipers can provide accurate measurements of dimensions

#	Description of Supply Items	Quantity	Model/Make/Specification (for reference)	Functional Requirement
				such as thickness, diameter, and depth, which are crucial for ensuring proper fitting and alignment of solar equipment
2	Digital Multi-meter	2	Digital multi-meter for AC/DC voltage, resistance, capacitance, frequency measurement. • Weight: 300 gms • Voltage: DC: 600 volts; AC: 600 volts; DC Accuracy: ± 0.5% + 3 digit; AC Accuracy: ± 1% + 3 digit • Resistance: 40 M ohm; Resistance Accuracy: ± 1.5% + 3 digi • Capacitance: 100 µF • 1 year warranty	Multi-meters measures voltage, current, resistance of circuit and as well as measures the continuity of connections. This ensures proper module to module, module to inverter, inverter to other accessories connections, maintaining appropriate positive and negative terminals
3	Clamp meter	2	200A AC/DC Clamp Meter (4345498). • Weight: 400 gms • 200 A ac and dc current • 1000 V ac and dc voltage measurement range • Measurement accuracy: +/- .5% • 18mm triangular jaw • 4000 Ω resistance range • Continuity detection • CAT III 600 V safety rating	Clamp meters are used for troubleshooting electrical systems, checking load currents, and verifying proper operation of electrical equipment. They are especially useful in situations where traditional current measurement methods are impractical or unsafe
4	Pyranometer	2	Infrared battery powered Pyrometer. • Weight: 280 gms • Dimensions: 152 x 102 x 38mm (h*l*w) • Ambient operating range : 0°C - 50°C • Storage temperature : -20°C - 65°C • Standards: EN 61326-1 Electromagnetic Emissions and Susceptibility EN 61010-1 General Safety EN 60825-1 Laser Safety Certification CE, CMC	It's an instrument to measure temperature, solar radiation received at a surface and correlate with solar energy generation

#	Description of Supply Items	Quantity	Model/Make/Specification (for reference)	Functional Requirement
			• Warranty: 1 year	
5	Wind meter and sensor	1	Rugged, corrosion-resistant high performance wind sensor. • Range: 0 to 50 m/s, Gust Survival 60 m/s • Sensor: 12 cm cup wheel assembly • 40 mm hemispherical cups • Turning Factor: 75 cm (2.46 ft) • Distance Constant: 2.3 m (7.5 ft.) for 63% recovery • Threshold Sensitivity: 1.1 m/s (2.5 mph) • Transducer: Stationary coil 1300 Ohm nominal DC resistance • Output Signal 4-20 mA = 0-50 m/s • Power Requirement: 8 – 30 VDC • Operating Temperature: -50 to 50°C (-58 to 122°F)	By providing accurate wind speed measurements, can contribute to optimizing the performance and efficiency of solar power systems
6	Measuring Tape	1	3In1 Laser Tape Measure Laser • ABS+ manganese steel ruler belt • Product model 1: 40 meters laser ranging +5 meters tape measure + laser cross marking line + 60m laser ranging + 5m tape measure + laser cross marking line • Battery type: Two AAA batteries • Size: 85 * 82 * 56 mm • Temperature range: 0-40 degrees Celsius • Measurement accuracy: 2mm • Accuracy: 2mm • Dust and splash proof: IP54 • Maximum storage: 20 groups • Maximum/Minimum value: Minimum value 0.005, maximum value 60 m	Measurements during installation of solar structure and PV modules

