

# ***INVITATION TO BID***

## ***Supply, Delivery, and Installation of Solar Energy System for 8 Villages in West & Central Darfur***

***ITB/KRT/16/016-R1***



***United Nations Development Programme***

***August, 2016  
Sudan***

**Supply, Delivery, and Installation of Solar Energy System  
For 8 Villages in the West & Central Darfur (Re-Advertised)**

Dear Sir or Madam,

The United Nations Development Programme (UNDP) hereby invites you to submit a Bid to this Invitation to Bid (ITB) for the above-referenced subject.

This ITB includes the following documents:

- Section 1 - This Letter of Invitation;
- Section 2 - Instructions to Bidders (including Data Sheet);
- Section 3 - Schedule of Requirements, Technical Specifications, Price Schedule Form;
- Section 4 - Bid Submission Form;
- Section 5 - Documents Establishing the Eligibility and Qualifications of the Bidder;
- Section 6 - Technical Bid Form;
- Section 7 - Form for Performance Security;
- Section 8 - General Terms and Conditions for Goods.
- Section 9 - Bid Bulletin (Questions and Answers) from previous ITB

Your offer, comprising of a Technical Bid and Price Schedule, in one sealed envelope, should be submitted in accordance with Section 2.

If you have received this ITB through a direct invitation by UNDP, transferring this invitation to another firm requires notifying UNDP accordingly.

Should you require any clarification, kindly communicate with the contact person identified in the attached Data Sheet as the focal point for queries on this ITB.

UNDP looks forward to receiving your Bid and thanks you in advance for your interest in UNDP procurement opportunities.

Yours sincerely,

Hari Kafle  
Head of Procurement

## **Section 2: Instruction to Bidders**

### **Definitions**

- a) *"Bid"* refers to the Bidder's response to the Invitation to Bid, including the Bid Submission Form, Technical Bid and Price Schedule and all other documentation attached thereto as required by the ITB.
- b) *"Bidder"* refers to any legal entity that may submit, or has submitted, a Bid for the supply of goods and provision of related services requested by UNDP.
- c) *"Contract"* refers to the legal instrument that will be signed by and between the UNDP and the successful Bidder, all the attached documents thereto, including the General Terms and Conditions (GTC) and the Appendices.
- d) *"Country"* refers to the country indicated in the Data Sheet.
- e) *"Data Sheet"* refers to such part of the Instructions to Bidders used to reflect conditions of the tendering process that are specific for the requirements of the ITB.
- f) *"Day"* refers to calendar day.
- g) *"Goods"* refer to any tangible product, commodity, article, material, wares, equipment, assets or merchandise that UNDP requires under this ITB.
- h) *"Government"* refers to the Government of the country where the goods and related services provided/rendered specified under the Contract will be delivered or undertaken.
- i) *"Instructions to Bidders"* refers to the complete set of documents which provides Bidders with all information needed and procedures to be followed in the course of preparing their Bid
- j) *"ITB"* refers to the Invitation to Bid consisting of instructions and references prepared by UNDP for purposes of selecting the best supplier or service provider to fulfil the requirement indicated in the Schedule of Requirements and Technical Specifications.
- k) *"LOI"* (Section 1 of the ITB) refers to the Letter of Invitation sent by UNDP to Bidders.
- l) *"Material Deviation"* refers to any contents or characteristics of the bid that is significantly different from an essential aspect or requirement of the ITB, and (i) substantially alters the scope and quality of the requirements; (ii) limits the rights of UNDP and/or the obligations of the offeror; and (iii) adversely impacts the fairness and principles of the procurement process, such as those that compromise the competitive position of other Offerors.
- m) *"Schedule of Requirements and Technical Specifications"* refers to the document included in this ITB as Section 3 which lists the goods required by UNDP, their specifications, the related services, activities, tasks to be performed, and other information pertinent to UNDP's receipt and acceptance of the goods.
- n) *"Services"* refers to the entire scope of tasks related or ancillary to the completion or delivery of the goods required by UNDP under the ITB.
- o) *"Supplemental Information to the ITB"* refers to a written communication issued by UNDP to prospective Bidders containing clarifications, responses to queries received from prospective Bidders, or changes to be made in the ITB, at any time after the release of the ITB but before the deadline for the submission of Bid.

### **A. GENERAL**

1. UNDP hereby solicits Bids as a response to this Invitation to Bid (ITB). Bidders must strictly adhere to all the requirements of this ITB. No changes, substitutions or other alterations to the rules and provisions stipulated in this ITB may be made or assumed unless it is instructed or approved in writing by UNDP in the form of Supplemental Information to the ITB.
2. Submission of a Bid shall be deemed as an acknowledgement by the Bidder that all obligations

stipulated by this ITB will be met and, unless specified otherwise, the Bidder has read, understood and agreed to all the instructions in this ITB.

3. Any Bid submitted will be regarded as an offer by the Bidder and does not constitute or imply the acceptance of any Bid by UNDP. UNDP is under no obligation to award a contract to any Bidder as a result of this ITB.
4. UNDP implements a policy of zero tolerance on proscribed practices, including fraud, corruption, collusion, unethical practices, and obstruction. UNDP is committed to preventing, identifying and addressing all acts of fraud and corrupt practices against UNDP as well as third parties involved in UNDP activities. (See [http://www.undp.org/about/transparencydocs/UNDP\\_Anti\\_Fraud\\_Policy\\_English\\_FINAL\\_june\\_2011.pdf](http://www.undp.org/about/transparencydocs/UNDP_Anti_Fraud_Policy_English_FINAL_june_2011.pdf) and [http://www.undp.org/content/undp/en/home/operations/procurement/procurement\\_protest/](http://www.undp.org/content/undp/en/home/operations/procurement/procurement_protest/) for full description of the policies)
5. In responding to this ITB, UNDP requires all Bidders to conduct themselves in a professional, objective and impartial manner, and they must at all times hold UNDP's interest's paramount. Bidders must strictly avoid conflicts with other assignments or their own interests, and act without consideration for future work. All Bidders found to have a conflict of interest shall be disqualified. Without limitation on the generality of the above, Bidders, and any of their affiliates, shall be considered to have a conflict of interest with one or more parties in this solicitation process, if they:

- 5.1 Are, or have been associated in the past, with a firm or any of its affiliates which have been engaged UNDP to provide services for the preparation of the design, Schedule of Requirements and Technical Specifications, cost analysis/estimation, and other documents to be used for the procurement of the goods and related services in this selection process;**
- 5.2 Were involved in the preparation and/or design of the programme/project related to the goods and related services requested under this ITB; or**
- 5.3 Are found to be in conflict for any other reason, as may be established by, or at the discretion of, UNDP.**

In the event of any uncertainty in the interpretation of what is potentially a conflict of interest, Bidders must disclose the condition to UNDP and seek UNDP's confirmation on whether or not such conflict exists.

6. Similarly, the following must be disclosed in the Bid:
  - 6.1 Bidders who are owners, part-owners, officers, directors, controlling shareholders, or key personnel who are family of UNDP staff involved in the procurement functions and/or the Government of the country or any Implementing Partner receiving the goods and related services under this ITB; and
  - 6.4 Others that could potentially lead to actual or perceived conflict of interest, collusion or unfair competition practices.

***Failure of such disclosure may result in the rejection of the Bid.***

7. The eligibility of Bidders that are wholly or partly owned by the Government shall be subject to UNDP's further evaluation and review of various factors such as being registered as an independent entity, the extent of Government ownership/share, receipt of subsidies, mandate, access to information in relation to this ITB, and others that may lead to undue advantage against other Bidders, and the eventual rejection of the Bid.
8. All Bidders must adhere to the UNDP Supplier Code of Conduct, which may be found at this link: <http://web.ng.undp.org/procurement/undp-supplier-code-of-conduct.pdf>

## **B. CONTENTS OF BID**

### **9. Sections of Bid**

Bidders are required to complete, sign and submit the following documents:

- 9.1 Bid Submission Cover Letter Form (see ITB Section 4);
- 9.2 Documents Establishing the Eligibility and Qualifications of the Bidder (see ITB Section 5);
- 9.3 Technical Bid (see prescribed form in ITB Section 6);
- 9.4 Price Schedule (see prescribed form in ITB Section 7);
- 9.5 Bid Security, if applicable (if required and as stated in the DS nos. 9-11, see prescribed Form in ITB Section 8);
- 9.6 Any attachments and/or appendices to the Bid (including all those specified under the **Data Sheet**)

#### **10. Clarification of Bid**

- 10.1 Bidders may request clarification of any of the ITB documents no later than the number of days indicated in the **Data Sheet** (DS no. 16) prior to the Bid submission date. Any request for clarification must be sent in writing via courier or through electronic means to the UNDP address indicated in the **Data Sheet** (DS no. 17). UNDP will respond in writing, transmitted by electronic means and will transmit copies of the response (including an explanation of the query but without identifying the source of inquiry) to all Bidders who have provided confirmation of their intention to submit a Bid.
- 10.2 UNDP shall endeavor to provide such responses to clarifications in an expeditious manner, but any delay in such response shall not cause an obligation on the part of UNDP to extend the submission date of the Bid, unless UNDP deems that such an extension is justified and necessary.

#### **11. Amendment of Bid**

- 11.1 At any time prior to the deadline for submission of Bid, UNDP may for any reason, such as in response to a clarification requested by a Bidder, modify the ITB in the form of a Supplemental Information to the ITB. All prospective Bidders will be notified in writing of all changes/amendments and additional instructions through Supplemental Information to the ITB and through the method specified in the **Data Sheet** (DS No. 18).
- 11.2 In order to afford prospective Bidders reasonable time to consider the amendments in preparing their Bid, UNDP may, at its discretion, extend the deadline for submission of Bid, if the nature of the amendment to the ITB justifies such an extension.

### **C. PREPARATION OF BID**

#### **12. Cost**

The Bidder shall bear any and all costs related to the preparation and/or submission of the Bid, regardless of whether its Bid was selected or not. UNDP shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the procurement process.

#### **13. Language**

The Bid, as well as any and all related correspondence exchanged by the Bidder and UNDP, shall be written in the language (s) specified in the **Data Sheet** (DS No. 4). Any printed literature furnished by the Bidder written in a language other than the language indicated in the **Data Sheet**, must be accompanied by a translation in the preferred language indicated in the **Data Sheet**. For purposes of interpretation of the Bid, and in the event of discrepancy or inconsistency in meaning, the version translated into the preferred language shall govern. Upon conclusion of a contract, the language of the contract shall govern the relationship between the contractor and UNDP.

#### **14. Bid Submission Form**

The Bidder shall submit the Bid Submission Form using the form provided in Section 4 of this ITB.

#### **15. Technical Bid Format and Content**

Unless otherwise stated in the **Data Sheet** (DS no. 28), the Bidder shall structure the Technical Bid as follows:

- 15.1 Expertise of Firm/Organization – this section should provide details regarding management structure of the organization, organizational capability/resources, and experience of organization/firm, the list of projects/contracts (both completed and on-going, both domestic and international) which are related or similar in nature to the requirements of the ITB, manufacturing capacity of plant if Bidder is a manufacturer, authorization from the

manufacturer of the goods if Bidder is not a manufacturer, and proof of financial stability and adequacy of resources to complete the delivery of goods and provision of related services required by the ITB (see ITB Clause 18 and DS No. 26 for further details). The same shall apply to any other entity participating in the ITB as a Joint Venture or Consortium.

- 15.2 Technical Specifications and Implementation Plan – this section should demonstrate the Bidder’s response to the Schedule of Requirements and Technical Specifications by identifying the specific components proposed; how each of the requirements shall be met point by point; providing a detailed specification and description of the goods required, plans and drawings where needed; the essential performance characteristics, identifying the works/portions of the work that will be subcontracted; a list of the major subcontractors, and demonstrating how the bid meets or exceeds the requirements, while ensuring appropriateness of the bid to the local conditions and the rest of the project operating environment during the entire life of the goods provided. Details of technical bid must be laid out and supported by an Implementation Timetable, including Transportation and Delivery Schedule where needed, that is within the duration of the contract as specified in the **Data Sheet** (DS noS. 29 and 30).

Bidders must be fully aware that the goods and related services that UNDP require may be transferred, immediately or eventually, by UNDP to the Government partners, or to an entity nominated by the latter, in accordance with UNDP’s policies and procedures. All bidders are therefore required to submit the following in their bids.

- a) A statement of whether any import or export licences are required in respect of the goods to be purchased or services to be rendered, including any restrictions in the country of origin, use or dual use nature of the goods or services, including any disposition to end users;
- b) Confirmation that the Bidder has obtained license of this nature in the past, and have an expectation of obtaining all the necessary licenses, should their bid be rendered the most responsive; and
- c) Complete documentation, information and declaration of any goods classified or may be classified as “Dangerous Goods”.

- 15.3 Management Structure and Key Personnel – This section should include the comprehensive curriculum vitae (CVs) of key personnel that will be assigned to support the implementation of the technical bid, clearly defining their roles and responsibilities. CVs should establish competence and demonstrate qualifications in areas relevant to the requirements of this ITB.

In complying with this section, the Bidder assures and confirms to UNDP that the personnel being nominated are available to fulfil the demands of the Contract during its stated full term. If any of the key personnel later becomes unavailable, except for unavoidable reasons such as death or medical incapacity, among other possibilities, UNDP reserves the right to render the Bid non-responsive. Any deliberate substitution of personnel arising from unavoidable reasons, including delay in the implementation of the project of programme through no fault of the Bidder, shall be made only with UNDP’s acceptance of the justification for substitution, and UNDP’s approval of the qualification of the replacement who shall be either of equal or superior credentials as the one being replaced.

- 15.4 Where the **Data Sheet** requires the submission of the Bid Security, the Bid Security shall be included along with the Technical Bid. The Bid Security may be forfeited by UNDP, and reject the Bid, in the event of any or any combination of the following conditions:

- a) If the Bidder withdraws its offer during the period of the Bid Validity specified in the **Data Sheet** (DS no. 11), or;
- b) If the Bid Security amount is found to be less than what is required by UNDP as indicated in the **Data Sheet** (DS no. 9), or;
- c) In the case the successful Bidder fails:
  - i. to sign the Contract after UNDP has awarded it;
  - ii. to comply with UNDP’s variation of requirement, as per ITB Clause 35; or

- iii. to furnish Performance Security, insurances, or other documents that UNDP may require as a condition to rendering effective the contract that may be awarded to the Bidder.

## **16. Price Schedule**

The Price Schedule shall be prepared using the attached standard form (Section 7). It shall list all major cost components associated with the goods and related services, and the detailed breakdown of such costs. All goods and services described in the Technical Bid must be priced separately on a one-to-one correspondence. Any output and activities described in the Technical Bid but not priced in the Price Schedule, shall be assumed to be included in the prices of the items or activities, as well as in the final total price of the bid.

## **17. Currencies**

All prices shall be quoted in the currency indicated in the **Data Sheet** (DS no. 15). However, where Bids are quoted in different currencies, for the purposes of comparison of all Bid:

- 17.1 UNDP will convert the currency quoted in the Bid into the UNDP preferred currency, in accordance with the prevailing UN operational rate of exchange on the last day of submission of Bid; and
- 17.2 In the event that the Bid found to be the most responsive to the ITB requirement is quoted in another currency different from the preferred currency as per **Data Sheet** (DS no. 15), then UNDP shall reserve the right to award the contract in the currency of UNDP's preference, using the conversion method specified above.

## **18. Documents Establishing the Eligibility and Qualifications of the Bidder**

18.1 The Bidder shall furnish documentary evidence of its status as an eligible and qualified vendor, using the forms provided under Section 5, Bidder Information Forms. In order to award a contract to a Bidder, its qualifications must be documented to UNDP's satisfactions. These include, but are not limited to the following:

- a) That, in the case of a Bidder offering to supply goods under the Contract which the Bidder did not manufacture or otherwise produce, the Bidder has been duly authorized by the goods' manufacturer or producer to supply the goods in the country of final destination;
- b) That the Bidder has the financial, technical, and production capability necessary to perform the Contract; and
- c) That, to the best of the Bidder's knowledge, it is not included in the UN 1267 List or the UN Ineligibility List, nor in any and all of UNDP's list of suspended and removed vendors.

