RURAL ELECTRIFICATION AND RENEWABLE ENERGY CORPORATION

CONSULTANCY SERVICES

TERMS OF REFERENCE

PROJECT NAME: THE KENYA OFF-GRID SOLAR ACCESS PROJECT FOR UNDERSERVED COUNTIES (KOSAP)

CREDIT NO. 6135 PROJECT ID NO. P160009

TITLE OF CONSULTANCY SERVICES: SUPERVISION AND MANAGEMENT OF WORKS CONTRACTS FOR SOLAR PV WATER PUMPING (COMPONENT 3B)

RFP: KE-REA-464945-CS-QCBS

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1. Background

The Kenya Off-Grid Solar Access Project for Underserved Counties (KOSAP) is financed by the World Bank for USD150 million. The Project will be implemented by the Ministry of Energy (MOE), Kenya Power and Lighting Company (KPLC) and Rural Electrification and Renewable Energy Corporation (REREC). The Project Development Objective is to increase access to modern energy services in underserved counties of Kenya by providing electricity services to households, enterprises, community facilities and boreholes.

The project will be implemented in the following 14 counties in Kenya that have been defined as marginalized by the Commission on Revenue Allocation (CRA): Garissa, Isiolo, Kilifi, Kwale, Lamu, Mandera, Marsabit, Narok, Samburu, Taita Taveta, Tana River, Turkana, Wajir, and West Pokot. The project has Four (4) components as follows:

Component 1: Mini-grids for Community Facilities, Enterprises, and Households to be implemented by KPLC and REREC.

Component 2: Standalone Solar Systems, and Clean Cooking Solutions for Households to be implemented by The Ministry of Energy

Component 3: Standalone Solar Systems and Solar Water Pumps for Community Facilities.
This component has two sub components:

Sub-component 3A- Standalone Solar Systems for Community Facilities to be implemented by KPLC. The Community Facilities considered in this component are Health Facilities, Educational Facilities and Administrative Offices e.g. Assistant County Commissioner offices.

Sub-component 3B- Solar Water Pumps for Community Facilities to be implemented by REREC**.**

Component 4: Implementation Support and Capacity Building.

REREC will be responsible for the implementation of Component 1(Mini Grids) and Component 3B (Solar Water Pumps for Community Facilities).

On this note, REREC intends to apply part of the financing received for this project towards financing of consultancy services for Sub-Component 3B.

2. Scope of Works for Sub-Component 3B (Solar Water Pumps for Community Facilities)

The project works for this assignment includes Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities in all the fourteen (14) Counties: The scope covers Design, Supply, Installation, Testing and Commissioning of 316 No. Solar PV Pumping (SPVP) Systems for Community Facilities in Garissa, Isiolo, Kilifi, Kwale, Lamu, Mandera, Marsabit, Narok, Samburu, Taita Taveta, Tana River, Turkana, Wajir, and West

Pokot counties. The site locations are provided in **Appendix I.** These will be grouped in Eleven (11) Lots. Each lot shall be treated as a separate contract as detailed below:

Lot 1: Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities in Isiolo & Marsabit Counties

Lot 2: Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities in Taita Taveta & Lamu Counties

Lot 3: Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities Kilifi &Tana River Counties

Lot 4: Design**,** Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities in Kwale County.

Lot 5: Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities in Narok County

Lot 6: Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities in Samburu County.

Lot 7: Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities in West Pokot County

Lot 8: Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities in Turkana County.

Lot 9: Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities in Garissa County

Lot 10: Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities in Mandera County.

Lot 11: Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities in Wajir)

Table 1: **Number of Lots and General Scope of Works per Lot.**

Lot Name	**Counties**	**Scope of Works**
Lot 1	Parts of Isiolo County & Parts of Marsabit County	• Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities in Isiolo (6 SPVP Systems) & Marsabit (9 SPVP Systems) Counties.
Lot 2	Parts of Taita Taveta County & Parts of Lamu County	• Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities in Taita Taveta (19 SPVP Systems) & Lamu (15 SPVP Systems) Counties.
Lot 3	Parts of Kilifi County & Parts of Tana River County	• Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities in Kilifi (33 SPVP

		Systems) & Tana River (24 SPVP Systems) Counties.
Lot 4	Parts of Kwale County	• Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities in Kwale (28 SPVP Systems) County.
Lot 5	Parts of Narok County	• Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities in Narok (35 SPVP Systems) County.
Lot 6	Parts of Samburu County	• Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities in Samburu (18 SPVP Systems) County.
Lot 7	Parts of West Pokot County	• Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities in West Pokot (33 SPVP Systems) County.
Lot 8	Parts of Turkana County	• Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities in Turkana (33 SPVP Systems) County.
Lot 9	Parts of Garissa County	• Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities in Garissa (20 SPVP Systems) County.
Lot 10	Parts of Mandera County	• Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities in Mandera (28 SPVP Systems) County.
Lot 11	Parts of Wajir County	• Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities in Wajir (15 SPVP Systems) County.

Contract Structure

A single Contractor will be responsible for the ***Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities*** for each lot**.** A single contractor might be awarded a maximum of three (3 No.) lots. Therefore, the Contract will be signed between REREC and the Contractor.

3. Project Management

The Project Implementation Unit (PIU) established under Rural Electrification and Renewable Energy Corporation (REREC) will manage the successful completion of the Project. The PIU comprises of staff from REREC and will be full time assigned to the project.

The Consultant shall assign a full time Resident Team Leader responsible for supervision and management of the project i.e. administration of contracts, supervision of contractors and liaison with the Project Implementation Unit. The Consultant shall also avail six (6) Resident Engineers and one (1) ESHS Specialist to supervise the contractors on a day to day basis.