#	Description of Supply Items	Quantity	Model/Make/Specification (for reference)	Functional Requirement
7	Water level	1	Spirit Level (0.5mm accuracy, without magnet) • Weight: 190 gms • Size: 60 cm	Level instrument is used in solar project - especially during installation of structures and modules to ensure : a. Horizontal surfaces are levelled b. Vertical alignment is maintained wherever required
8	Compass	1	Waterproof outdoor compass. • Dial Diameter: 65 mm • Weight: 106 gm • Size: 80*70 mm • Accuracy: +/- .5°	Compass is used for locating geographical direction. They are critical instruments to ensure appropriate alignment of module to true south or north direction
9	Pathfinder	2	Non-electronic solar pathfinder working on reflective principle	The Sun Path Finder is a device used to visualize and understand the path of the sun throughout the day and across different seasons. It helps in determining the solar access and shading conditions at a specific location, thereby useful in solar energy system design
10	Insulation tester	1	Insulation Tester. • Weight: 550 gms • Measurement Range: 10g Ohm • Test Voltage: 50v, 100v, 250v, 500v, 1000 V • Test Current: 1 Ma Nominal • Auto Discharge: Discharge Time0.5 Second for C= 1 F or Less • Live Circuit Indicator: Inhibit Test if Terminal Voltage> 30 Volts Prior to Initializations of Test	Insulation testing in the context of solar energy typically refers to assessing the electrical insulation of components within a solar power system, such as solar panels, inverters, and associated wiring. Ensuring proper insulation is crucial to prevent electrical faults, short circuits, and to maintain the safety and efficiency of the solar installation
11	IV Curve Tracer	1	PVPM device allows the measurement of the IV characteristic of photovoltaic modules as well as strings and arrays up to 1500V and 20ADC. • Voltage: 25V / 100V / 500V / 1500V • Current: 2A / 5A / 10A / 20A	An IV curve tracer, or simply an IV tracer, is a tool commonly used in the field of photovoltaics, where the IV curve refers to the current-voltage characteristic of a solar cell or module. It helps understand how the electrical output of the solar cell varies

#	Description of Supply Items	Quantity	Model/Make/Specification (for reference)	Functional Requirement
			• Temperature: -40°C - +100°C with Pt1000 • Irradiance: 0 - 1300W/m2 (Standard sensor) • Accuracy: Sampling rate max. 100kHz • Resolution 0.01V - 0.25V, 0.005A – 0.01A (depending on sel. range) • Accuracy of the a/d converter 0.08% of FSR±1 LSB • Accuracy Peak power measurement: ±5% • Reproducement: ±2-3%	with different operating conditions. It helps to understand solar cell performance under different conditions. It helps to identify the optimal operating points of a solar cell or module which is crucial in designing solar power systems to ensure maximum power output
12	Spectroradiometer to measure the solar spectral distribution between 300 and 2500nm	1	Combines the MS-711 and MS-713. The MS-711 measures between 300nm and 1100nm, while the MS-713 covers the near-infrared (NIR) range between 900nm and 2500nm. Reference: EKO WISER II Spectroradiometer	Spectroradiometers help characterize the solar spectrum and assess how well solar cells respond to different wavelengths of light. This is essential for designing efficient photovoltaic systems
13	Infrared Camera PV Inspection	1	Professional thermal imager: resolution 640 × 480 pixels, focus manual/auto, laser, thermal sensitivity < 40 mK, standard lens, design with wrist strap, along with the rotatable, fold-out display with high brightness (to be seen in the sun), with standard accessories. Reference: TESTO 890-1 Order-Nr. 0563 0890 X1	Infrared inspections can reveal hotspots on solar panels, which may indicate malfunctioning cells or other issues affecting the energy production efficiency
14	Four-Quadrant Bipolar Power Supply for PV I-V curve analysis	1	Four-Quadrant Bipolar Power Supply for PV I-V curve analysis for operating in four-quadrant mode. Umax± 60V, Imax ±20A, 1200W, power input 220-240 Vac 60Hz Reference: matsusada DOS60-20	PV systems are designed to operate at the maximum power point for optimal energy harvesting. The four-quadrant power supply can be used to track and analyze the MPPT performance by varying the operating conditions
15	Earth Resistance tester	1	Measures ground resistance from 0.05 Ω to 1,500 Ω	It is used for safety, performance verification, preventing degradation, and regular testing
16	Battery testing tool	1	Must be suitable for battery capacities from 3 to 250Ah Should have Certifications of CE, UKCA,	Instruments used to assess the performance, health, and characteristics of batteries.

#	Description of Supply Items	Quantity	Model/Make/Specification (for reference)	Functional Requirement
			FCC or equivalent LED color indication for test result	These tools help measure various parameters such as voltage, current, capacity, internal resistance
17	Testing Stand		To put solar panels on the stand to test using the testing equipment. To put the battery on stand for testing.	The PV testing stand should be movable to take it out in the sun for testing purpose. The stand should have option to adjust the height and tilt of the panel. The battery test stand should also be movable and lined with wood/foam to protect from acid spillage etc.