18.2 Bids submitted by two (2) or more Bidders shall all be rejected by UNDP 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
- c) they have the same legal representative for purposes of this ITB; or
- d) 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 ITB process;
- e) 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
- f) an expert proposed to be in the bid of one Bidder participates in more than one Bid received for this ITB process. This condition does not apply to subcontractors being included in more than one Bid.

## **19. Joint Venture, Consortium or Association**

If the Bidder is a group of legal entities that will form or have formed a joint venture, consortium or association at the time of the submission of 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 joint venture jointly and severally, and this shall be duly evidenced by a duly notarized Agreement among the legal entities, which shall be submitted along with the Bid; and (ii) if they are awarded the contract, the contract shall be entered into, by and between UNDP and

the designated lead entity, who shall be acting for and on behalf of all entities that comprise the joint venture.

After the bid has been submitted to UNDP, the lead entity identified to represent the joint venture shall not be altered without the prior written consent of UNDP. Furthermore, neither the lead entity nor the member entities of the joint venture can:

- a) Submit another Bid, either in its own capacity; nor
- b) As a lead entity or a member entity for another joint venture submitting another Bid.

The description of the organization of the joint venture/consortium/association must clearly define the expected role of each of the entity in the joint venture in delivering the requirements of the ITB, both in the bid and in the Joint Venture Agreement. All entities that comprise the joint venture shall be subject to the eligibility and qualification assessment by UNDP.

Where a joint venture is presenting its track record and experience in a similar undertaking as those required in the ITB, it should present such information in the following manner:

- a) Those that were undertaken together by the joint venture; and
- b) Those that were undertaken by the individual entities of the joint venture expected to be involved in the performance of the services defined in the ITB.

Previous contracts completed by individual experts working privately but who are permanently or were temporarily associated with any of the member firms cannot be claimed as the experience of the joint venture or those of its members, but should only be claimed by the individual experts themselves in their presentation of their individual credentials.

If the Bid of a joint venture is determined by UNDP as the most responsive Bid that offers the best value for money, UNDP shall award the contract to the joint venture, in the name of its designated lead entity, who shall sign the contract for and on behalf of all the member entities.

## **20. Alternative Bid**

Unless otherwise specified in the **Data Sheet** (DS nos. 5 and 6), alternative bid shall not be considered. Where the conditions for its acceptance are met, or justifications are clearly established, UNDP reserves the right to award a contract based on an alternative bid.

## **21. Validity Period**

21.1 Bid shall remain valid for the period specified in the **Data Sheet** (DS no. 8), commencing on the submission deadline date also indicated in the **Data Sheet** (DS no. 21). A Bid valid for a shorter period shall be immediately rejected by UNDP and rendered non-responsive.

21.2 In exceptional circumstances, prior to the expiration of the Bid validity period, UNDP may request Bidders to extend the period of validity of their Bid. The request and the responses shall be made in writing, and shall be considered integral to the Bid.

## **22. Bidder's Conference**

When appropriate, a Bidder's conference will be conducted at the date, time and location specified in the **Data Sheet** (DS no. 7). All Bidders are encouraged to attend. Non-attendance, however, shall not result in disqualification of an interested Bidder. Minutes of the Bidder's conference will be either posted on the UNDP website, or disseminated to the individual firms who have registered or expressed interest with the contract, whether or not they attended the conference. No verbal statement made during the conference shall modify the terms and conditions of the ITB unless such statement is specifically written in the Minutes of the Conference, or issued/posted as an amendment in the form of a Supplemental Information to the ITB.

# **D. SUBMISSION AND OPENING OF BID**

## **23. Submission**

23.1 The Technical Bid and the Price Schedule **must be submitted together and sealed together in one and the same envelope**, delivered either personally, by courier, or by electronic method of transmission. If submission will not be done by electronic means, the Technical Bid and Price Schedule must be sealed together in an envelope whose external side must:



- a) Bear the name of the Bidder;
- b) Be addressed to UNDP as specified in the **Data Sheet** (DS no.20); and
- c) Bear a warning not to open before the time and date for Bid opening as specified in the **Data Sheet** (DS no. 24).

If the envelope is not sealed nor labeled as required, the Bidder shall assume the responsibility for the misplacement or premature opening of Bid due to improper sealing and labeling by the Bidder.

23.2 Bidders must submit their Bid in the manner specified in the **Data Sheet** (DS nos. 22 and 23). When the Bid is expected to be in transit for more than 24 hours, the Bidder must ensure that sufficient lead time has been provided in order to comply with UNDP's deadline for submission. UNDP shall indicate for its record that the official date and time of receiving the Bid is the actual date and time when the said Bid has physically arrived at the UNDP premises indicated in the **Data Sheet** (DS no. 20).

23.3 Bidders submitting Bid by mail or by hand shall enclose the original and each copy of the Bid, in separate sealed envelopes, duly marking each of the envelopes as "Original Bid" and the others as "Copy of Bid". The two envelopes, consisting of original and copies, shall then be sealed in an outer envelope. The number of copies required shall be as specified in the **Data Sheet** (DS no. 19). In the event of any discrepancy between the contents of the "Original Bid" and the "Copy of Bid", the contents of the original shall govern. The original version of the Bid shall be signed or initialed by the Bidder or person(s) duly authorized to commit the Bidder on every page. The authorization shall be communicated through a document evidencing such authorization issued by the highest official of the firm, or a Power of Attorney, accompanying the Bid.

23.4 Bidders must be aware that the mere act of submission of a Bid, in and of itself, implies that the Bidder accepts the General Contract Terms and Conditions of UNDP as attached hereto as Section 11.

#### **24. Deadline for Submission of Bid and Late Bids**

Bid must be received by UNDP at the address and no later than the date and time specified in the **Data Sheet** (DS no. 20 and 21).

UNDP shall not consider any Bid that arrives after the deadline for submission of Bid. Any Bid received by UNDP after the deadline for submission of Bid shall be declared late, rejected, and returned unopened to the Bidder.

#### **25. Withdrawal, Substitution, and Modification of Bid**

25.1 Bidders are expected to have sole responsibility for taking steps to carefully examine in detail the full consistency of its Bid to the requirements of the ITB, keeping in mind that material deficiencies in providing information requested by UNDP, or lack clarity in the description of goods and related services to be provided, may result in the rejection of the Bid. The Bidder shall assume any responsibility regarding erroneous interpretations or conclusions made by the Bidder in the course of understanding the ITB out of the set of information furnished by UNDP.

25.2 A Bidder may withdraw, substitute or modify its Bid after it has been submitted by sending a written notice in accordance with ITB Clause 23, duly signed by an authorized representative, and shall include a copy of the authorization (or a Power of Attorney). The corresponding substitution or modification of the Bid must accompany the respective written notice. All notices must be received by UNDP prior to the deadline for submission and submitted in accordance with ITB Clause 23 (except that withdrawal notices do not require copies). The respective envelopes shall be clearly marked "WITHDRAWAL," "SUBSTITUTION," or "MODIFICATION".

25.3 Bid requested to be withdrawn shall be returned unopened to the Bidders.

25.4 No Bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of Bid and the expiration of the period of Bid validity specified by the Bidder

on the Bid Submission Form or any extension thereof.

## **26. Bid Opening**

UNDP will open the Bid in the presence of an ad-hoc committee formed by UNDP of at least two (2) members. If electronic submission is permitted, any specific electronic Bid opening procedures shall be as specified in the **Data Sheet** (DS no. 23).

The Bidders' names, modifications, withdrawals, the condition of the envelope labels/seals, the number of folders/files and all other such other details as UNDP may consider appropriate, will be announced at the opening. No Bid shall be rejected at the opening stage, except for late submission, for which the Bid shall be returned unopened to the Bidder.

## **27. Confidentiality**

Information relating to the examination, evaluation, and comparison of Bid, and the recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with such process, even after publication of the contract award.

Any effort by a Bidder to influence UNDP in the examination, evaluation and comparison of the Bid or contract award decisions may, at UNDP's decision, result in the rejection of its Bid.

In the event that a Bidder is unsuccessful, the Bidder may seek a meeting with UNDP for a debriefing. The purpose of the debriefing is discussing the strengths and weaknesses of the Bidder's submission, in order to assist the Bidder in improving the bid presented to UNDP. The content of other bid and how they compare to the Bidder's submission shall not be discussed.

## **E. EVALUATION OF BID**

### **28. Preliminary Examination of Bid**

UNDP shall examine the Bid to determine whether they are complete with respect to minimum documentary requirements, whether the documents have been properly signed, whether or not the Bidder is in the UN Security Council 1267/1989 Committee's list of terrorists and terrorist financiers, and in UNDP's list of suspended and removed vendors, and whether the Bid are generally in order, among other indicators that may be used at this stage. UNDP may reject any Bid at this stage.

### **29. Evaluation of Bid**

29.1 UNDP shall examine the Bid to confirm that all terms and conditions under the UNDP General Terms and Conditions and Special Conditions have been accepted by the Bidder without any deviation or reservation.

29.2 The evaluation team shall review and evaluate the Bids on the basis of their responsiveness to the Schedule of Requirements and Technical Specifications and other documentation provided, applying the procedure indicated in the **Data Sheet** (DS No. 25). Absolutely no changes may be made by UNDP in the criteria after all Bids have been received.

29.1 UNDP reserves the right to undertake a post-qualification exercise, aimed at determining, to its satisfaction the validity of the information provided by the Bidder. Such post-qualification shall be fully documented and, among those that may be listed in the **Data Sheet** (DS No.33), may include, but need not be limited to, all or any combination of the following:

- a) Verification of accuracy, correctness and authenticity of the information provided by the bidder on the legal, technical and financial documents submitted;
- b) Validation of extent of compliance to the ITB requirements and evaluation criteria based on what has so far been found by the evaluation team;
- c) Inquiry and reference checking with Government entities with jurisdiction on the bidder, or any other entity that may have done business with the bidder;
- d) Inquiry and reference checking with other previous clients on the quality of performance on on-going or previous contracts completed;
- e) Physical inspection of the bidder's plant, factory, branches or other places where business transpires, with or without notice to the bidder;
- f) Testing and sampling of completed goods similar to the requirements of UNDP, where available; and

- g) Other means that UNDP may deem appropriate, at any stage within the selection process, prior to awarding the contract.

### **30. Clarification of Bid**

To assist in the examination, evaluation and comparison of bids, UNDP may, at its discretion, ask any Bidder to clarify its Bid.

UNDP's request for clarification and the Bidder's response shall be in writing. Notwithstanding the written communication, no change in the prices or substance of the Bid shall be sought, offered, or permitted, except to provide clarification, and confirm the correction of any arithmetic errors discovered by UNDP in the evaluation of the Bid, in accordance with ITB Clause 35.

Any unsolicited clarification submitted by a Bidder in respect to its Bid, which is not a response to a request by UNDP, shall not be considered during the review and evaluation of the Bid.

### **31. Responsiveness of Bid**

UNDP's determination of a Bid's responsiveness will be based on the contents of the Bid itself.

A substantially responsive Bid is one that conforms to all the terms, conditions, and specifications of the ITB without material deviation, reservation, or omission.

If a Bid is not substantially responsive, it shall be rejected by UNDP and may not subsequently be made responsive by the Bidder by correction of the material deviation, reservation, or omission.

### **32. Nonconformities, Repairable Errors and Omissions**

32.3 Provided that a Bid is substantially responsive, UNDP may waive any non-conformities or omissions in the Bid that, in the opinion of UNDP, do not constitute a material deviation.

32.4 Provided that a Bid is substantially responsive, UNDP may request the Bidder to submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities or omissions in the Bid related to documentation requirements. Such omission shall not be related to any aspect of the price of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.

32.5 Provided that the Bid is substantially responsive, UNDP shall correct arithmetical errors as follows:

- a) if there is a discrepancy between the unit price and the line item total that is obtained by multiplying the unit price by the quantity, the unit price shall prevail and the line item total shall be corrected, unless in the opinion of UNDP there is an obvious misplacement of the decimal point in the unit price, in which case the line item total as quoted shall govern and the unit price shall be corrected;*
- b) if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and*
- c) if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to the above.*

32.6 If the Bidder does not accept the correction of errors made by UNDP, its Bid shall be rejected.

## **F. AWARD OF CONTRACT**

### **33. Right to Accept, Reject, or Render Non-Responsive Any or All Bid**

33.1 UNDP reserves the right to accept or reject any Bid, to render any or all of the Bids as non-responsive, and to reject all Bids at any time prior to award of contract, without incurring any liability, or obligation to inform the affected Bidder(s) of the grounds for UNDP's action. Furthermore, UNDP is not obligated to award the contract to the lowest price offer.

33.2 UNDP shall also verify, and immediately reject their respective Bid, if the Bidders are found to appear in the UN's Consolidated List of Individuals and Entities with Association to Terrorist Organizations, in the List of Vendors Suspended or Removed from the UN Secretariat Procurement Division Vendor Roster, the UN Ineligibility List, and other such lists that as may be established or recognized by UNDP policy on Vendor Sanctions. (See [http://www.undp.org/content/undp/en/home/operations/procurement/procurement\\_p\\_rotest/](http://www.undp.org/content/undp/en/home/operations/procurement/procurement_p_rotest/))

**34. Award Criteria**

Prior to expiration of the period of Bid validity, UNDP shall award the contract to the qualified and eligible Bidder that is found to be responsive to the requirements of the Schedule of Requirements and Technical Specification, and has offered the lowest price (See DS No. 32).

**35. Right to Vary Requirements at the Time of Award**

At the time of award of Contract, UNDP reserves the right to vary the quantity of the goods and/or related services, 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.

**36. Contract Signature**

Within fifteen (15) days from the date of receipt of the Contract, the successful Bidder shall sign and date the Contract and return it to UNDP.

Failure of the successful Bidder to comply with the requirement of ITB Section F.3 and this provision shall constitute sufficient grounds for the annulment of the award, and forfeiture of the Bid Security if any, and on which event, UNDP may award the Contract to the Bidder with the second highest rated Bid, or call for new Bid.

**37. Performance Security**

A performance security, if required, shall be provided in the amount and form provided in Section 9 and by the deadline indicated in the **Data Sheet** (DS no. 14), as applicable. Where a Performance Security will be required, the submission of the said document, and the confirmation of its acceptance by UNDP, shall be a condition for the affectivity of the Contract that will be signed by and between the successful Bidder and UNDP.

**38. Bank Guarantee for Advanced Payment**

Except when the interests of UNDP so require, it is the UNDP's preference to make no advanced payment(s) on contracts (i.e., payments without having received any outputs). In the event that the Bidder requires an advanced payment upon contract signature, and if such request is duly accepted by UNDP, and the said advanced payment exceeds 20% of the total Bid price, or exceed the amount of USD 30,000, UNDP shall require the Bidder to submit a Bank Guarantee in the same amount as the advanced payment. A bank guarantee for advanced payment shall be furnished in the form provided in Section 10.

**39. Vendor Protest**

UNDP's vendor protest procedure provides an opportunity for appeal to those persons or firms not awarded a purchase order or contract through a competitive procurement process. In the event that a Bidder believes that it was not treated fairly, the following link provides further details regarding UNDP vendor protest procedures: <http://www.undp.org/procurement/protest.shtml>

## Instructions to Bidders

### DATA SHEET

The following data for the supply of goods and related services shall complement / supplement the provisions in the Instruction to Bidders. In the case of a conflict between the Instruction to Bidders and the Data Sheet, the provisions in the Data Sheet shall prevail.

<b>DS No.</b>	<b>Cross Ref. to Instructions</b>	<b>Data</b>	<b>Specific Instructions / Requirements</b>
1		Project Title:	Darfur Solar Electrification Project / Project #96657
2		Title of Goods/Services/Work Required:	Supply, Delivery, and Installation of Solar Energy System for 8 Villages in West & Central Darfur LOT 1: El Geneina, West Darfur State LOT 2: Zalengi, Central Darfur State
3		Country:	Republic of the Sudan
4	C.13	Language of the Bid:	<input checked="" type="checkbox"/> English <input checked="" type="checkbox"/> Arabic
5	C.20	Conditions for Submitting Partial Bid of the Total Requirements	<b>Not Allowed</b> The requirements of this procurement notice (ITB) have been divided into 2 LOTS, respectively: - <b>LOT 1 – El-Geneina, West Darfur State</b> - <b>LOT 2 – Zalengi, Central Darfur State</b>  Bidders must bid for <b>both LOTS</b> and should submit <b>a complete BID for each LOT</b> . However, UNDP reserve the right to award the contract to most responsive offer per LOT.
6	C.20	Conditions for Submitting Alternative Bid	Shall Not be considered.
7	C.22	A pre-Bid conference will be held on:	Time: 10:00 Hours (+3 GMT) Date: Wednesday August 31, 2016 Venue: UNDP Compound, House 7, Block 5, Gama'a Avenue, Khartoum
8	C.21.1	Period of Bid Validity commencing on the submission date	90 days
9	B.9.5 C.15.4 b)	Bid Security	<input checked="" type="checkbox"/> Required Amount: USD <b>10,000.00</b> or equivalent in local currency. UN Rate of Exchange is 1 USD = 6.446 SDG
10	B.9.5	Acceptable forms of Bid Security	- Bank Guarantee - Any Bank-issued Check / Cashier's Check / Certified Check The Bid Security shall name UNDP as the beneficiary.
11	B.9.5 C.15.4 a)	Validity of Bid Security	<b>90</b> days from the last day of Bid submission. Bid Security of unsuccessful Bidders shall be returned.
12		Advanced Payment upon signing of contract	At the discretion of UNDP, it may exceptionally consider advance payment maximum of 20% of contract amount or US Dollars 30,000 (or equivalent) to

			cover the mobilization cost whichever is the less.
13		Liquidated Damages	1) Will not be imposed, but payment will be released only upon confirmation by UNDP that quality of goods and services rendered was satisfactory, in accordance with Purchase Order (PO) terms and conditions; 2) However, the supplier will be required to replace the items that may be damaged during transportation to the specified destination. In such case/s replaced items shall bear the same specification as that of the damaged item/s
14	F.37	Performance Security	<b>Required</b> Amount: 10% of Contract Amount <b>Acceptable Forms:</b> a. Bank guarantee or irrevocable letter of credit, issued by a reputable bank (shall be in accordance with Form included in the Invitation to Bid Documents (Section 9)) b. Cashier's cheque or certified cheque
15	C.17 C.17.2	Preferred Currency of Bid and Method for Currency conversion	✓ Local Currency (SDG) or (USD) local Bidders; ✓ US Dollars (USD) or major convertible currency for international Bidders
16	B.10.1	Deadline for submitting requests for clarifications/ questions	1 <sup>st</sup> September 2016, 10:00 Hours (+3 GMT)
17	B.10.1	Contact Details for submitting clarifications/questions	UNDP Procurement Unit Address: United Nations Development Programme House No. 7, Block No. 5 Gama'a Avenue. E-mail: <a href="mailto:inquiry.procurement.sd@undp.org">inquiry.procurement.sd@undp.org</a>
18	B.11.1	Manner of Disseminating Supplemental Information to the ITB and responses/clarifications to queries	Direct communication to prospective Bidders by email, and Posting on the website <a href="http://intra.sd.undp.org/bids">http://intra.sd.undp.org/bids</a>
19	D.23.3	No. of copies of Bid that must be submitted	✓ Original: 1 (for courier and hand delivery submissions) ✓ Copy: 1 (on CD ROM or Flash for courier and hand delivery submissions) ✓ Original softcopy for email submissions.
20	D.23.1 b) D.23.2 D.24	Bid submission address	Head of Procurement Ref: <b>ITB/KRT/16/016-R1</b> United Nations Development Programme House 7 Block 5 Gama'a Avenue Khartoum, Sudan
21	C.21.1 D.24	Deadline of Bid Submission	Date and Time: 6 <sup>th</sup> September 2016 13:45 Hours (+3 GMT)
22	D.23.2	Manner of Submitting Bid	Courier/Hand Delivery; OR email ( <b>email submission is more preferred</b> )

23	D.23.2 D.26	Conditions and Procedures for electronic submission and opening, if allowed	<p>Official Address for e-submission:  <a href="mailto:procurement.sd@undp.org">procurement.sd@undp.org</a>            Free from virus and corrupted files</p> <p> <input checked="" type="checkbox"/> Format: PDF files only,  <input checked="" type="checkbox"/> Max. File Size per transmission: 10 MB  <input checked="" type="checkbox"/> Max. No. of transmission: Unlimited  <input checked="" type="checkbox"/> No. of copies to be transmitted: 1  <input checked="" type="checkbox"/> Mandatory subject of email: <b>ITB/KRT/16/016-R1</b>  <input checked="" type="checkbox"/> Time Zone to be Recognized: Sudan-Khartoum local time [GMT + 3:00 hours]         </p>
24	D.23.1 c)	Date, time and venue for opening of Bid	<ul style="list-style-type: none"> <li>✓ Bids will be opened in the presence of bidders' representatives who choose to attend:</li> <li>✓ Date and Time: 6<sup>th</sup> September 2016 14:00 Hours (+3 GMT)</li> <li>✓ Venue: UNDP Compound, Gama'a avenue, Khartoum</li> </ul>
25		Evaluation method to be used in selecting the most responsive Bid	<p>The evaluation will be undertaken for each lot <b>separately</b>. Each lot will be awarded <b>individually to the supplier</b> whose tender complied with the below evaluation method</p> <p> <input checked="" type="checkbox"/> Non-Discretionary "Pass/Fail" Criteria on the Technical Requirements; and  <input checked="" type="checkbox"/> Lowest price offer of technically qualified/responsive Bid         </p>
26	C.15.1	Required Documents that must be Submitted to Establish Qualification of Bidders (In "Certified True Copy" form only)	<ul style="list-style-type: none"> <li>✓ Company Profile, which should not exceed fifteen (15) pages, including printed brochures and product catalogues relevant to the goods/services being procured</li> <li>✓ Certificate of Registration of the business, including Articles of Incorporation, or equivalent document if Bidder is not a corporation</li> <li>✓ Latest Audited Financial Statement (Income statement and Balance Sheet) including Auditor's report for the past two years.</li> <li>✓ Statement of Satisfactory Performance from the Top 3 Clients in terms of Contract Value in the past 3 years</li> <li>✓ Official Letter of Appointment as local partner, if Bidder is submitting a Bid on behalf of an entity located outside the country</li> <li>✓ Quality Certificate (e.g., ISO, etc.) and/or other similar certificates, accreditations, awards and citations received by the Bidder, if any</li> <li>✓ Environmental Compliance Certificates, Accreditations, Markings/ Labels, and other evidences of the Bidder's practices which contributes to the ecological sustainability and reduction of adverse environmental impact (e.g., use of non-toxic substances, recycled raw materials, energy-efficient equipment, reduced carbon emission, etc.), either in its business practices or in the goods it manufactures or distribute.</li> </ul>

27		Other documents that may be Submitted to Establish Eligibility	<ul style="list-style-type: none"> <li>✓ Licence/Permit obtained from the Government of Sudan to operate in the Country [<b><i>It is a MUST for International Bidders</i></b>]</li> <li>✓ Specification of all offered equipment and materials (technical data sheets for all equipment and material which contractor plans to supply, catalogues, technical specifications, attests, and certificates)</li> </ul>
28	C.15	Structure of the Technical Bid and List of Documents to be Submitted	<p>Bids must be submitted in the following order including the page numbering for all pages (as hard copy, softcopy in CD ROM – or email PDF format):</p> <ol style="list-style-type: none"> <li>1. Signed Bid Submission form;</li> <li>2. Company Profile showing Qualifications and the Capabilities, 15 pages, maximum;</li> <li>3. Copy of Certificate of Registration of the business, including License/permission of operation in Sudan;</li> <li>4. At least five years of experience, Evidentiary Documents show relevant level of experience and knowledge on the Scope of Supply and Services;</li> <li>5. Experience with organizations that are similar in size and complexities as UN Agencies; List of top 3 Clients currently being served;</li> <li>6. Completed bidder Information Form (section 5) with all required attachments;</li> <li>7. Completed Joint Venture Partner Information Form (if Registered) and JV is opted as Bidding Company, with all attachments, otherwise do not use reference 7 in your submission;</li> <li>8. Completed all the 3 sections of Technical bid form (section 6) with required attachments;</li> <li>9. Technical documentation on the whole set of equipment and documents confirming the declared specifications;</li> <li>10. Information as per Section 3b Related Services.</li> </ol>
29	C.15.2	Latest Expected date for commencement of Contract	20 <sup>th</sup> September 2016
30	C.15.2	Maximum Expected duration of contract	Delivery of goods to Capital Cities must be within maximum of <b>12 weeks</b> from receipt of Purchase Order (PO). Duration of installation is 4 weeks from the notification that goods are delivered to villages.
31		UNDP will award the contract to:	<p>Each lot is awarded to the supplier who offers the most economically advantageous offer for that lot. The award can be for:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Two Suppliers: in the event where the evaluation exercise results in the selection of two winners; one winner per lot</li> <li><input checked="" type="checkbox"/> One Supplier: in the event where the evaluation results in the selection of one winner for both lots</li> </ul>
32	F.34	Criteria for the Award and Evaluation of Bid	<b>Award Criteria</b>



			<ul style="list-style-type: none"> <li>✓ Non-discretionary "Pass" or "Fail" rating on the detailed contents of the Schedule of Requirements and Technical Specifications</li> <li>✓ Compliance on the following qualification requirements:</li> </ul> <p><b>Bid Evaluation Criteria</b></p> <ul style="list-style-type: none"> <li>✓ Compliance to the Delivery Date (<b>15</b> days from the issuance of Purchase Order. Goods must be delivered to specified location by or before this deadline. Installation shall be completed by supplier upon notification of arrival of goods to specified villages.</li> <li>✓ Interested firms must have obtained appropriate permission/registration from relevant Corporation or governmental body to provide the legal status to operate in Sudan;</li> <li>✓ Minimum no. of years of experience in similar contracts: 3years;</li> <li>✓ Current Ratio of not less than 1.0 for the past three years. If liquidity ratio is less than 1.0, UNDP will verify financial stability/ strength of the Bidder and has the authority to seek references from concerned parties and banks on the Bidder' financial standing. UNDP shall have the right to reject any bid submitted by a Bidder proved to be not financially stable as a result of the verification of the Bidder's financial stability/strength;</li> <li>✓ Minimum no. of similar projects successfully completed over the past 3 years [3 projects];</li> <li>✓ Full compliance of Bid to the Technical requirements;</li> <li>✓ Warranty on parts and services for a minimum period as provided in specification requirements]</li> <li>✓ Confirmation of availability of local after sale services within warrantee period specified for each component item.</li> <li>✓ Acceptability of the Delivery to the proposed address within required period.</li> </ul>
33	E.29	Post qualification Actions	<ul style="list-style-type: none"> <li>✓ Verification of accuracy, correctness and authenticity of the information provided by the bidder on the legal, technical and financial documents submitted;</li> <li>✓ Validation of extent of compliance to the ITB requirements and evaluation criteria based on what has so far been found by the evaluation team;</li> <li>✓ Inquiry and reference checking with Government entities with jurisdiction on the bidder, or any other entity that may have done business with the bidder;</li> <li>✓ Inquiry and reference checking with other previous clients on the quality of performance on ongoing or previous contracts completed;</li> </ul>
34		Conditions for Determining Contract Effectivity	<p>Others</p> <p>Upon supplier's acceptance of and</p>

			signature of UNDP Purchase Order and its related General Terms and Conditions for Goods
35		Other Information Related to the ITB	<p><b>Marking of the envelope</b> (containing technical and financial bids in one envelope):  <b>From:</b> Bidder's name and address;  <b>Attention:</b> Head of Procurement Unit;  <b>Address:</b>  United Nations Development Programme,  House No. 7, Block No. 5, Gama'a Avenue, Khartoum  <b>Ref.:</b> ITB/KRT/16/016-R1  Supply, Delivery, and Installation of Solar Energy System for 8 Villages in West &amp; Central Darfur  <b>"Do not open before 6<sup>th</sup> September 2016 13:45 Hours"</b> (+3 GMT)  NOT TO BE OPENED BY REGISTRY</p>
36		Preliminary Examination of the Bids	<p>Memo to Offerors (Examples of Bid Rejection)  Bids have been rejected at the submission stage or found to be technically noncompliant due to errors in presentation and failure to follow bidding instructions. Below are some of the more common examples of why bids are rejected by UNDP. Bidders are urged to read this before submission and to check that their bid conforms to each of these points and the instructions as noted in the bidding documents.</p> <ul style="list-style-type: none"> <li>• Bid is submitted <b>after</b> the deadline for submission, either by hand or electronically. Emailed proposals sent just before the deadline may arrive after the deadline and be rejected. Therefore, make sure to submit your bids beforehand.</li> <li>• Bid not submitted to correct physical or electronic address. Note that the address for bid submission is different to the address for bid questions.</li> <li>• Bid is submitted as a single package, without separating technical and financial bid (including CDs).</li> <li>• Bid is not signed as per the instructions in the ITB.</li> <li>• Not all sufficient documents have been provided.</li> <li>• Documents provided are not in English or Arabic (as applicable)</li> <li>• Documents provided do not directly address each point of the evaluation criteria.</li> <li>• Bid is more like a brochure for the firm without specifically addressing the specific evaluation criteria of the ITB and TOR.</li> <li>• Bid does not offer goods or services which have been specifically requested by UNDP in the Terms of Reference/ Scope of Works</li> <li>• Failure to enclose the Bid Submission Form (see Section 4).</li> <li>• The Bidder failed to consult the UNDP website before the deadline for bid submission and did not see the changes to the ITB/TOR listed there which need to be incorporated in the bid.</li> </ul>

			<ul style="list-style-type: none"> <li>• The Bidder failed to read the minutes of the bidders' conference and to include the relevant points in their bid.</li> <li>• The bidder declines or proposes a major deviation to UNDP General Conditions of Contract (see Section 9).</li> <li>• Bid contains viruses and/or corrupted files. The bidders should ensure that submitted bids DO NOT contain viruses and/or corrupted files. Such bids will be rejected.</li> </ul> <p>The above examples illustrate some errors which may be made by bidders. This is a partial list. The bidding documents contain the full list of instructions relevant to each particular bid and should be followed carefully.</p>
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## **Section 3a: Schedule of Requirements, Technical Specifications, and Price Schedule Form**

### **3a.1: Schedule of Requirements and Technical Specifications**

Supply, delivery, and installation of solar energy systems for 8 villages in the West & Central Darfur.

The solar systems to be installed include:

1. Indoor lighting systems
2. Street lighting systems
3. Water pumping
4. Solar lanterns

Transportation of solar equipment and materials from state capital to villages under each LOT will be handled by UNDP. Contractor will be then requested to install the equipment after delivery made to villages.

### **General Installation and testing**

#### **1. General Standards for PV Modules and Components:**

- a. Recommended products are those which bear the Photovoltaic Global Approval Program (PV GAP) mark or seal or certified according to PVRs requirements. Products should be certified or compliant with the PV GAP Specifications.
- b. Organizations accredited to ISO 17025 or equivalent standards will be acceptable for issuing the component certifications. A maximum measurement of 3% is permitted on all tests of compliance.
- c. The applicable standards for individual system components have to be based on IEC standards for photovoltaic system components and new standards include qualification of junction boxes, connectors, PV cables, and module integrated electronics as well as for testing the packaging used during transport of modules.

#### **2. System Documentation**

The following as-built documentation required to be produced and maintained by the contractor during the course of the installation. Operation, Instruction and Maintenance Manuals, in English and Arabic language, should be provided with the Solar Systems. The following minimum details must be provided:

- *A small write-up (with a block diagram) on Solar System its components, PV module, battery, electronics and luminaire and expected performance.*
- *Clear instructions on the mounting*
- *Clear instructions about erection and mounting of PV module, angle of inclination and required civil works.*

#### **3. Certification Requirements**

1. Products must have a type-test certificate from an accredited testing and certification organization, and the system meets or exceeds the specifications given. Organizations accredited according to ISO 25 or equivalent standards will be acceptable for issuing the component certifications.
2. Solar PV components or systems that bear the photovoltaic Global Approval program (PV GAP) Mark or seal will be acceptable for use.
3. Solar PV module, battery, charge controllers, DC CFL, and DC/AC inverters that have been tested at an accredited testing institute and have a currently valid certification for use.