The company selected will be responsible for supply, installation and commissioning and should ensure proper synchronization and integration of the solar system and associated components to enable productive loads and smooth operation. The installation of equipment should be clean, untangled and aesthetically appealing. The cables should be put in conduit using PVC pipes and bends of adequate type and sizes. Cable joints should be properly sealed.

Notes:

1. The offered PV Modules should comply with the relevant IEC standards, including but not limited to IEC 61215, IEC 61730, UL 61730, IEC 62716 as well as local country's standards.
2. All solar components imported to Ghana must comply with the import quality standards for the country.
3. Brands mentioned (if any) are indicative only. ISA may consider equivalent brands meeting the specifications.
4. Bidders are free to procure items locally within the mentioned country as well.

The company needs to submit relevant documents towards compliance of the above standard.

General Guidance

- The bidder can source the equipment from anywhere, but the equipment should be of good quality meeting the specifications as listed in the table.
- In case of battery, the bidder can procure it locally where the centre is being established.
- The preferred mode of transportation will be air freight, however economical route needs to be considered. The delivery, commissioning time in the country for all the equipment is maximum 90 days.
- It is bidder's responsibility to arrange labour or technicians for installation of equipment. The cost can be included in the final costing of the equipment.
- The bidder will provide manufacturer's warranty for all the equipment with complete documentation.

B. Objective

The objective of the assignment is to set up a model solar training and application resource centre (STAR C) lab at the **Ho Technical University Ghana.**

C. Scope of Work

1. **Component A:** Supply, installation and Commissioning of the equipment's given in the above table.

2. **Component B:** Training of the Country's staff on Operation and Maintenance practice of the equipment and instruments.

3. **Component C:** Comprehensive Operation and Maintenance for 1 year post commissioning.

The roles and responsibilities of the bidder and ISA are outlined below:
Bidder's Terms of reference:

- Design concepts
- Supply of materials and products
- Provide adequate skilled labour for installation and commissioning
- Construction supervision / contract management
- Quality control plan (QCP) and Safety plan
- Commissioning of project
- Mentoring and training, building operating staff for operation and maintenance
- Operation and Maintenance for first year and optional service plan after the first year

ISA and Country's identified STAR-Cs responsibilities:

- Provide location to install solar panels as per the contract.
- Review for approval design submittals
- Witness inspections and test witnesses to verify attainment of performance requirements
- Make progress payments for any service agreed
- Allow consultants access to STAR-C premises for site visit/energy audit exercise.
- Approve any contracts agreed with the consultant.

Payment Terms:

1. For Component-A (Supply, Installation and Commissioning of the equipment's)

S. No.	Description of Deliverables	Timelines	Release of payment
1	Kick-off meeting with a tentative plan for supply of material, Installation & Commissioning	1 Week	20%
2	Dispatch of material (Document proof of dispatch)	3 Weeks	10%
3	Successful delivery of material on site.	10 Weeks	50%
4	Successful Installation, Commissioning	12 Weeks	15%
5	After successful operation for 3 months		5%

Notes:

i. Transportation cost will be paid at the time of dispatching of the material.
ii. Custom duty/excise duty will be paid on actual after submission of invoice and proofs.
iii. The above payment schedule will be allowed for Component-A pricing.

2. For Component-B (Training of the Country's staff on Operation and Maintenance practice of the equipment and instruments)

S. No.	Description of Deliverables	Timelines	Release of payment
1	Training of the Country's staff on Operation and Maintenance practices	Within 2 Weeks after Successful Installation & Commissioning	100%

Notes:

i. Training of 3-5 people for maximum 4 days on day-to-day O&M of the equipment.

For Component-C (Comprehensive Operation and Maintenance for 1 year post commissioning)

i. Payment will be processed in two tranches, 1st tranche at the end of six months after commissioning and 2nd Tranche at the end of 12 months after commissioning.

Delivery Requirements

Delivery Requirements	
Delivery date and time	Bidder shall complete the delivery and installation within 90 days from the issuance of Contract.
Delivery Terms (INCOTERMS 2020)	Delivered at Place
Customs clearance	☐ Not applicable Shall be done by: ☐ Name of organisation (where applicable) ☒ Supplier/bidder ☐ Freight Forwarder
Exact Address(es) of Delivery Location(s)	**Ho Technical University**
Distribution of shipping documents (if using freight forwarder)	Bidder responsibility
Packing Requirements	Safe delivery of supplies, handling will be bidders responsibility
Training on Operations and Maintenance	Within 14 days of delivery and installation
Warranty Period	At least one year
After-sales service and local service support requirements	One year
Preferred Mode of Transport	Air

NOTES:

a. The products/goods/parts of machineries must be recalled by the manufacturer/ bidder/ supplier at the manufacturers/ bidder/ suppliers cost if rejected by ISA/ purchaser or end user because of the problems with quality. The supplier/ bidder/ manufacturer will be obliged to replace the products/goods/parts of machineries in question at its own cost with a new one of acceptable quality.
b. The supplier will be responsible for protection of materials, property and equipment before successful delivery and handover to ISA.
c. Prices quoted must be inclusive of all costs necessary to supply these items, including delivery, warranty, transport cost, insurance, materials, installation, training and commissioning etc.
d. OEM of equipment's' can be from any country. However, meeting the technical specifications is mandatory requirement.
e. Items can be procured locally, within the country. However, bidder shall provide 1 year CMC as per the contract.

ANNEX 2: QUOTATION SUBMISSION FORM

Bidders are requested to complete this form, including the Company Profile and Bidder's Declaration, sign it and return it as part of their quotation along with Annex 3: Technical and Financial Offer. The Bidder shall fill in this form in accordance with the instructions indicated. No alterations to its format shall be permitted and no substitutions shall be accepted.

Name of Bidder:	Click or tap here to enter text.	
RFQ reference:	Click or tap here to enter text.	Date: Click or tap to enter a date.

Company Profile

Item Description	Detail
Legal name of bidder or Lead entity for JVs	Click or tap here to enter text.
Legal Address, City, Country	Click or tap here to enter text.
Website	Click or tap here to enter text.
Year of Registration	Click or tap here to enter text.
Legal structure	Choose an item.
Are you a UNGM registered vendor?	☐ Yes ☐ No If yes, insert UNGM Vendor Number
Quality Assurance Certification (e.g. ISO 9000 or Equivalent) *(If yes, provide a Copy of the valid Certificate):*	☐ Yes ☐ No
Does your Company hold any accreditation such as ISO 14001 or ISO 14064 or equivalent related to the environment? *(If yes, provide a Copy of the valid Certificate):*	☐ Yes ☐ No
Does your Company have a written Statement of its Environmental Policy? *(If yes, provide a Copy)*	☐ Yes ☐ No
Does your organization demonstrate significant commitment to sustainability through some other means, for example internal company policy documents on women empowerment, renewable energies or membership of trade institutions promoting such issues *(If yes, provide a Copy)*	☐ Yes ☐ No

Is your company a member of the UN Global Compact	☐ Yes ☐ No
Bank Information	Bank Name: Click or tap here to enter text. Bank Address: Click or tap here to enter text. IBAN: Click or tap here to enter text. SWIFT/BIC: Click or tap here to enter text. Account Currency: Click or tap here to enter text. Bank Account Number: Click or tap here to enter text.

Previous relevant experience: 3 contracts				
Name of previous contracts	**Client & Reference Contact Details including e-mail**	**Contract Value**	**Period of activity**	**Types of activities undertaken**