#### **4. Warranty and Services**

The contractor must provide the required warranty & services for solar system components as follows:

- i. Twenty-year warranty on PV modules (performance not less than 80% efficiency)
- ii. Five years' warranty on Batteries
- iii. Ten years' warranty on Inverter
- iv. Five-year warranty on lanterns
- v. Minimum 4000 hours' life time warranty on luminaries
- vi. Five years' warranty on charge controller
- vii. Five years' warranty on pump and its controller

The solar systems components that are required for all the above solar systems are specified in the following table (***Bidders are required to fill in this table as part of their bid submission***)

Qty	Technical Specifications	Proposed Brand/ Model	Country of Origin	Unit Price (Currency)
1	<p><b>1. Solar module 250 /100 WP</b> (Please provide the price for both sizes)</p> <ul style="list-style-type: none"> <li>✓ Only Crystalline modules are required and the relevant PVGAP standard is PVR52 "Crystalline silicon terrestrial photovoltaic (PV) modules" The applicable international standard for modules IEC 61215:1993 crystalline silicon terrestrial modules-design qualification and type Approval.</li> <li>✓ The flat-plate photovoltaic modules should comprise of no less than 36 series-connected single or poly-crystalline silicon solar cells</li> <li>✓ The PV modules must be warranted to retain at least 80% of its rated peak watt measured at STC for at least twenty years.</li> <li>✓ Each Module must be labeled indicating at minimum Manufacturer, Model Number, Serial Number, and Power Voltage &amp; Current at max. Watt, Open Circuit Voltage and Short Circuit Current.</li> <li>✓ Modules frame dimensions (35 x 29 mm and 1.7 mm thickness)</li> <li>✓ Module junction box with IP65, connector MC4 with 4 mm<sup>2</sup> cable (IEC)/12AWG (UL) with a length of 70% of module length.</li> <li>✓ The supplier is required to provide for each PV Module offered the following data: Equipment Origin, Type of Certification, I-V Curves, Dimensions, Warranty, any certificates for solar panels (TUV, IEC61215, ISO ..... etc.).</li> <li>✓ Transport, commissioning, testing and installation cost to be included in the price.</li> </ul>			
1	<p><b>2. Dry Battery 120Ah / 100Ah</b> (Please provide the price for all sizes)</p> <ul style="list-style-type: none"> <li>✓ Supply, delivery, and installation of high resolution day / night outdoor VRLA GEL battery of 12 years' design life in float service. With heavy duty grids, thicker plates,</li> <li>✓ Maximum depth of discharge (DOD) to about 60% of rated capacity.</li> <li>✓ Battery provides consistent performance and long service life.</li> <li>✓ Higher specific energy density and excellent high rate discharge characteristics.</li> <li>✓ It is Terminal Thread insert &amp; Bolt</li> <li>✓ The maximum permissible Self Discharge should not exceed 5% per month of rated capacity at 25C°.</li> <li>✓ The supplier is required to provide for each Battery offered the following data: <ul style="list-style-type: none"> <li>- The battery must be labeled indicating at minimum Manufacturer, Model Number, Voltage and Capacity.</li> <li>- Type of the battery (Gel)</li> <li>- Battery Voltage</li> <li>- Battery Capacity@C100</li> <li>- Life cycle</li> <li>- Battery performance versus Temperature</li> <li>- Warranty</li> </ul> </li> <li>✓ Transport, commissioning, testing and installation cost to be included in the price.</li> </ul>			

Qty	Technical Specifications	Proposed Brand/ Model	Country of Origin	Unit Price (Currency)
1	<p><b>3. Charge regulator / controller (20A, 30A &amp; 45 A) (Please provide the price for all sizes)</b></p> <ul style="list-style-type: none"> <li>✓ A solid state photovoltaic charge controller is required for all systems.</li> <li>✓ Charge controllers must be supplied with charge and discharge voltage set points (adjustable), which match the battery requirements to ensure adequate protection and cycling.</li> <li>✓ The charge controller must ensure safe and reliable operation in the temperature range 5 C° – 40C°.</li> <li>✓ Charge controllers with electro-mechanical relays are not accepted.</li> <li>✓ Self-consumption must be below 10mA.</li> <li>✓ Connection terminals must easily admit cables of 6mm<sup>2</sup> minimum.</li> <li>✓ Charge controller housing must offer a protection at least IP22. And that used for street light should be IP68.</li> <li>✓ Charge controller must offer at least signs for Charging Mode, battery state of charge and load disconnect.</li> <li>✓ Charge controller must have labeled indicating at minimum Manufacturer, model number, voltage &amp; current ratings.</li> <li>✓ Circuit Protection: - <ul style="list-style-type: none"> <li>– Battery overcharge and excessive water loss.</li> <li>– Battery undercharge and excessive deep discharge.</li> <li>– Circuit protection against short circuit of any load.</li> <li>– Circuit protection against reverse polarity of any load.</li> <li>– Circuit protection against reverse polarity of module or battery.</li> <li>– Circuit protection against damage by the high PV open circuit voltage when it is connected to the controller without battery.</li> </ul> </li> <li>✓ The supplier is required to provide for each Charge Controller offered the following data: <ul style="list-style-type: none"> <li>– The charge controller must be labeled indicating at minimum manufacturer, Model Number, Voltage, PV and Load Currents.</li> <li>– Type of the controller (Series/Shunt, etc.)</li> <li>– Operating Voltage(s)/ PV and Load Currents.</li> <li>– Indicators, Battery Sensor.</li> </ul> </li> </ul> <p>Transport, commissioning, testing and installation cost to be included in the price.</p>			
1	<p><b>4- DC/AC Inverters (Please do not provide price for this item here, but please refer to Annex 1 for bid price)</b></p> <ul style="list-style-type: none"> <li>✓ Pure sine wave output of 230Vac</li> <li>✓ Inverters should be labeled indicating minimum Manufacturer, Model Number, Power Rating, Voltages and Frequency.</li> <li>✓ Total Harmonic Distortion (THD) should be &lt; 4%</li> <li>✓ The inverter should have protection against Reverse Polarity, AC Short Circuit, AC Overload, High Voltage Disconnect, Low Battery Disconnect and High Temperature Disconnect</li> </ul>			

Qty	Technical Specifications	Proposed Brand/ Model	Country of Origin	Unit Price (Currency)
	<ul style="list-style-type: none"> <li>✓ The supplier is required to provide full specifications for each DC/AC Inverter offered like the following data: <ul style="list-style-type: none"> <li>– System rating (W/VA)</li> <li>– Input Voltage (DC)</li> <li>– Output Voltage (AC)</li> <li>– Output Frequency and Waveform</li> <li>– Warranty</li> </ul> </li> </ul>			
1	<p><b>5. LED - DC Lamp (11 W/ 9 W) (Please provide the price for both sizes)</b></p> <ul style="list-style-type: none"> <li>✓ LED lamps should have a nominal voltage of 12 VDC</li> <li>✓ LED Lamps must ensure safe and reliable operation in the temperature range -5C<sup>0</sup> to 50 C<sup>0</sup>.</li> <li>✓ Minimum Lumen efficiency required is 25lm/W.</li> <li>✓ LED lamps should be marked with Manufacturer name, model, rated voltage and Watt.</li> <li>✓ Performance guarantee should cover 3 Years.</li> <li>✓ Vacuum metallic-membrane plating reflector, high-purity aluminum reflector, light housing and heating body, high intensity toughened glass covers</li> <li>✓ Uses single powerful LED as the light source</li> <li>✓ Utilizes the special design of multichip single module. Imported high brightness semiconductor chips.</li> <li>✓ Integrative design for heat sink and housing; The LED is closely connected to the surface.</li> <li>✓ The heat from LED is removed through the heat dissipation wing and also by the air ventilation.</li> <li>✓ The design should ensure a 50,000 hours' life-span for</li> <li>✓ The LED. If it works 12 hours per day, it can work over 10 years' lifetime</li> <li>✓ The die-casting aluminum alloy housing is effective in waterproofing and dust prevention.</li> <li>✓ It also helps in removing the heat properly. The surface of the light is specially treated, so it is able to bear an ultraviolet ray and resist to corrosion. The whole light meets the standard of IP65</li> <li>✓ No ill glare; no abrupt and frequent flashes. The design ensures that bad</li> <li>✓ glare is eliminated, vision fatigue and disturbance aroused by traditional</li> <li>✓ Street light and also can improves the safety of the driving.</li> <li>✓ No delay start; no waiting. It can reach its normal light as soon as it is turned on.</li> <li>✓ Environment friendly. Does not have lead, hydrargyrum, and any other</li> <li>✓ Contamination. No pollution to the air.</li> <li>✓ Provide high reliability connection of the solar panel, battery and charge controller.</li> <li>✓ Transport, commissioning, testing and installation cost to be included in the price.</li> </ul>			
1	<p><b>6. Portable Lanterns: (Please do not provide price for this item here, but please refer to Annex 1 for bid price)</b></p> <ul style="list-style-type: none"> <li>✓ Portable lanterns shall be integrated rechargeable units comprising of LED lamp, battery storage and associated control.</li> <li>✓ The lantern shall be suitable for charging 12V DC supply through an appropriate jack.</li> </ul>			

Qty	Technical Specifications	Proposed Brand/ Model	Country of Origin	Unit Price (Currency)
	<ul style="list-style-type: none"> <li>✓ The lantern shall provide 3600 coverage with 400 lumens for a minimum of 6hours /day. The lamp shall be 7W LED or equivalent.</li> <li>✓ The lantern shall provide indications of the status of the battery conditions. It shall be protected for reverse polarity.</li> <li>✓ The lantern shall be supplied with a charging cable and 10Wp PV crystalline module.</li> </ul> <p>Transport, commissioning, testing and installation cost to be included in the price.</p>			
1	<p><b>7. Solar Pumps:</b> Systems shall be sized by the supplier to meet the performance requirements below: (Please do not provide price for this item here, but please refer to Annex 1 for bid price)</p> <ul style="list-style-type: none"> <li>✓ The PV pump system shall include a solar array, wiring, Module Support Structure for Solar array , power conditioner, submersible pump, pump electrical cables, Pump security wire clamp, galvanize pipe and fittings, borehole cover, earthling , flow meter.</li> <li>✓ The pump system shall deliver at least the quantity of water in (m3/day) at the total pumping head in (m), under local solar radiation conditions.</li> <li>✓ The pump shall be a submersible electrical borehole pump, and surface mount or shaft driven pumps are not acceptable.</li> <li>✓ The pump motor may be either AC or DC operated, and the pump impeller may be centrifugal, positive displacement, or rotating helix type. The only requirement is that the maintenance demands of the pump should be minimal, and the pump is intended to be operated down the borehole for 10 years without maintenance. Pumps which will require replacement of brushes, diaphragms, bushings or other components as part of routine maintenance during this period are not acceptable.</li> <li>✓ Pumps shall be supplied with the following protections: <ul style="list-style-type: none"> <li>– Dry running protection.</li> <li>– Thermal overload protection.</li> <li>– Over and under voltage protection.</li> </ul> </li> <li>✓ The contractor is required to size the complete PV pump system and ensure that it meets the performance requirements above.</li> <li>✓ PV Pump system performance curves shall be provided at time of tender for the expected solar and hydraulic conditions. Daily water output curves shall be provided; Instantaneous output curves may be provided. Pump performance shall be tested during the "Test or "Blueprint" installation to ensure compliance before acceptance.</li> </ul> <p>Transport, commissioning, testing and installation cost to be included in the price.</p>			
1	<p><b>8. Street Light Systems (Complete set):</b> (Please do not provide price for this item here, but please refer to Annex 1 for bid price)</p> <p>1) DUTY CYCLE: The system should automatically switch is ON at dusk, operate throughout the night and automatically switch is OFF at the dawn.</p> <p>The terminal box on the module should have a provision for</p>			



Qty	Technical Specifications	Proposed Brand/ Model	Country of Origin	Unit Price (Currency)
	<p>opening for replacing the cable</p> <p><b>Battery:</b> and the following specifications are applied:</p> <p><b>Lamps LED DC lamps (16W)</b></p> <p>the light output from the lamps should be around <math>900 \pm 5</math> % lumens</p> <p>The lamp should be housed in an assembly suitable for outdoor use, with a reflector on its back.</p> <p><b>MECHANICAL HARDWARE:</b></p> <ul style="list-style-type: none"> <li>- A metallic frame structure (with corrosion resistance paint) to be fixed on the pole to hold the SPV module(s).</li> <li>- The frame structure should have adjustable angle of inclination to the horizontal between 0 and 45.</li> <li>- The pole should be made of mild steel pipe with a height of 4 meters above the ground level, after grouting and final installation.</li> <li>- The pole should have the provision to hold the weather proof lamp housing. It should be painted with a corrosion resistant paint.</li> <li>- Corrosion resistant painted metallic box for housing the battery.</li> <li>- Concrete base housing the battery, well ventilated with lock.</li> </ul> <p>Transport, commissioning, testing and installation cost to be included in the price.</p>			
<p><b>WARRANTY REQUIREMENTS:</b></p> <ul style="list-style-type: none"> <li>✓ Twenty years' warranty on PV modules (performance not less than 80% efficiency)</li> <li>✓ Five years' warranty on Batteries</li> <li>✓ Ten years' warranty on Inverter</li> <li>✓ Five-year warranty on lanterns</li> <li>✓ Minimum 4000 hours' life time warranty on luminaries</li> <li>✓ Five years' warranty on charge controller</li> <li>✓ Five years' warranty on pump and its controller</li> </ul>				

### **3a.2 Price Schedule Form**

Please refer to Annex 1 to this ITB for comprehensive price schedule to be carefully read, completed with bid price, signed and stamped by the bidders.

For the purpose of bid price, please note that entire requirement is grouped under LOT 1 and LOT 2 as stated below

LOT 1 El Geneina, West Darfur State;

LOT 2 Zalengi, Central Darfur State.

Kindly note that below table is an integrated part of bid price and must be completed signed and stamped by the bidders. This must be completed as submitted as a part of the Price Proposal, failing which bid may be disqualified.