Bidder's Declaration

Yes	No	
☐	☐	**Requirements and Terms and Conditions:** I/We have read and fully understand the RFQ, including the RFQ Information and Data, Schedule of Requirements, the General Conditions of Contract, and any Special Conditions of Contract. I/we confirm that the Bidder agrees to be bound by them.
☐	☐	I/We confirm that the Bidder has the necessary capacity, capability, and necessary licenses to fully meet or exceed the Requirements and will be available to deliver throughout the relevant Contract period.
☐	☐	**Ethics**: In submitting this Quote I/we warrant that the bidder: has not entered any improper, illegal, collusive, or anti-competitive arrangements with any Competitor; has not directly or indirectly approached any representative of the Buyer (other than the Point of Contact) to lobby or solicit information in relation to the RFQ; has not attempted to influence, or provide any form of personal inducement, reward, or benefit to any representative of the Buyer.
☐	☐	I/We confirm to undertake not to engage in proscribed practices, , or any other unethical practice, with the UN or any other party, and to conduct business in a manner that averts any financial, operational, reputational or other undue risk to the UN and we have read the United Nations Supplier Code of Conduct :https://www.un.org/Depts/ptd/about-us/un-supplier-code-conduct and acknowledge that it provides the minimum standards expected of suppliers to the UN.
☐	☐	**Conflict of interest:** I/We warrant that the bidder has no actual, potential, or perceived Conflict of Interest in submitting this Quote or entering a Contract to deliver the Requirements. Where a Conflict of Interest arises during the RFQ process the bidder will report it immediately to the Procuring Organisation's Point of Contact.
☐	☐	**Prohibitions, Sanctions:** I/We hereby declare that our firm, its affiliates or subsidiaries or employees, including any JV/Consortium members or subcontractors or suppliers for any part of the contract is not under procurement prohibition by the United Nations, including but not limited to prohibitions derived from the Compendium of United Nations Security Council Sanctions Lists and have not been suspended, debarred, sanctioned or otherwise identified as ineligible by any UN Organization or the World Bank Group or any other international Organization.
☐	☐	**Bankruptcy**: I/We have not declared bankruptcy, are not involved in bankruptcy or receivership proceedings, and there is no judgment or pending legal action against them that could impair their operations in the foreseeable future.

Yes	No	
☐	☐	**Offer Validity Period:** I/We confirm that this Quote, including the price, remains open for acceptance for the Offer Validity.
☐	☐	I/We understand and recognize that you are not bound to accept any Quotation you receive, and we certify that the goods offered in our Quotation are new and unused.
☐	☐	By signing this declaration, the signatory below represents, warrants and agrees that he/she has been authorised by the Organization/s to make this declaration on its/their behalf.

Signature: _____

Name: Click or tap here to enter text.

Title: Click or tap here to enter text.

Date: Click or tap to enter a date.

ANNEX 3: TECHNICAL AND FINANCIAL OFFER - GOODS

Bidders are requested to complete this form, sign it and return it as part of their quotation along with Annex 2 Quotation Submission Form. The Bidder shall fill in this form in accordance with the instructions indicated. No alterations to its format shall be permitted and no substitutions shall be accepted.

Name of Bidder:	Click or tap here to enter text.	
RFQ reference:	RFQ/XXXX/IND 2023	Date: Click or tap to enter a date.

Technical Offer

Qualification Criteria

Please fill this and attach relevant documents. Only quotations of bidders qualifying against the below criteria will be evaluated.

Qualifying Criteria	***Yes/No***	***List of supporting documents***
Bidders must have the legal capacity to enter a binding contract with ISA and to deliver in the country, or through an authorized representative.		
Bidders must have the legal capacity to enter a binding contract with ISA and to deliver in the country, or through an authorized representative. **Company registration certificate or any other document proving legal entity.**		
The bidder must have the experience of supply of solar equipment's / hardware components. **Submit copy of work order or completion certificate**		
The bidder must have annual turnover of more than **USD 100,000** - Please attach relevant documents.		

ISA reserves the right to reject the bid if it determines that the selected bidder has not provided the supporting documents against the Qualifying Criteria.

Technical Proposal

The bidder shall include the following in the technical proposal document:

- *A brief description of your qualification and capacity that is relevant to the Scope of Works;*
- *A brief method statement and implementation plan;*

Technical offer should encompass detailed specifications, including make, complying standards, relevant test certificate as applicable for each of the component proposed to be supplied by the bidder under the RFQ in line with the table below (Please refer to the specification/description given in the schedule of requirement in Annexure 1 for submitting the technical & financial proposal)**:**

#	Description of Supply Items	Quantity	Detailed Specification	Make/Model	Complying Standard	Period of Warranty
1	Solar PV module:515/525/530Wp mono-crystalline					