#### **Price Schedule Form**

No.	Lot Number	Site No./ Name	Total Price Per Site (Currency)
1	LOT 1	1- Makada	
		2 - Kododule	
		3 - Angamy	
		4 – Um Sebakha	
		5 - Tandalti	
	Lot 1 Sub Total		
	Add: Value Added Tax –VAT (if any)		
	Add: Other related costs (if any)- please specify		
	Total final and all-inclusive price (DDP delivery to Elgeniena, West Darfur State)		
2	LOT 2	6 - Tololo	
		7 - Danarat Elnour	
		8 - Solo	
	Lot 2 Sub Total		
	Add: Value Added Tax –VAT (if any)		
	Add: Other related costs (if any)- please specify		
	Total final and all-inclusive price (DDP delivery to Zalengi, Central Darfur State)		
	Grand Total for Lot 1 and Lot 2		

Company/ Business Name:

Authorized Person:

Title:

Mailing Address

Contact Number (s):

Email:

Signature:

Date:

Stamp:

### **Section 3.b: Related Services**

Further to the Schedule of Requirements in the preceding Table, Bidders are requested to take note of the following additional requirements, conditions, and related services pertaining to the fulfillment of the requirements:

Delivery Term [INCOTERMS 2010] (Pls. link this to price schedule)	DDP to destinations specified in address below
Exact Address of Delivery/Installation Location	<ol style="list-style-type: none"> <li>1. Delivery of equipment for villages (Makada, Kododule, Angamy, Um Sebakha, and Tandalti) will be made DDP (INCOTERM 2010) Elgeniena, West Darfur State</li> <li>2. Delivery of equipment for villages (Tololo, Danarat Elnour, and Solo) will be made DDP (INCOTERM 2010) Zalengi, Central Darfur State. Contact person, exact address, and contact details of focal person to receive the goods in specified locations will be shared with selected supplier at time of delivery.</li> </ol>
Mode of Transport	Up to the contractor to decide so long as delivery date is met
Delivery Date	Delivery of goods to Capital Cities must be within maximum of <b>12 weeks</b> from receipt of Purchase Order (PO). Duration of installation is 4 weeks from the notification that goods are delivered to villages.
Customs, if needed, clearing shall be done by:	Supplier
Inspection upon delivery	<ul style="list-style-type: none"> <li>✓ The UNDP shall inspect the equipment on receipt at destination.</li> <li>✓ In case the goods fully comply with the contract specifications, UNDP shall issue the Delivery and Acceptance Certificate, which will be the ground for payment upon delivery of equipment.</li> <li>✓ In case the goods do not fully comply with the contract specifications, the goods will not be accepted and received by UNDP.</li> <li>✓ If the equipment fails to meet the contract specifications, the Supplier shall take immediate steps to remedy the deficiency or replace the entire defective equipment at his own cost to the specified specification.</li> </ul>
Installation Requirements	<ul style="list-style-type: none"> <li>✓ The Supplier shall carry out installation and further make sure that supervision of installation of equipment is appropriately conducted to ensure quality of the installation;</li> <li>✓ The UNDP shall not be responsible for any costs and other needs of the Supplier's staff, i.e. accommodation, food, transportation and travel, fuel, insurance, daily allowance and expenses, etc. (if any). The Supplier shall include such and related costs (salary and overhead) costs into the bid price.</li> </ul>
Technical Support Requirements	Yes, by supplier
Packing and Labeling Requirements	Each village equipment must be packed in separate robust wooden crate and labeled with village name, LOT number, number of boxes, and PO reference
Payment Terms (max. advanced payment is 20% of total price as per UNDP policy)	<ol style="list-style-type: none"> <li>1) 20% of contract value or USD30,000 whichever is less for the mobilization advance upon signature of contract;</li> <li>2) Payment can be made partially for any portion of goods delivered to state headquarters and accepted</li> </ol>

	<p>by UNDP excluding those damaged or those not meeting the specification;</p> <p>3) All the reminder from the Contract will be paid only upon final completion of installation and their acceptance by UNDP. This includes the replacement of the defective goods to the specified specification.</p>
Conditions for Release of Payment	Certification of payment in part or full from the UNDP authorized staff
After-sale services required	Warranty on Parts and Labor for minimum period of as mentioned in Section 3a
All documentations, including catalogs, instructions and operating manuals, shall be in this language	<input checked="" type="checkbox"/> English <input checked="" type="checkbox"/> Arabic

**Section 4: Bid Submission Form<sup>1</sup>**

**(This should be written in the Letterhead of the Bidder. Except for indicated fields, no changes may be made in this template.)**

Khartoum, Sudan

Date: \_\_\_\_\_

To: Procurement Unit

Dear Sir/Madam:

We, the undersigned, hereby offer to supply the services required for supply, delivery and installation of solar energy system in accordance with your Invitation to Bid dated August 28, 2016. We are hereby submitting our Bid, which includes the Technical Bid and Price Schedule.

We hereby declare that:

- a) All the information and statements made in this Bid are true and we accept that any misrepresentation contained in it may lead to our disqualification;
- b) We are currently not on the removed or suspended vendor list of the UN or other such lists of other UN agencies, nor are we associated with, any company or individual appearing on the 1267/1989 list of the UN Security Council;
- c) We have no outstanding bankruptcy or pending litigation or any legal action that could impair our operation as a going concern; and
- d) We do not employ, nor anticipate employing, any person who is or was recently employed by the UN or UNDP.

We confirm that we have read, understood and hereby accept the Scope of Works describing the duties and responsibilities required of us in this ITB, and the General Terms and Conditions of UNDP's Contract for Works.

We agree to abide by this Proposal for **90** days

We undertake, if our bid is accepted, to initiate the services not later than the date indicated in the Data Sheet.

We fully understand and recognize that UNDP is not bound to accept this bid; that we shall bear all costs associated with its preparation and submission, and that UNDP will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the evaluation.

We remain,

Yours sincerely,

Company/ Business Name:

Authorized Person:

Title:

Mailing Address

Contact Number (s):

Email:

Signature:

Date:

<sup>1</sup> No deletion or modification may be made in this form. Any such deletion or modification may lead to the rejection of the Bid.

**Section 5: Documents Establishing the Eligibility and Qualifications of the Bidder**  
Bidder Information Form<sup>2</sup>

Date: *[insert date (as day, month and year) of Bid Submission]*

ITB No.: ITB/KRT/16/016-R1

Page \_\_\_\_\_ of \_\_\_\_\_ pages

1. Bidder's Legal Name <i>[insert Bidder's legal name]</i>		
2. In case of Joint Venture (JV), legal name of each party: <i>[insert legal name of each party in JV]</i>		
3. Actual or intended Country/ies of Registration/Operation: <i>[insert actual or intended Country of Registration]</i>		
4. Year of Registration in its Location: <i>[insert Bidder's year of registration]</i>		
5. Countries of Operation	6. No. of staff in each Country	7. Years of Operation in each Country
8. Legal Address/es in Country/ies of Registration/Operation: <i>[insert Bidder's legal address in country of registration]</i>		
9. Value and Description of Top three (3) Biggest Contract for the past five (5) years		
10. Latest Credit Rating (Score and Source, if any): <b>Not required</b>		
11. Brief description of litigation history (disputes, arbitration, claims, etc.), indicating current status and outcomes, if already resolved.		
12. Bidder's Authorized Representative Information Name: <i>[insert Authorized Representative's name]</i> Address: <i>[insert Authorized Representative's Address]</i> Telephone/Fax numbers: <i>[insert Authorized Representative's telephone/fax numbers]</i> Email Address: <i>[insert Authorized Representative's email address]</i>		
13. Are you in the UNPD List 1267.1989 or UN Ineligibility List? <input type="checkbox"/> YES or <input type="checkbox"/> NO		
14. Attached are copies of original documents of: <input type="checkbox"/> All eligibility document requirements listed in the Data Sheet <input type="checkbox"/> If Joint Venture/Consortium – copy of the Memorandum of Understanding/Agreement or Letter of Intent to form a JV/Consortium, or Registration of JV/Consortium, if registered <input type="checkbox"/> If case of Government corporation or Government-owned/controlled entity, documents establishing legal and financial autonomy and compliance with commercial law.		

<sup>2</sup> The Bidder shall fill in this Form in accordance with the instructions. Apart from providing additional information, no alterations to its format shall be permitted and no substitutions shall be accepted.

Joint Venture Partner Information Form (if Registered)<sup>3</sup>

Date: *[insert date (as day, month and year) of Bid Submission]*

ITB No.: *[ITB/KRT/16/016-R1]*

Page \_\_\_\_\_ of \_\_\_\_\_ pages

1. Bidder's Legal Name: <i>[insert Bidder's legal name]</i>		
2. JV's Party legal name: <i>[insert JV's Party legal name]</i>		
3. JV's Party Country of Registration: <i>[insert JV's Party country of registration]</i>		
4. Year of Registration: <i>[insert Party's year of registration]</i>		
5. Countries of Operation	6. No. of staff in each Country	7. Years of Operation in each Country
8. Legal Address/es in Country/ies of Registration/Operation: <i>[insert Party's legal address in country of registration]</i>		
9. Value and Description of Top three (3) Biggest Contract for the past five (5) years		
10. Latest Credit Rating (if any): <i>Click here to enter text.</i>		
1. Brief description of litigation history (disputes, arbitration, claims, etc.), indicating current status and outcomes, if already resolved. <i>Click here to enter text.</i>		
13. JV's Party Authorized Representative Information Name: <i>[insert name of JV's Party authorized representative]</i> Address: <i>[insert address of JV's Party authorized representative]</i> Telephone/Fax numbers: <i>[insert telephone/fax numbers of JV's Party authorized representative]</i> Email Address: <i>[insert email address of JV's Party authorized representative]</i>		
14. Attached are copies of original documents of: <i>[check the box(es) of the attached original documents]</i> <input type="checkbox"/> All eligibility document requirements listed in the Data Sheet <input type="checkbox"/> Articles of Incorporation or Registration of firm named in 2. <input type="checkbox"/> In case of government owned entity, documents establishing legal and financial autonomy and compliance with commercial law.		

<sup>3</sup> The Bidder shall fill in this Form in accordance with the instructions. Apart from providing additional information, No alterations to its format shall be permitted and no substitutions shall be accepted.

**Section 6: Technical Bid Form****INSERT TITLE OF THE ITB**

Name of Bidding Organization / Firm:	
Country of Registration:	
Name of Contact Person for this Bid:	
Address:	
Phone / Fax:	
Email:	

**SECTION 1: EXPERTISE OF FIRM/ ORGANISATION**

*This section should fully explain the Bidder's resources in terms of personnel and facilities necessary for the performance of this requirement.*

**1.1 Brief Description of Bidder as an Entity:** Provide a brief description of the organization / firm submitting the Bid, its legal mandates/authorized business activities, the year and country of incorporation, and approximate annual budget, etc. Include reference to reputation, or any history of litigation and arbitration in which the organisation / firm has been involved that could adversely affect or impact the delivery of goods and/or performance of related services, indicating the status/result of such litigation/arbitration.

**1.2. Financial Capacity:** Based on the latest Audited Financial Statement (Income Statement and Balance Sheet) describe the financial capacity (liquidity, stand-by credit lines, current ratio, etc.) of the bidder to engage into the contract. Include any indication of credit rating, industry rating, etc.

**1.3. Track Record and Experiences:** Provide the following information regarding corporate experience within at least the last five (5) years which are related or relevant to those required for this Contract.

<b>Name of project</b>	<b>Client</b>	<b>Contract Value</b>	<b>Period of activity</b>	<b>Types of activities undertaken</b>	<b>Status or Date Completed</b>	<b>References Contact Details (Name, Phone, Email)</b>

**SECTION 2 - SCOPE OF SUPPLY, TECHNICAL SPECIFICATIONS, AND RELATED SERVICES**

*This section should demonstrate the Bidder's responsiveness to the specification by identifying the specific components proposed, addressing the requirements, as specified, point by point; providing a detailed description of the essential performance characteristics proposed; and demonstrating how the proposed bid meets or exceeds the specifications.*

**2.1. Scope of Supply:** Please provide a detailed description of the goods to be supplied, indicating clearly how they comply with the technical specifications required by the ITB (see below table); describe how the organization/firm will supply the goods and any related services, keeping in mind the appropriateness to local conditions and project environment.

<b>Item No.</b>	<b>Description / Specification of the goods</b>	<b>Source / Manufacturer</b>	<b>Country of Origin</b>	<b>Qty</b>	<b>Quality Certificate/ Export Licenses, etc. (indicate all that applies and if attached)</b>



*A supporting document with full details may be annexed to this section*

2.2. Technical Quality Assurance Mechanisms: The bid shall also include details of the Bidder's internal technical and quality assurance review mechanisms, all the appropriate quality certificates, export licenses and other documents attesting to the superiority of the quality of the goods and technologies to be supplied.

2.3. Reporting and Monitoring: Please provide a brief description of the mechanisms proposed for this project for reporting to the UNDP and partners, including a reporting schedule.

2.4. Subcontracting: Explain whether any work would be subcontracted, to whom, how much percentage of the work, the rationale for such, and the roles of the proposed sub-contractors. Special attention should be given to providing a clear picture of the role of each entity and how everyone will function as a team.

2.5. Risks / Mitigation Measures: Please describe the potential risks for the implementation of this project that may impact achievement and timely completion of expected results as well as their quality. Describe measures that will be put in place to mitigate these risks.

2.6 Implementation Timelines: The Bidder shall submit a Gantt Chart or Project Schedule indicating the detailed sequence of activities that will be undertaken and their corresponding timing.

2.7. Partnerships (Optional): Explain any partnerships with local, international or other organizations that are planned for the implementation of the project. Special attention should be given to providing a clear picture of the role of each entity and how everyone will function as a team. Letters of commitment from partners and an indication of whether some or all have successfully worked together on other previous projects is encouraged.

2.8. Anti-Corruption Strategy (Optional): Define the anti-corruption strategy that will be applied in this project to prevent the misuse of funds. Describe the financial controls that will be put in place.

2.9 Statement of Full Disclosure: This is intended to disclose any potential conflict in accordance with the definition of "conflict" under Section 4 of this document, if any.

2.10 Other: Any other comments or information regarding the bid and its implementation.

## **Section 7: Form for Performance security**

***(This must be finalized using the official letterhead of the Issuing Bank. Except for indicated fields, no changes may be made in this template.)***

To: UNDP

*[Insert contact information as provided in Data Sheet]*

WHEREAS [*name and address of Contractor*] (hereinafter called "the Contractor") has undertaken, in pursuance of Contract No. Click to enter dated Click to enter, to deliver the goods and execute related services Click here to enter text. (Hereinafter called "the Contract"):

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract:

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee:

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of [*amount of guarantee*] [*in words and numbers*], such sum being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of [*amount of guarantee as aforesaid*] without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

This guarantee shall be valid until a date 30 days from the date of issue by UNDP of a certificate of satisfactory performance and full completion of services by the Contractor.

### **SIGNATURE AND SEAL OF THE GUARANTOR BANK**

Date.....

Name of Bank.....

Address.....

## **Section 8: General Terms and Conditions for Goods**

### **1. ACCEPTANCE OF THE PURCHASE ORDER**

This Purchase Order may only be accepted by the Supplier's signing and returning an acknowledgement copy of it or by timely delivery of the goods in accordance with the terms of this Purchase Order, as herein specified. Acceptance of this Purchase Order shall effect a contract between the Parties under which the rights and obligations of the Parties shall be governed solely by the terms and conditions of this Purchase Order, including these General Conditions. No additional or inconsistent provisions proposed by the Supplier shall bind UNDP unless agreed to in writing by a duly authorized official of UNDP.

### **2. PAYMENT**

- 2.1.1 UNDP shall, on fulfillment of the Delivery Terms, unless otherwise provided in this Purchase Order, make payment within 30 days of receipt of the Supplier's invoice for the goods and copies of the shipping documents specified in this Purchase Order.
- 2.1.2 Payment against the invoice referred to above will reflect any discount shown under the payment terms of this Purchase Order, provided payment is made within the period required by such payment terms.
- 2.1.3 Unless authorized by UNDP, the Supplier shall submit one invoice in respect of this Purchase Order, and such invoice must indicate the Purchase Order's identification number.
- 2.1.4 The prices shown in this Purchase Order may not be increased except by express written agreement of UNDP.

### **3. TAX EXEMPTION**

3.1 Section 7 of the Convention on the Privileges and Immunities of the United Nations provides, inter alia, that the United Nations, including its subsidiary organs, is exempt from all direct taxes, except charges for utilities services, and is exempt from customs duties and charges of a similar nature in respect of articles imported or exported for its official use. In the event any governmental authority refuses to recognize UNDP's exemption from such taxes, duties or charges, the Supplier shall immediately consult with UNDP to determine a mutually acceptable procedure.

3.2 Accordingly, the Supplier authorizes UNDP to deduct from the Supplier's invoice any amount representing such taxes, duties or charges, unless the Supplier has consulted with UNDP before the payment thereof and UNDP has, in each instance, specifically authorized the Supplier to pay such taxes, duties or charges under protest. In that event, the Supplier shall provide UNDP with written evidence that payment of such taxes, duties or charges has been made and appropriately authorized.

### **4. RISK OF LOSS**

Risk of loss, damage to or destruction of the goods shall be governed in accordance with DDU Incoterms 2000, unless otherwise agreed upon by the Parties on the front side of this Purchase Order.

### **5. EXPORT LICENCES**

Notwithstanding any INCOTERM 2000 used in this Purchase Order, the Supplier shall obtain any export licences required for the goods.

### **6. FITNESS OF GOODS/PACKAGING**

The Supplier warrants that the goods, including packaging, conform to the specifications for the goods ordered under this Purchase Order and are fit for the purposes for which such goods are ordinarily used and for purposes expressly made known to the Supplier by UNDP, and are free from defects in workmanship and materials. The Supplier also warrants that the goods are contained or packaged adequately to protect the goods.

**7. INSPECTION**

1. UNDP shall have a reasonable time after delivery of the goods to inspect them and to reject and refuse acceptance of goods not conforming to this Purchase Order; payment for goods pursuant to this Purchase Order shall not be deemed an acceptance of the goods.
2. Inspection prior to shipment does not relieve the Supplier from any of its contractual obligations.