#	Description of Supply Items	Quantity	Detailed Specification	Make/Model	Complying Standard	Period of Warranty
2	Polycrystalline/CIGs module: 100/200 Wp					
3	Module mounting structure for flat RCC roof (Ballast Type)					
4	Mounting structure (elevated type) 1 to 2 kW					
5	Array combiner box with fuse 1 IN -1 out with SPD					
6	AC DB with SPD Class 2,with CB (5kW, 1Ph)					
7	Mounting Structure for corrugated tin/tiled roof with slope (for mounting at least 2 solar panels)					
8	5 KVA hybrid inverter/ set of equipment					
9	Battery system					
10	Micro inverter 1 kW					
11	1Cx4sq.mm Solar DC cable					
12	1Cx4sq.mm copper cable					
13	CABLE, 3CX4 sq.mm PVC copper cable					
14	1CX6sq mm cable					
15	AC/DC earthing copper panels					
16	Earthing kit, 1.5m 14mm cu bonded rod					
17	Lightning arrestor (1.5M Height)					
18	Installation Kit					

#	Description of Supply Items	Quantity	Detailed Specification	Make/Model	Complying Standard	Period of Warranty
19	Generation and energy meter					
20	Solar Power Generation and Training System					
21	Junction boxes					
22	Cable tray					
23	MC4 Y-plug and connector					
24	Z, T and C, U clamps					
25	Digital multimeter (medium quality)					
26	Spare fuses for above multimeter (medium quality)					
27	Insulation resistance tester					
28	Compass					
29	Electrician's tools kit					
30	Adjustable spanners					
31	Spanner set					
32	Screwdriver set for precision mechanics					
33	Long tape measures					

#	Description of Supply Items	Quantity	Detailed Specification	Make/Model	Complying Standard	Period of Warranty
34	Allen key with ratchet					
35	Cordless screwdriver with bits					
36	Drilling Machine					
37	Angle grinder					
38	Set of drilling bits (for wood, steel, and stone					
39	Hole saw set (or 20mm hole saw minimum)					
40	Crimping tool kit					
41	Crimping tool (lobster)					
42	Caulking gun / glue gun					
43	PPEs					
44	Electrical Conductivity Meter					
45	Dip line with probe					
46	Electrical insulation tape					
47	DC circuit breaker with fuses					

#	Description of Supply Items	Quantity	Detailed Specification	Make/Model	Complying Standard	Period of Warranty
48	DC Lamp with cable and switch					
49	Spare Cable					
50	Flipchart board with paper, markers, coloured pencils etc.					
51	Laser rangefinder or telemeter					
52	GPS					
SOLAR HOME SYSTEM						
1	Solar Charge Controller MPPT					
2	VRLA AGM Battery for Cycling Solar applicationsTotal capacity min 2.4kWh @ c10 including interconnection, cable, screws, isolator, and cable to Battery Fuse and from Fuse to Inverter--> Charge controller					
3	PV Modules Total min 300Wp, Voltage suitable for Charge Controller, Inverter					
4	Micro inverter 1 kW					
5	Fan (60-75 Wp)					
6	Bulb					
7	TV (30 to 55 Wp)					
OUTDOOR SOLAR LIGHTINING						
1	Solar Street Light Kit					
2	Lamp post for Street Light Kit					
3	Scaffold complete assembly					

#	Description of Supply Items	Quantity	Detailed Specification	Make/Model	Complying Standard	Period of Warranty
4	Scaffolding Elevator Console with Pulley					
5	Ladder					
DISPLAY OF THE SYSTEM INSIDE THE TRAINING LAB						
1	Display Stand and Table					

Solar PV Testing Equipment

#	Description of Supply Items	Quantity	Detailed Specification	Make/Model	Complying Standard	Period of Warranty
1	Vernier Calipers					
2	Digital Multi-meter					
3	Clamp meter					
4	Pyranometer					
5	Wind meter and sensor					
6	Measuring Tape					
7	Water level					
8	Compass					
9	Pathfinder					
10	Insulation tester					
11	IV Curve Tracer					
12	Spectroradiometer to measure the solar spectral					

#	Description of Supply Items	Quantity	Detailed Specification	Make/Model	Complying Standard	Period of Warranty
	distribution between 300 and 2500nm					
13	Infrared Camera PV Inspection					
14	Four-Quadrant Bipolar Power Supply for PV I-V curve analysis					
15	Earth Resistance tester					
16	Battery testing tool					
17	Power analyzer					
18	Solar power meter					
19	Light meter/ Lux meter					
20	Testing Stand					

The submission of proposal should highlight in subject line "SITC for equipment in Ghana"

Financial Offer

Financial offer should encompass the quantity and price as applicable for each of the component proposed to be supplied by the bidder under the RFQ in line with the table below:

Submission for the Country……. ***(fill the country name)***

#	Description of Supply Items	Quantity	Detailed Specification	Unit Price	Total Price
1	Solar PV module:515/525/530Wp mono-crystalline				
2	Polycrystalline/CIGs module: 100/200 Wp				
3	Module mounting structure for flat RCC roof (Ballast Type)				
4	Mounting structure (elevated type) 1 to 2 kW				
5	Array combiner box with fuse 1 IN -1 out with SPD				
6	AC DB with SPD Class 2,with CB (5kW, 1Ph)				
7	Mounting Structure for corrugated tin/tiled roof with slope (for mounting at least 2 solar panels)				
8	5 KVA hybrid inverter/ set of equipment				
9	Battery system				
10	Micro inverter 1 kW				
11	1Cx4sq.mm Solar DC cable				
12	1Cx4sq.mm copper cable				
13	CABLE, 3CX4 sq.mm PVC copper cable				

#	Description of Supply Items	Quantity	Detailed Specification	Unit Price	Total Price
14	1CX6sq mm cable				
15	AC/DC earthing copper panels				
16	Earthing kit, 1.5m 14mm cu bonded rod				
17	Lightning arrestor (1.5M Height)				
18	Installation Kit				
19	Generation and energy meter				
20	Solar Power Generation and Training System				
21	Junction boxes				
22	Cable tray				
23	MC4 Y-plug and connector				
24	Z, T and C, U clamps				
25	Digital multimeter (medium quality)				
26	Spare fuses for above multimeter (medium quality)				
27	Insulation resistance tester				
28	Compass				

#	Description of Supply Items	Quantity	Detailed Specification	Unit Price	Total Price
29	Electrician's tools kit				
30	Adjustable spanners				
31	Spanner set				
32	Screwdriver set for precision mechanics				
33	Long tape measures				
34	Allen key with ratchet				
35	Cordless screwdriver with bits				
36	Drilling Machine				
37	Angle grinder				
38	Set of drilling bits (for wood, steel, and stone				
39	Hole saw set (or 20mm hole saw minimum)				
40	Crimping tool kit				
41	Crimping tool (lobster)				
42	Caulking gun / glue gun				

#	Description of Supply Items	Quantity	Detailed Specification	Unit Price	Total Price
43	PPEs				
44	Electrical Conductivity Meter				
45	Dip line with probe				
46	Electrical insulation tape				
47	DC circuit breaker with fuses				
48	DC Lamp with cable and switch				
49	Spare Cable				
50	Flipchart board with paper, markers, coloured pencils etc.				
51	Laser rangefinder or telemeter				
52	GPS				
SOLAR HOME SYSTEM					
1	Solar Charge Controller MPPT				
2	VRLA AGM Battery for Cycling Solar applicationsTotal capacity min 2.4kWh @ c10 including interconnection, cable, screws, isolator, and cable to Battery Fuse and from Fuse to Inverter--> Charge controller				

#	Description of Supply Items	Quantity	Detailed Specification	Unit Price	Total Price
3	PV Modules Total min 300Wp, Voltage suitable for Charge Controller, Inverter				
4	Micro inverter 1 kW				
5	Fan (60-75 Wp)				
6	Bulb				
7	TV (30 to 55 Wp)				
OUTDOOR SOLAR LIGHTINING					
1	Solar Street Light Kit				
2	Lamp post for Street Light Kit				
3	Scaffold complete assembly				
4	Scaffolding Elevator Console with Pulley				
5	Ladder				
DISPLAY OF THE SYSTEM INSIDE THE TRAINING LAB					
1	Display Stand and Table				