**8. INTELLECTUAL PROPERTY INFRINGEMENT**

The Supplier warrants that the use or supply by UNDP of the goods sold under this Purchase Order does not infringe any patent, design, trade-name or trade-mark. In addition, the Supplier shall, pursuant to this warranty, indemnify, defend and hold UNDP and the United Nations harmless from any actions or claims brought against UNDP or the United Nations pertaining to the alleged infringement of a patent, design, trade-name or trade-mark arising in connection with the goods sold under this Purchase Order.

**9. RIGHTS OF UNDP**

In case of failure by the Supplier to fulfil its obligations under the terms and conditions of this Purchase Order, including but not limited to failure to obtain necessary export licences, or to make delivery of all or part of the goods by the agreed delivery date or dates, UNDP may, after giving the Supplier reasonable notice to perform and without prejudice to any other rights or remedies, exercise one or more of the following rights:

- a) Procure all or part of the goods from other sources, in which event UNDP may hold the Supplier responsible for any excess cost occasioned thereby.
- b) Refuse to accept delivery of all or part of the goods.
- c) Cancel this Purchase Order without any liability for termination charges or any other liability of any kind of UNDP.

**10. LATE DELIVERY**

Without limiting any other rights or obligations of the parties hereunder, if the Supplier will be unable to deliver the goods by the delivery date(s) stipulated in this Purchase Order, the Supplier shall (i) immediately consult with UNDP to determine the most expeditious means for delivering the goods and (ii) use an expedited means of delivery, at the Supplier's cost (unless the delay is due to Force Majeure), if reasonably so requested by UNDP.

**11. ASSIGNMENT AND INSOLVENCY**

- 11.1. The Supplier shall not, except after obtaining the written consent of UNDP, assign, transfer, pledge or make other disposition of this Purchase Order, or any part thereof, or any of the Supplier's rights or obligations under this Purchase Order.
- 11.2. Should the Supplier become insolvent or should control of the Supplier change by virtue of insolvency, UNDP may, without prejudice to any other rights or remedies, immediately terminate this Purchase Order by giving the Supplier written notice of termination.

**12. USE OF UNDP OR UNITED NATIONS NAME OR EMBLEM**

The Supplier shall not use the name, emblem or official seal of UNDP or the United Nations for any purpose.

**13. PROHIBITION ON ADVERTISING**

The Supplier shall not advertise or otherwise make public that it is furnishing goods or services to UNDP without specific permission of UNDP in each instance.

**14. CHILD LABOUR**

The Supplier represents and warrants that neither it nor any of its affiliates is engaged in any practice inconsistent with the rights set forth in the Convention on the Rights of the Child, including Article 32 thereof, which, inter alia, requires that a child shall be protected from performing any work that is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral or social development.

Any breach of this representation and warranty shall entitle UNDP to terminate this Purchase Order immediately upon notice to the Supplier, without any liability for termination charges or any other liability of any kind of UNDP.

**15. MINES**

The Supplier represents and warrants that neither it nor any of its affiliates is actively and directly engaged in patent activities, development, assembly, production, trade or manufacture of mines or in such activities in respect of components primarily utilized in the manufacture of Mines. The term "Mines" means those devices defined in Article 2, Paragraphs 1, 4 and 5 of Protocol II annexed to the Convention on Prohibitions and Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects of 1980.

Any breach of this representation and warranty shall entitle UNDP to terminate this Purchase Order immediately upon notice to the Supplier, without any liability for termination charges or any other liability of any kind of UNDP.

**16. SETTLEMENT OF DISPUTES**

**16.1 Amicable Settlement**

The Parties shall use their best efforts to settle amicably any dispute, controversy or claim arising out of, or relating to this Purchase Order or the breach, termination or invalidity thereof. Where the Parties wish to seek such an amicable settlement through conciliation, the conciliation shall take place in accordance with the UNCITRAL Conciliation Rules then obtaining, or according to such other procedure as may be agreed between the Parties.

**16.2 Arbitration**

Unless, any such dispute, controversy or claim between the Parties arising out of or relating to this Purchase Order or the breach, termination or invalidity thereof is settled amicably under the preceding paragraph of this Section within sixty (60) days after receipt by one Party of the other Party's request for such amicable settlement, such dispute, controversy or claim shall be referred by either Party to arbitration in accordance with the UNCITRAL Arbitration Rules then obtaining, including its provisions on applicable law. The arbitral tribunal shall have no authority to award punitive damages. The Parties shall be bound by any arbitration award rendered as a result of such arbitration as the final adjudication of any such controversy, claim or dispute.

**17. PRIVILEGES AND IMMUNITIES**

Nothing in or related to these General Terms and Conditions or this Purchase Order shall be deemed a waiver of any of the privileges and immunities of the United Nations, including its subsidiary organs.

**18. SEXUAL EXPLOITATION:**

18.1 The Contractor shall take all appropriate measures to prevent sexual exploitation or abuse of anyone by it or by any of its employees or any other persons who may be engaged by the Contractor to perform any services under the Contract. For these purposes, sexual activity with any person less than eighteen years of age, regardless of any laws relating to consent, shall constitute the sexual exploitation and abuse of such person. In addition, the Contractor shall refrain from, and shall take all appropriate measures to prohibit its employees or other persons engaged by it from, exchanging any money, goods, services, offers of employment or other things of value, for sexual favors or activities, or from engaging in any sexual activities that are exploitive or degrading to any person. The Contractor acknowledges and agrees that the provisions hereof constitute an essential term of the Contract and that any breach of this representation and warranty shall entitle UNDP to terminate the Contract immediately upon notice to the Contractor, without any liability for termination charges or any other liability of any kind.

18.2 UNDP shall not apply the foregoing standard relating to age in any case in which the Contractor's personnel or any other person who may be engaged by the Contractor to perform any services under the Contract is married to the person less than the age of eighteen years with whom sexual activity has occurred and in which such marriage is recognized as valid under the laws of the country of citizenship of such Contractor's personnel or such other person who may be engaged by the Contractor to perform any services under the Contract.

**19.0 OFFICIALS NOT TO BENEFIT:**

The Contractor warrants that no official of UNDP or the United Nations has received or will be offered by the Contractor any direct or indirect benefit arising from this Contract or the award thereof. The Contractor agrees that breach of this provision is a breach of an essential term of this Contract.

**20. AUTHORITY TO MODIFY:**

Pursuant to the Financial Regulations and Rules of UNDP, only the UNDP Authorized Official possess the authority to agree on behalf of UNDP to any modification of or change in this Agreement, to a waiver of any of its provisions or to any additional contractual relationship of any kind with the Contractor. Accordingly, no modification or change in this Contract shall be valid and enforceable against UNDP unless provided by an amendment to this Agreement signed by the Contractor and jointly by the UNDP Authorized Official.

# ANNEX 1

## LOT 1: El Geneina, West Darfur State

**Site1: Village Name: Makada** (35 Km from El Geneina), All equipment and materials must be packed in robust wooden crate and labeled with village name, LOT reference number, number of boxes, and PO reference.

Facility	Item Descriptions	Qty	Specifications	Unit Price Per System	Installation Cost	Total Price (Currency)
1.1 Basic School	100 WP Solar Panel	1	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (10 A / 12/24 VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock	1	See item No: 2 in Section 3a: Schedule of Requirements			
	LED Lamps (9 w/12 V)	6	See item No: 1 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	2	for regulator and battery (with good ventilation & secure)			
	Cables	60 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>1.2 Health Care Center</b>	250 solar panel	2	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (30A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	120 Ah Battery Battery to be placed inside the room, in a metal boxes well ventilated opening with box lock	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /24v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				



<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>1.3 Mosque</b>	100 WP Solar Panel	1	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (10 A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	1	See item No: 2 in Section 3a: Schedule of Requirements			
	LED Lamp (9 w/12 V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	2	for regulator and battery (with good ventilation & secure)			
	Cables	60 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per</b>	<b>Installation</b>	<b>Total Price</b>
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				<b>System</b>	<b>Cost</b>	<b>(Currency)</b>
<b>1.4 Police Centre</b>	250 solar panel	1	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (20A /12/24V)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	2	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 600 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	2	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				
<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
	250 solar panel	2	See item No: 1 in Section 3a: Schedule			

<b>1.5 Youth Centre</b>			of Requirements			
	Battery Charge Controller (30A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				
<b>1.6 Street Light</b>	Street Light Systems (Complete set)	10	See item No: 8 in Section 3a: Schedule of Requirements			
<b>1.7 Solar Lantern</b>	Solar lantern	100	See item No: 6 in Section 3a: Schedule of Requirements			

**Site2: Village Name: Kododule** (20 Km from Elgeniena), All equipment and materials must be packed in robust wooden crate and labeled with village name, LOT reference number, number of boxes, and PO reference.

Facility	Item Descriptions	Qty	Specifications	Unit Price Per	Installation	Total Price
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				<b>System</b>	<b>Cost</b>	<b>(Currency)</b>
<b>2.1 Mosque</b>	100 WP Solar Panel	1	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (10 A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	1	See item No: 2 in Section 3a: Schedule of Requirements			
	LED Lamp (9 w/12 V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	2	for regulator and battery (with good ventilation & secure)			
	Cables	60 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
	250 WP solar panel	1	See item No: 1 in Section 3a: Schedule			

<b>2.2 Police Centre</b>			of Requirements			
	Battery Charge Controller (20A /12/24V)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	2	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 600 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	2	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>2.3 Youth Centre</b>	250 WP solar panel	2	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller	1	See item No: 3 in Section 3a: Schedule			

	(30A / 12/24VDC)		of Requirements			
	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				
<b>2.4 Street Light</b>	Street Light Systems (Complete set)	10	See item No: 8 in Section 3a: Schedule of Requirements			
<b>2.5 Solar Lantern</b>	Solar lantern	100	See item No: 6 in Section 3a: Schedule of Requirements			

#### **2.6 Solar Pump - Design parameters / specifications for solar powered pump system**

<b>Item</b>	<b>Description</b>	<b>Borehole data</b>	
1	Borehole total depth	36m	
2	Tank height	4 (m)	
3	Well casing diameter	4.5inch	

4	Quantity of water (Q) per day	40m <sup>3</sup> /day				
<b>Bill of Quantities &amp; specifications for solar pump system</b>				<b>Water Pump Price Schedule Form</b>		
<b>Item</b>	<b>Description</b>	<b>Units</b>	<b>QTY</b>	<b>Unit Price</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
1	Supply and fix solar water pump and its control unit according to information given in above table	pcs	1			
2	Supply and fix water level sensor for dry run protection including wire (2,5 mm <sup>2</sup> )	pcs	1			
3	Supply and fix 1800 w or above crystalline solar panels (according to pump type) Supply and fix module Support Structure for Solar	watt	16			
4	array system in item (3) above, 15° tilt angle and to withstand high wind speed of (40m/s)		1			
5	Supply and fix flexible 4 core 4x10 mm <sup>2</sup> , pump drop Cable	m	50			
6	Supply and fix Splice / termination kit for item (5) above for underwater use.	pcs	50			
7	Supply and fix <u>steel pipe</u> (its diameter according to pump outlet)	pcs	17			
8	Supply and fix fittings for item (7) above (connecters, elbows, adapters, clamp to hold the pipes on the top of the well).	set	Lot			
9	Supply and fix pump security wire with its clamp 6mm <sup>2</sup> , rust proof type.	m	45			
10	Supply and fix wiring between solar array junction box and pump controller minimum 2core x10mm <sup>2</sup> (black& red).	m	90			
11	Supply and fix water flow meter	pcs	1			
12	Supply and fix none return valve	pcs	1			
13	Supply and fix system earthling, lightning protection	set	1			
14	Supply and fix a device that can operate the pump from a generator with <u>two</u> voltage disconnected Switches	set	1			
15	Supply and fix steel box for the controller & the three items in 14 above (inverter + two switches) with good ventilation and lock	pcs	1			

**Site3: Village Name: Angamy** (28 Km from Elgeniema), All equipment and materials must be packed in robust wooden crate and labeled with village name, LOT reference number, number of boxes, and PO reference.

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>3.1</b>	100 WP Solar Panel	1	See item No: 1 in Section 3a: Schedule of Requirements			

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>Basic School</b>	Battery Charge Controller (10 A / 12/24 VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock	1	See item No: 2 in Section 3a: Schedule of Requirements			
	LED Lamp (9 w/12 V)	6	See item No: 1 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	2	for regulator and battery (with good ventilation & secure)			
	Cables	60 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>3.2</b>	250 WP solar panel	2	See item No: 1 in Section 3a: Schedule of Requirements			



<b>Health Care Centre</b>	Battery Charge Controller (30A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	100 WP solar panel (for vaccine fridge)	1	See item No: 1 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>3.3</b>	100 WP Solar Panel	1	See item No: 1 in Section 3a: Schedule of Requirements			

<b>Mosque</b>	Battery Charge Controller (10 A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	1	See item No: 2 in Section 3a: Schedule of Requirements			
	LED Lamp (9 w/12 V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	2	for regulator and battery (with good ventilation & secure)			
	Cables	60 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>3.4</b>	250 WP solar panel	2	See item No: 1 in Section 3a: Schedule of Requirements			

<b>Police Centre</b>	Battery Charge Controller (30A /12/24V)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>3.5 Youth Centre</b>	250 WP solar panel	2	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (30A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			

	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				
<b>3.6 Street Light</b>	Street Light Systems (Complete set)	10	See item No: 8 in Section 3a: Schedule of Requirements			
<b>3.7 Solar Lantern</b>	Solar lantern	100	See item No: 6 in Section 3a: Schedule of Requirements			

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>3.8 Women Develop. Center</b>	250 WP solar panel	2	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (30A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	120 Ah Battery Battery to be placed inside the class	4	See item No: 2 in Section 3a: Schedule of Requirements			

	room, in a metal boxes well ventilated opening with box lock.					
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

### 3.9 Solar Pump - Design parameters / specifications for solar powered pump system

Item	Description	Borehole data	
1	Borehole total depth	36m	
2	Borehole yield	15m <sup>3</sup> /hr.	
3	Tank height	4 (m)	
4	Well casing diameter	4.5inch	
5	Quantity of water (Q) per day	50m <sup>3</sup> /day	

<i>Bill of Quantities &amp; specifications for solar pump system</i>				<i>Water Pump Price Schedule Form</i>		
<i>Item</i>	<i>Description</i>	<i>Units</i>	<i>QTY</i>	<i>Unit Price</i>	<i>Installation Cost</i>	<i>Total Price (Currency)</i>
1	Supply and fix solar water pump and its control unit according to information given in above table	pcs	1			
2	Supply and fix water level sensor for dry run protection including wire (2.5 mm <sup>2</sup> )	pcs	1			
3	Supply and fix 1800 w or above crystalline solar panels (according to pump type) Supply and fix module Support Structure for Solar	watt	28			
4	array system in item (3) above, 15° tilt angle and to withstand high wind speed of (40m/s)		1			
5	Supply and fix flexible 4 core 4x10 mm <sup>2</sup> , pump drop Cable	m	50			
6	Supply and fix Splice / termination kit for item (5) above for underwater use.	pcs	45			
7	Supply and fix <u>steel pipe</u> (its diameter according to pump outlet)	pcs	17			
8	Supply and fix fittings for item (7) above (connecters, elbows, adapters, clamp to hold the pipes on the top of the well).	set	lot			
9	Supply and fix pump security wire with its clamp 6mm <sup>2</sup> , rust proof type.	m	60			
10	Supply and fix wiring between solar array junction box and pump controller minimum 2core x10mm <sup>2</sup> (black& red).	m	90			
11	Supply and fix water flow meter	pcs	1			
12	Supply and fix none return valve	pcs	1			
13	Supply and fix system earthling, lightning protection	set	1			
14	Supply and fix a device that can operate the pump from a generator with <u>two</u> voltage disconnected Switches	set	1			
15	Supply and fix steel box for the controller & the three items in 14 above (inverter + two switches) with good ventilation and lock	pcs	1			

**Site4: Village Name: Um Sebakha** (20 Km from Elgeniena), All equipment and materials must be packed in robust wooden crate and labeled with village name, LOT reference number, number of boxes, and PO reference.

<i>Facility</i>	<i>Item Descriptions</i>	<i>Qty</i>	<i>Specifications</i>	<i>Unit Price Per System</i>	<i>Installation Cost</i>	<i>Total Price (Currency)</i>
<b>4.1 Secondary School</b>	250 WP Solar Panel	4	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (45 A / 12/24 VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (9 w/12 V)	8	See item No: 1 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	3	for regulator and battery (with good ventilation & secure)			
	Cables	90 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	8				
	Cable clamp	4 boxes				
	Lamp switches	8				
	Switches box	16				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>4.2 Health Care Centre</b>	250 WP solar panel	4	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (45A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery	4	See item No: 2 in Section 3a: Schedule			

	Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.		of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	8	See item No: 5 in Section 3a: Schedule of Requirements			
	100 WP solar panel (for vaccine fridge)	1	See item No: 1 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	8				
	Cable clamp	4 boxes				
	Lamp switches	8				
	Switches box	16				
	Concrete base	Job				
<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>4.3 Mosque</b>	100 WP Solar Panel	1	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (10 A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated	1	See item No: 2 in Section 3a: Schedule of Requirements			



	opening with box lock.					
	LED Lamp (9 w/12 V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	2	for regulator and battery (with good ventilation & secure)			
	Cables	60 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>4.4 Police Centre</b>	250 WP solar panel	2	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (30A /12/24V)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated	4	See item No: 2 in Section 3a: Schedule of Requirements			

	opening with box lock.					
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>4.5 Youth Centre</b>	250 WP solar panel	2	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (30A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter	1	See item No: 4 in Section 3a:			

	Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave		Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>4.6 Teachers' House</b>	250 WP solar panel	2	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (30A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				
<b>4.7 Street Light</b>	Street Light Systems (Complete set)	10	See item No: 8 in Section 3a: Schedule of Requirements			
<b>4.8 Solar Lantern</b>	Solar lantern	100	See item No: 6 in Section 3a: Schedule of Requirements			

#### 4.9 Solar Pump - Design parameters / specifications for solar powered pump system

<b>Item</b>	<b>Description</b>	<b>Borehole data</b>				
1	Borehole total depth	126m				
2	Borehole yield	10m <sup>3</sup> /hr.				
3	Tank height	4 (m)				
4	Well casing diameter	6inch				
5	Quantity of water (Q) per day	30m <sup>3</sup> /day				
<b>Bill of Quantities &amp; specifications for solar pump system</b>			<b>Water Pump Price Schedule Form</b>			
<b>Item</b>	<b>Description</b>	<b>Units</b>	<b>QTY</b>	<b>Unit Price</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
1	Supply and fix solar water pump and its control unit according to information given in above table	pcs	1			
2	Supply and fix water level sensor for dry run protection including wire (2,5 mm <sup>2</sup> )	pcs	1			
3	Supply and fix 1800 w or above crystalline solar panels (according to pump type) Supply and fix module Support Structure for Solar	watt	28			
4	array system in item (3) above, 15° tilt angle and to withstand high wind speed of (40m/s)		1			
5	Supply and fix flexible 4 core 4x10 mm <sup>2</sup> , pump drop Cable	m	110			
6	Supply and fix Splice / termination kit for item (5) above for underwater use.	pcs	80			
7	Supply and fix <u>steel pipe</u> (its diameter according to pump outlet)	pcs	42			
8	Supply and fix fittings for item (7) above (connecters, elbows, adapters, clamp to hold the pipes on the top of the well).	set	lot			
9	Supply and fix pump security wire with its clamp 6mm <sup>2</sup> , rust proof type.	m	100			
10	Supply and fix wiring between solar array junction box and pump controller minimum 2core x10mm <sup>2</sup> (black& red).	m	90			
11	Supply and fix water flow meter	pcs	1			
12	Supply and fix none return valve	pcs	1			
13	Supply and fix system earthling, lightning protection	set	1			
14	Supply and fix a device that can operate the pump from a generator with <u>two</u> voltage disconnected Switches	set	1			
15	Supply and fix steel box for the controller & the three items in 14 above (inverter + two switches) with good ventilation and lock	pcs	1			

**Site5: Village Name: Tandalti** (50 Km from Elgeniena), All equipment and materials must be packed in robust wooden crate and labeled with village name, LOT reference number, number of boxes, and PO reference.

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>5.1 Basic School for Boys</b>	100 WP Solar Panel	1	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (10 A / 12/24 VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock	1	See item No: 2 in Section 3a: Schedule of Requirements			
	LED Lamp (9 w/12 V)	6	See item No: 1 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	2	for regulator and battery (with good ventilation & secure)			
	Cables	60 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>5.2 Basic School for Girls</b>	100 WP Solar Panel	1	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (10 A / 12/24 VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock	1	See item No: 2 in Section 3a: Schedule of Requirements			
	LED Lamp (9 w/12 V)	6	See item No: 1 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	2	for regulator and battery (with good ventilation & secure)			
	Cables	60 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>5.3 Secondary School For Boys</b>	250 WP Solar Panel	4	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (45 A / 12/24 VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (9 w/12 V)	8	See item No: 1 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	3	for regulator and battery (with good ventilation & secure)			
	Cables	90 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	8				
	Cable clamp	4 boxes				
	Lamp switches	8				
	Switches box	16				
	Concrete base	Job				



<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>5.4 Secondary School For Girls</b>	250 WP Solar Panel	4	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (45 A / 12/24 VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (9 w/12 V)	8	See item No: 1 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	3	for regulator and battery (with good ventilation & secure)			
	Cables	90 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	8				
	Cable clamp	4 boxes				
	Lamp switches	8				
	Switches box	16				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
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<b>5.5 Health Care Centre</b>	250 WP solar panel	2	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (30A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
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<b>5.6 Mosque</b>	250 WP Solar Panel	2	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (30 A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14 w/220 V)	12	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	3	for regulator and battery (with good ventilation & secure)			
	Cables	90 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	12				
	Cable clamp	4 boxes				
	Lamp switches	12				
	Switches box	24				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>5.7 Police Centre</b>	250 WP solar panel	2	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (30A /12/24V)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED LAMP (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>5.8 Veterinary Centre</b>	250 WP solar panel	2	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (30A /12/24V)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>5.9 Teachers' House (Boys)</b>	250 WP solar panel	2	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (30A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>5.10 Teachers' House (Girls)</b>	250 WP solar panel	2	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (30A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

Facility	Item Descriptions	Qty	Specifications	Unit Price Per System	Installation Cost	Total Price (Currency)
<b>5.11 Secondary School Teachers' House</b>	250 WP solar panel	2	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (30A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				



<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>5.12 Police Residence</b>	250 WP solar panel	2	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (30A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>5.13 Admin. Unit Office</b>	250 WP solar panel	6	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (45A / 12/24VDC)	2	See item No: 3 in Section 3a: Schedule of Requirements			
	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	8	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	10	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	120 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	10				
	Cable clamp	4 boxes				
	Lamp switches	10				
	Switches box	20				
	Concrete base	Job				
<b>5.14 Street Light</b>	Street Light Systems (Complete set)	10	See item No: 8 in Section 3a: Schedule of Requirements			
<b>5.15 Solar Lantern</b>	Solar lantern	100	See item No: 6 in Section 3a: Schedule of Requirements			
<b>5.16 Solar Pump - Design parameters / specifications for solar powered pump system</b>						

<b>Item</b>	<b>Description</b>	<b>Borehole data</b>				
1	Borehole total depth	53m				
3	Borehole yield	10m <sup>3</sup> /hr.				
5	Tank height	4 (m)				
6	Well casing diameter	8inch				
7	Quantity of water (Q) per day	50m <sup>3</sup> /day				
<b>Bill of Quantities &amp; specifications for solar pump system</b>			<b>Water Pump Price Schedule Form</b>			
<b>Item</b>	<b>Description</b>	<b>Units</b>	<b>QTY</b>	<b>Unit Price</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
1	Supply and fix solar water pump and its control unit according to information given in above table	pcs	1			
2	Supply and fix water level sensor for dry run protection including wire (2,5 mm <sup>2</sup> )	pcs	1			
3	Supply and fix 1800 w or above crystalline solar panels (according to pump type) Supply and fix module Support Structure for Solar	watt	28			
4	array system in item (3) above, 15° tilt angle and to withstand high wind speed of (40m/s)		1			
5	Supply and fix flexible 4 core 4x10 mm <sup>2</sup> , pump drop Cable	m	65			
6	Supply and fix Splice / termination kit for item (5) above for underwater use.	pcs	55			
7	Supply and fix <u>steel pipe</u> (its diameter according to pump outlet)	pcs	20			
8	Supply and fix fittings for item (7) above (connecters, elbows, adapters, clamp to hold the pipes on the top of the well).	set	lot			
9	Supply and fix pump security wire with its clamp 6mm <sup>2</sup> , rust proof type.	m	75			
10	Supply and fix wiring between solar array junction box and pump controller minimum 2core x10mm <sup>2</sup> (black& red).	m	90			
11	Supply and fix water flow meter	pcs	1			
12	Supply and fix none return valve	pcs	1			
13	Supply and fix system earthling, lightning protection	set	1			
14	Supply and fix a device that can operate the pump from a generator with <u>two</u> voltage disconnected Switches	set	1			
15	Supply and fix steel box for the controller & the three items in 14 above (inverter + two switches) with good ventilation and lock	pcs	1			

**LOT 2: Zalengi, Central Darfur State**

**Site6: Village Name: Tololo** (30 Km from Zalengi), All equipment and materials must be packed in robust wooden crate and labeled with village name, LOT reference number, number of boxes, and PO reference.

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>6.1 Secondary School</b>	250 WP Solar Panel	4	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (45 A / 12/24 VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (9 w/12 V)	8	See item No: 1 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	3	for regulator and battery (with good ventilation & secure)			
	Cables	90 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	8				
	Cable clamp	4 boxes				
	Lamp switches	8				
	Switches box	16				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
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<b>6.2 Health Care Center</b>	250 solar panel	4	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (45A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery Battery to be placed inside the room, in a metal boxes well ventilated opening with box lock	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /24v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	8	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	8				
	Cable clamp	4 boxes				
	Lamp switches	8				
	Switches box	16				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
	100 WP Solar Panel	1	See item No: 1 in Section 3a: Schedule			

<b>6.3 Mosque</b>			of Requirements			
	Battery Charge Controller (10 A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	1	See item No: 2 in Section 3a: Schedule of Requirements			
	LED Lamp (9 w/12 V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	2	for regulator and battery (with good ventilation & secure)			
	Cables	60 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>6.4 Khalwa (A)</b>	100 WP Solar Panel	1	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller	1	See item No: 3 in Section 3a: Schedule			

	(10 A / 12/24VDC)		of Requirements			
	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	1	See item No: 2 in Section 3a: Schedule of Requirements			
	LED Lamp (9 w/12 V)	5	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	2	for regulator and battery (with good ventilation & secure)			
	Cables	60 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	5				
	Cable clamp	4 boxes				
	Lamp switches	5				
	Switches box	10				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>6.5 Khalwa (B)</b>	100 WP Solar Panel	1	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (10 A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery	1	See item No: 2 in Section 3a: Schedule			

	Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.		of Requirements			
	LED Lamp (9 w/12 V)	5	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	2	for regulator and battery (with good ventilation & secure)			
	Cables	60 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	5				
	Cable clamp	4 boxes				
	Lamp switches	5				
	Switches box	10				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>6.6 Police Centre</b>	250 WP solar panel	1	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (20A /12/24V)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery	2	See item No: 2 in Section 3a: Schedule			



	Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.		of Requirements			
	DC/AC Inverter Output: 600 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>6.7 Police Residence</b>	250 WP solar panel	2	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (30A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated	4	See item No: 2 in Section 3a: Schedule of Requirements			

	opening with box lock.					
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				
<b>6.8 Street Light</b>	Street Light Systems (Complete set)	10	See item No: 8 in Section 3a: Schedule of Requirements			
<b>6.9 Solar Lantern</b>	Solar lantern	100	See item No: 6 in Section 3a: Schedule of Requirements			

#### 6.10 Solar Pump - Design parameters / specifications for solar powered pump system

Item	Description	Borehole data	
1	Borehole total depth	70m	
2	Borehole yield	10m <sup>3</sup> /hr.	
3	Tank height	4 (m)	
4	Well casing diameter	8inch	
5	Quantity of water (Q) per day	60m <sup>3</sup> /day	
<b>Bill of Quantities &amp; specifications for solar pump system</b>			<b>Water Pump Price Schedule Form</b>

Item	Description	Units	QTY	Unit Price	Installation Cost	Total Price (Currency)
1	Supply and fix solar water pump and its control unit according to information given in above table	pcs	1			
2	Supply and fix water level sensor for dry run protection including wire (2,5 mm <sup>2</sup> )	pcs	1			
3	Supply and fix 1800 w or above crystalline solar panels (according to pump type) Supply and fix module Support Structure for Solar	watt	24			
4	array system in item (3) above, 15° tilt angle and to withstand high wind speed of (40m/s)		1			
5	Supply and fix flexible 4 core 4x10 mm <sup>2</sup> , pump drop Cable	m	100			
6	Supply and fix Splice / termination kit for item (5) above for underwater use.	pcs	45			
7	Supply and fix <u>steel pipe</u> (its diameter according to pump outlet)	pcs	15			
8	Supply and fix fittings for item (7) above (connectors, elbows, adapters, clamp to hold the pipes on the top of the well).	set	lot			
9	Supply and fix pump security wire with its clamp 6mm <sup>2</sup> , rust proof type.	m	50			
10	Supply and fix wiring between solar array junction box and pump controller minimum 2core x10mm <sup>2</sup> (black& red).	m	90			
11	Supply and fix water flow meter	pcs	1			
12	Supply and fix none return valve	pcs	1			
13	Supply and fix system earthling, lightning protection	set	1			
14	Supply and fix a device that can operate the pump from a generator with <u>two</u> voltage disconnected Switches	set	1			
15	Supply and fix steel box for the controller & the three items in 14 above (inverter + two switches) with good ventilation and lock	pcs	1			

**Site7: Village Name: Danarat Elnour** (51 Km from Zalengi), All equipment and materials must be packed in robust wooden crate and labeled with village name, LOT reference number, number of boxes, and PO reference.