Solar PV Testing Equipment

#	Description of Supply Items	Quantity	Detailed Specification	Unit Price	Total Price
1	Vernier Calipers				
2	Digital Multi-meter				
3	Clamp meter				
4	Pyrometer				
5	Wind meter and sensor				

#	Description of Supply Items	Quantity	Detailed Specification	Unit Price	Total Price
6	Measuring Tape				
7	Water level				
8	Compass				
9	Pathfinder				
10	Insulation tester				
11	IV Curve Tracer				
12	Spectroradiometer to measure the solar spectral distribution between 300 and 2500nm				
13	Infrared Camera PV Inspection				
14	Four-Quadrant Bipolar Power Supply for PV I-V curve analysis				
15	Earth Resistance tester				
16	Battery testing tool				
17	Power analyzer				
18	Solar power meter				
19	Light meter/ Lux meter				
20	Testing Stand				

Please fill the component wise cost of goods/services in the table below:

SL NO.	BRIEF DESCRIPTION OF GOODS/ SERIVCES	Price in USD	Customs duty/excise duty/other taxes#
1	**Component A:** Supply of required solar PV Training and Testing equipment's* (As detailed out above), Installation, Testing & Commissioning		
2	**Component B:** Training Charges		
3	**Component C:** Comprehensive maintenance of the system for the period of one year form the date of commissioning.		
	Total Price		

SL NO.	BRIEF DESCRIPTION OF GOODS/ SERIVCES	Price in USD	Customs duty/excise duty/other taxes#
	Transportation Price (up to delivery site)		
	Insurance Price (up to delivery site)		
	Other Charges (specify)		
	Total Final and All-inclusive Price		

- **ISA will evaluate the financial offers received from the bidders based on total quoted price excluding tax.**
- **# Please provide details of the nature of the taxes. Taxes will be paid on actual basis on submission of documents proving the nature and the amount of tax.**
- *** ISA reserves the rights to select/deselect items from list of equipment's.**

Compliance with Requirements

	You Responses		
	Yes, we will comply	**No, we cannot comply**	**If you cannot comply, pls. indicate counter - offer**
Minimum Technical Specifications	☐	☐	Click or tap here to enter text.
Delivery Term (INCOTERMS)	☐	☐	Click or tap here to enter text.
Delivery Lead Time	☐	☐	Click or tap here to enter text.
Warranty and After-Sales Requirements	☐	☐	Click or tap here to enter text.
Validity of Quotation	☐	☐	Click or tap here to enter text.
Payment terms	☐	☐	Click or tap here to enter text.
Other requirements *[pls. specify]*	☐	☐	Click or tap here to enter text.

Other Information:

Estimated weight/volume/dimension of the Consignment:	Click or tap here to enter text.
Country/ies of Origin: (*if export licence required this must be submitted if awarded the contract*)	Click or tap here to enter text.

I, the undersigned, certify that I am duly authorized to sign this quotation and bind the company below in event that the quotation is accepted.	
Exact name and address of company Company NameClick or tap here to enter text. Address: Click or tap here to enter text. Click or tap here to enter text. Phone No.:Click or tap here to enter text. Email Address:Click or tap here to enter text.	Authorized Signature: Date:Click or tap here to enter text. Name:Click or tap here to enter text. Functional Title of Authorised Signatory:Click or tap here to enter text. Email Address: Click or tap here to enter text.

ANNEX 4: CHECKLIST FOR SUBMISSION OF BID

Item	Yes, we have submitted	If you cannot submit, pls. indicate the reason
Technical Proposal	☐	Click or tap here to enter text.
Filled up Annex 2 and Bidder Declaration form	☐	
Registration Certificate	☐	
Annual Turnover Certificate	☐	
Documents against Qualifying criteria as per Annexure-3	☐	
Financial Proposal	☐	Click or tap here to enter text.
Quoted prices for all items in the list	☐	
Quoted price for the three components in the table	☐	
Quoted prices for Transportation (up to the delivery site)	☐	
Quoted prices for Insurance (up to the delivery site)	☐	
Quoted prices for VAT or other taxes and duties	☐	

The submission of proposal should highlight in subject line "SITC for equipment in Ghana"