Facility	Item Descriptions	Qty	Specifications	Unit Price Per System	Installation Cost	Total Price (Currency)
<b>7.1 Secondary School</b>	250 WP Solar Panel	6	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (45 A / 12/24 VDC)	2	See item No: 3 in Section 3a: Schedule of Requirements			

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock	8	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14 w/220 V)	6	See item No: 1 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	3	for regulator and battery (with good ventilation & secure)			
	Cables	120 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>7.2 Health Care Center</b>	250 WP Solar Panel	2	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (30 A / 12/24 VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (9 w/12 V)	6	See item No: 1 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	3	for regulator and battery (with good ventilation & secure)			
	Cables	90 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>7.3 Mosque (A)</b>	100 WP Solar Panel	1	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (10 A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	1	See item No: 2 in Section 3a: Schedule of Requirements			
	LED Lamp (9 w/12 V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	2	for regulator and battery (with good ventilation & secure)			
	Cables	60 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>7.4 Mosque (B)</b>	100 WP Solar Panel	1	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (10 A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	1	See item No: 2 in Section 3a: Schedule of Requirements			
	LED Lamp (9 w/12 V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	2	for regulator and battery (with good ventilation & secure)			
	Cables	60 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>7.5 Khalwa (A)</b>	100 WP Solar Panel	1	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (10 A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	1	See item No: 2 in Section 3a: Schedule of Requirements			
	LED Lamp (9 w/12 V)	5	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	2	for regulator and battery (with good ventilation & secure)			
	Cables	60 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	5				
	Cable clamp	4 boxes				
	Lamp switches	5				
	Switches box	10				
	Concrete base	Job				



<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>7.6 Khalwa (B)</b>	100 WP Solar Panel	1	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (10 A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	1	See item No: 2 in Section 3a: Schedule of Requirements			
	LED Lamp (9 w/12 V)	5	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	2	for regulator and battery (with good ventilation & secure)			
	Cables	60 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	5				
	Cable clamp	4 boxes				
	Lamp switches	5				
	Switches box	10				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
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<b>7.7 Youth Centre</b>	250 solar panel	2	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (30A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				
<b>7.8 Street Light</b>	Street Light Systems (Complete set)	10	See item No: 8 in Section 3a: Schedule of Requirements			
<b>7.8 Solar Lantern</b>	Solar lantern	100	See item No: 6 in Section 3a: Schedule of Requirements			

#### 7.10 Solar Pump - Design parameters / specifications for solar powered pump system

Item	Description	Borehole data	
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1	Borehole total depth	45m				
3	Borehole yield	14m³/hr.				
5	Tank height	4(m)				
6	Well casing diameter	6inch				
7	Quantity of water (Q) per day	30m³/day				
Bill of Quantities & specifications for solar pump system				Water Pump Price Schedule Form		
Item	Description	Units	QTY	Unit Price	Installation Cost	Total Price (Currency)
1	Supply and fix solar water pump and its control unit according to information given in above table	pcs	1			
2	Supply and fix water level sensor for dry run protection including wire (2,5 mm²)	pcs	1			
3	Supply and fix 1800 w or above crystalline solar panels (according to pump type) Supply and fix module Support Structure for Solar	watt	24			
4	array system in item (3) above, 15° tilt angle and to withstand high wind speed of (40m/s)		1			
5	Supply and fix flexible 4 core 4x10 mm², pump drop Cable	m	24			
6	Supply and fix Splice / termination kit for item (5) above for underwater use.	pcs	45			
7	Supply and fix <u>steel pipe</u> (its diameter according to pump outlet)	pcs	15			
8	Supply and fix fittings for item (7) above (connecters, elbows, adapters, clamp to hold the pipes on the top of the well).	set	lot			
9	Supply and fix pump security wire with its clamp 6mm², rust proof type.	m	50			
10	Supply and fix wiring between solar array junction box and pump controller minimum 2core x10mm² (black& red).	m	90			
11	Supply and fix water flow meter	pcs	1			
12	Supply and fix none return valve	pcs	1			
13	Supply and fix system earthling, lightning protection	set	1			
14	Supply and fix a device that can operate the pump from a generator with <u>two</u> voltage disconnected Switches	set	1			
15	Supply and fix steel box for the controller & the three items in 14 above (inverter + two switches) with good ventilation and lock	pcs	1			

**Site8: Village Name: Solo** (46 Km from Zalengi), All equipment and materials must be packed in robust wooden crate and labeled with village name, LOT reference number, number of boxes, and PO reference.

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>8.1 Basic School</b>	100 WP Solar Panel	1	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (10 A / 12/24 VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock	1	See item No: 2 in Section 3a: Schedule of Requirements			
	LED Lamp (9 w/12 V)	6	See item No: 1 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	2	for regulator and battery (with good ventilation & secure)			
	Cables	60 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>8.2</b>	250 WP Solar Panel	6	See item No: 1 in Section 3a: Schedule of Requirements			

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>Secondary School</b>	Battery Charge Controller (45 A / 12/24 VDC)	2	See item No: 3 in Section 3a: Schedule of Requirements			
	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock	8	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14w/220 V)	6	See item No: 1 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	3	for regulator and battery (with good ventilation & secure)			
	Cables	120 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
	100 WP Solar Panel	1	See item No: 1 in Section 3a: Schedule			

<b>8.3 Mosque</b>			of Requirements			
	Battery Charge Controller (10 A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	1	See item No: 2 in Section 3a: Schedule of Requirements			
	LED Lamp (9 w/12 V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	2	for regulator and battery (with good ventilation & secure)			
	Cables	60 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
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<b>8.4 Police Centre</b>	250 WP solar panel	1	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (20A /12/24V)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	2	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 600 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

Facility	Item Descriptions	Qty	Specifications	Unit Price Per	Installation	Total Price
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				<b>System</b>	<b>Cost</b>	<b>(Currency)</b>
<b>8.5 Youth Centre</b>	250 WP solar panel	2	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (30A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
	250 WP solar panel	2	See item No: 1 in Section 3a: Schedule			



<b>8.6 Women Develop. Center</b>			of Requirements			
	Battery Charge Controller (30A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	4	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	90 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>8.7</b>	100 WP Solar Panel	1	See item No: 1 in Section 3a: Schedule of Requirements			

<b>Hostel</b>	Battery Charge Controller (10 A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			
	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	1	See item No: 2 in Section 3a: Schedule of Requirements			
	LED Lamp (9 w/12 V)	5	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	2	for regulator and battery (with good ventilation & secure)			
	Cables	60 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	5				
	Cable clamp	4 boxes				
	Lamp switches	5				
	Switches box	10				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>8.8 Security Office</b>	250 WP solar panel	6	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (45A /12/24V)	2	See item No: 3 in Section 3a: Schedule of Requirements			

	120 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	8	See item No: 2 in Section 3a: Schedule of Requirements			
	DC/AC Inverter Output: 1500 watt /12v /50Hz Waveform: Pure Sine wave	1	See item No: 4 in Section 3a: Schedule of Requirements			
	LED Lamp (14W, 220V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Cables	120 m	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Control boxes	3	for regulator, inverter and battery (with good ventilation & secure)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				

<b>Facility</b>	<b>Item Descriptions</b>	<b>Qty</b>	<b>Specifications</b>	<b>Unit Price Per System</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
<b>8.9 Camp</b>	100 WP Solar Panel	1	See item No: 1 in Section 3a: Schedule of Requirements			
	Battery Charge Controller (10 A / 12/24VDC)	1	See item No: 3 in Section 3a: Schedule of Requirements			

	100 Ah Battery Battery to be placed inside the class room, in a metal boxes well ventilated opening with box lock.	1	See item No: 2 in Section 3a: Schedule of Requirements			
	LED Lamp (9 w/12 V)	6	See item No: 5 in Section 3a: Schedule of Requirements			
	<b>Accessories and installations requirements</b>					
	Module Support Structure	Set	Tilt angle of 15° (Weather Proof & Bolted Type)			
	Bolts, nuts and washers					
	Control boxes	2	for regulator and battery (with good ventilation & secure)			
	Cables	60 meters	4 mm <sup>2</sup> (for modules interconnection, from modules to regulator from battery to regulator, and cable 2.5 mm <sup>2</sup> for battery connection)			
	Lamp port	6				
	Cable clamp	4 boxes				
	Lamp switches	6				
	Switches box	12				
	Concrete base	Job				
<b>8.10 Street Light</b>	Street Light Systems (Complete set)	10	See item No: 8 in Section 3a: Schedule of Requirements			
<b>8.11 Solar Lantern</b>	Solar lantern	100	See item No: 6 in Section 3a: Schedule of Requirements			

**8.12 Solar Pump - Design parameters / specifications for solar powered pump system**

<b>Item</b>	<b>Description</b>	<b>Borehole data</b>	
1	Borehole total depth	30m	
2	Borehole yield	14m <sup>3</sup> /hr.	
3	Tank height	3 (m)	
4	Well casing diameter	5inch	
5	Quantity of water (Q) per day	30m <sup>3</sup> /day	

**Bill of Quantities & specifications for solar pump system**

**Solar Pump Price Schedule Form**

<b>Item</b>	<b>Description</b>	<b>Units</b>	<b>QTY</b>	<b>Unit Price</b>	<b>Installation Cost</b>	<b>Total Price (Currency)</b>
1	Supply and fix solar water pump and its control unit according to information given in above table	pcs	1			
2	Supply and fix water level sensor for dry run protection including wire (2,5 mm <sup>2</sup> )	pcs	1			
3	Supply and fix 1800 w or above crystalline solar panels (according to pump type) Supply and fix module Support Structure for Solar	watt	24			
4	array system in item (3) above, 15° tilt angle and to withstand high wind speed of (40m/s)		1			
5	Supply and fix flexible 4 core 4x10 mm <sup>2</sup> , pump drop Cable	m	50			
6	Supply and fix Splice / termination kit for item (5) above for underwater use.	pcs	45			
7	Supply and fix <u>steel pipe</u> (its diameter according to pump outlet)	pcs	15			
8	Supply and fix fittings for item (7) above (connectors, elbows, adapters, clamp to hold the pipes on the top of the well).	set	lot			
9	Supply and fix pump security wire with its clamp 6mm <sup>2</sup> , rust proof type.	m	50			
10	Supply and fix wiring between solar array junction box and pump controller minimum 2core x10mm <sup>2</sup> (black& red).	m	90			
11	Supply and fix water flow meter	pcs	1			
12	Supply and fix none return valve	pcs	1			
13	Supply and fix system earthling, lightning protection	set	1			
14	Supply and fix a device that can operate the pump from a generator with <u>two</u> voltage disconnected Switches	set	1			
15	Supply and fix steel box for the controller & the three items in 14 above (inverter + two switches) with good ventilation and lock	pcs	1			

**Section 9: Bid Bulletin (Questions and Answers) from Previous ITB**

**Q1: Request for deadline extension for 2 weeks. (Removed)**

A1:

**Q2: Is CBC eligible to participate in this Bid as we do not have any affiliate company/ies in Sudan?**

A2: It is up to supplier to decide the way of submission since ITB requirements are met.

**Q3: System Secondary school: system consist DC/AC Inverter and Lamp is LED DC. Maybe LED Lamp should be DC. Pls. clarify.**

A3: Lighting systems area all LED/DC. The AC system is for school computer.

**Q4: Solar Water Pump System: to be able to prepare proper sizing of the pump we need water dynamic level.**

A4: The dynamic level is not available and most of these wells are dug long time ago and wells profile reports are not available.

**Q5: Item 3: Solar panels - in description column is mention power 1800W and in Qty is mention: 16 or 28.... Should we quote according our sizing? Pls. clarify.**

A5: You should quote according to your sizing the only fixed parameter here is the quantity of water demands in Cubic Meters per Day (Q/Day).

**Q6: Referring to ITB & Subject above we are kindly asking whether the selection of the pumps should be according to the quantity of water per day or the borehole yield, because they give different selections and consequently different price.**

A6: the selection of pumps should be based on the quantity of water per day.

**Q7: How many hours you need this system work? from dusk 18:00 to dawn 6:00am**

A7: Yes, as Stated in the specifications: "The system should automatically switch is ON at dusk, operate throughout the night and automatically switch is OFF at the dawn."

**Q8: For brightness you need 100% bright for 12 hours or? Usually we count 100% lighting at 18:00 till 0:00, 50% lighting at 0:00 till 06:00**

A8: It is required that system provide a 100% brightness for 12 hours and the design is based on this requirement.

**Q9: How many days you need this street light system work when rainy day?**

A9: In all these areas we don't expect days of no sunshine. Partially cloudy days is possible during the rainy season (August-October).

**Q10: we have question about the delivery time of 15 days after studying the document.**

**Do u mean that the goods should be arrived at site within 15 days after issuance of purchase order?**

**Or all the goods should be ready in 15 days, besides the time of transportation?**

A10: All goods must have delivered to the sites, which is the Capitals of States within the stated period "15 days from the issuance of Purchase Order. Goods must be delivered to specified location by or before this deadline". This usually airfreight and is not including land transportation to the villages which will carried out by the project and as also stated "Installation shall be completed by supplier upon notification of arrival of goods to specified villages."

**Q11: Combined question about Batteries**

- Gel batteries usually have a lifetime of 2-4 years. In the requirement schedule it is required that the batteries have a lifetime of 12 years? Should the requirements be revised? **No this shouldn't be revised.**

- The batteries' capacities are usually measured in C10, or C20. The required battery capacity is @C100? Does that mean at C10? **Required C100**
- Inverters usually have warranty of 5 years, the required warranty on inverters is 10 years? Is that revisable? Extended warranties come at a cost. **10 years**
- For kits with 250 WP panels (ex: Secondary school, police center,.), the required inverters are 12 V which are not possible, only 24 V inverters could be technically viable option. Shall we revise that? **Right 24 VDC input as the 250 is by design comes as 24.**
- The following kits have the batteries extremely undersized in proportion to the PV panels and 60% DoD. shall we revise the number of batteries needed?
  - Village Tandalti: Secondary school for boys
  - Tololo Village: Secondary School & Health Care center. **No keep it as it is in the specifications as some of the power is consumed during the day particularly for the computer.**

#### Q12: Question about PV Panels

- Are the required panels must be 250 WP and 100 WP? Or could we supply 265 WP for the 250 WP and 105 or 120 WP for the 100 WP? This does not impact the technical solution or the other equipment in any way, however can make the procurement process more efficient. **Here we need keep the required specifications which are 250 WP and 100 WP only.**

#### Q13: Combined questions about Street Lights

- In the street lights specifications, "the concrete base housing for the batteries" does that mean that the batteries should be buried under the ground? **Batteries should be inside the concrete case for more protection and safety.**
- In the street lights kit: what is the required autonomy (how many days)? **In all these areas we don't expect days of no sunshine. Partially cloudy days is possible during the rainy season (August-October).**

#### Q14: Combined questions about Cables

**Needs revision cable 4 mm<sup>2</sup> from module to regulator and mm<sup>2</sup> between batteries.**

- Should the cables be put inside trays or flexible or PVC? This is recommended however; The BoQ does not specify any. **Flexible cables are the requirement.**
- Are the load connections from inverters required to be supplied by the bidder? Are we required to supply AC cables? We believe some will be needed however they are not accounted for in the BoQ. **All connections are required and other accessories are required to be supplied by bidder.**
- If we should supply AC cables, then what are the required specifications and quantities for these cables? 2.5 mm<sup>2</sup> – 70m for each system. **AC is for low loads usually computers and some appliances inside one room. Bidder is required to provide only one socket in the room. Usually not more than 10m.**

#### Q15: Combined questions about Solar Water Pumping:

**This is indicative and own design is also accepted as far as it provides the same rate of pumping M3/Day.**

- In the solar water pumping section, Alternation between AC (generator) and DC(PV) power sources to the pump should be done manually or automatically? **Automatically controlled.**

- The length of the pump drop cable for each pumping system does not match the pump depth of the system, shall we revise that? **Yes, the required cable can be adjustable to fit with length of well and also distance from controller and the well.**
- What is the preferred pump position? **Pump position can vary depends selection of pump type and configuration. But it should provide the required quantity of water per day.**
- For the steel pipe, what is the grade required? And is it seamless? **Steel pipe ASTM thickness not less 2.7 mm.**
- The length of the steel pipe does not match the identified project needs. Should it be revised? **Yes, it can be revise as to provide the best design option**
- Please specify the horizontal distance between the well and the tank because this would affect the length of the piping required. **The piping from well to the tank is not required. Tanks are already connected to the old pumping systems we replace.**

#### **Q16: Question about Control Box**

- Each kit usually requires 1 control box to include the batteries, charger controller and inverter. Why do the kits include more than 1 control box per kit? **More than One control box for each system when**

#### **Q17: Question about Switch Box**

- Is the switch box the housing required for the lamp switch? Does it have any specifications? **Plastic switch box for different purposes (for switches and other)**

#### **Q18: Does the UN provide storehouses for the materials in El-Geneina and Zalengi cities? Or it's our responsibility?**

A18: Yes, storehouses will be provided by UNAMID

#### **Q19: Does the UN provide safety for the installation team during the work and on their way from the cities to the villages?**

A19: No, UNDP will not be responsible for the companies' installation team(s) security, transport, accommodation or any out of pocket expenses in the field. It is the sole responsibility of the company to manage and put in place the mechanism and resources to meet this requirement and should be incorporated in the bid cost.

#### **Q20 Materials from outside Sudan will it be free of custom and taxes fees (Concessions)?**

A20: No, supplier will be responsible of customs clearance and transport to specified locations (INCOTERM 2010) used is DDP Elgeniena and Zalengi.

#### **Q21: Is the delivery date "within 2 weeks" can be extended as it is not realistic for design, supply and installation of the equipment.**

A21: At this stage delivery will be as specified in the ITB document with no change.

#### **Q22: If a local company JV with a foreign company can the payment be made in a foreign currency to overseas account.**

A22: It depends on who is the leading company, if local company is the one who submit the bid, payment will be made to the local company.