The overall responsibility of site supervision shall remain with the Consultant.

The Resident Engineers will be distributed in the lots and counties as shown in Appendix II.

4. Project Implementation Schedule

(A) Project Implementation Time:

It is envisaged to take 10 Months to complete the works contracts for the SPVP Systems.

(B) Defects Liability Period:

The defects Liability period for the SPVP Systems shall be 12 Months after successful completion and commissioning.

(C) Consultancy Services Time:

Based on (A&B) above, it is envisaged that the consultancy services shall be required for a period of 8 person-months, inclusive of final inspections and contract closure.

5. Objectives of the Consultancy Services

The objective of the supervision consultant is to provide technical assistance to REREC in supervising the contractors implementing the project under the ***Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities***. This will entail quality assurance, ensuring high standard of workmanship, project delivery on schedule and within the budget, compliance with agreed specifications, adherence to ESHS standards in accordance with the World Bank's and GOK's Safeguard Policies.

The Services under this assignment have the following major objectives:

i. Provide engineering expert service/advise in Design, Supply, Installation, Testing and Commissioning of Solar PV Pumping Systems for Community Facilities.
ii. Provide technical support related to supervision of works and connections for the eleven (11) contracted lots for the Solar PV Pumping Systems.
iii. Ensure quality and standard installation works and transparent project execution.

iv. Ensure Contractors implement the approved Environmental, Social, Health and Safety mitigations measures for the project as stipulated in the Environmental and Social Management Plans (ESMPs).
v. Provide Monitoring and Evaluation (M&E) expert services of the project for the individual Contracted lots as outlined in (ii) above.
vi. Mitigate/resolve probable technical problems/deadlocks associated with the project and hence accelerate project execution.
vii. Ensure technically sound project implementation and contract administration.

6. Scope of the Consultancy Service

The Supervision Consultant shall assist REREC by providing comprehensive Engineering, Contract Management and any other technical support during the Supply, Installation & Commissioning Phase of Solar Water Pumps for Community Facilities so that above mentioned objectives shall be achieved. The specific responsibilities of the Consultant are broadly divided into the following main activities:

i. Pre-Installation phase responsibilities
ii. Implementation Support and Post Installation phase responsibilities.
iii. Supervision and Monitoring of Adherence to the Management Strategies and Implementation Plans (MSIP) to manage the Environmental & Social (ES) risks; including Environmental, Social, Health and Safety Management Plan (ESHSMP) by Contractors.
iv. Monitor and report on the progress and implementation of the property easement consent forms for boreholes located on private land.
v. Training and Transfer of Knowledge.
vi. Project and Contracts Closure.

Activity 1: Pre-installation Phase Responsibilities

Responsibilities of the Consultant under this includes, but not necessarily limited to the following:

- Review and Approval of the Contractors' designs and drawings to ascertain that they comply with the specifications and in accordance with sound and best engineering practice.
- Review the Technical specifications of equipment and components to ensure that they meet relevant local and international quality and performance standards.
- Review and approval of Contractors' Project Implementation schedule.
- Confirm the contractors' schedule of personnel is as stated in the contract and recommend changes in the contractors' personnel where necessary.
- Review and Approval of the Contractors' screening forms, Management Strategies and Implementation Plans (MSIP) to manage the (ES) risks; including Installation ESHSMP.
- Review the provisions of signed property easement forms for boreholes located on private land.

- Prepare an Installation Supervision Manual delineating a consistent, comprehensive and uniform system of quality assurance and quality control for the works, including but not limited to systems of checks and reviews that will be enforced during installation to ensure the highest standards of quality and safety.
- Take part in contracts clarifications and kick off meetings for all the lots.
- Prepare a Monitoring and Evaluation Plan for each of the contract Lots. This plan will help in tracking the progress of each lot against set targets/milestones (project time schedule, budget, number of customer connections and adherence to ESHSMP).

Activity 2: Implementation Support & Post Installation Phase Responsibilities

The Consultant, as the Client's Representative under the various works contracts, will Supervise installation of the project in the Fourteen (14) Counties.
Responsibilities of the Consultant under this includes, but not necessarily limited to the following:

i. Provide necessary technical support to the client on its project management, including risk management, cost control, scheduling, monitoring and reporting.
ii. Monitor installation methods and quality control; verification of users information as collected by contractors to ensure completeness and accuracy, approval of design drawings submitted by contractors, certify that the quality of works conforms to the specifications, norms, standards and drawings.
iii. Scrutinize and approve the detailed work programs including resource planning by all the contractors, prepare and certify cash flow forecasts for disbursement requests.
iv. Supervise and monitor installation of all project components, verify modifications of designs as required by site conditions and recommend variation orders to be issued to all the contractors; check measurements for works completed and verify bills for payments to all the contractors as per the conditions of contract.
v. Supervise all aspects of installation work including periodical inspection of all the contractors' machinery and equipment.
vi. Supervise proper implementation of environmental and social specifications by the contractor, through monthly inspection of the sites, with production of E&S monitoring reports highlighting potential non-conformities.
vii. The Consultant together with the Client's personnel shall inspect and witness all factory tests for all major materials and key equipment supplied under all contracts to ensure conformance to relevant local and international standards and equipment specifications.
viii. Monitor mobilization and progress of works and services including confirmation of materials delivery to sites.
ix. Oversee testing, pre-commissioning and commissioning activities by the contractors for each lot, including but not limited to performance guarantee tests and other acceptance tests to ensure that they meet the required standards and procedures.
x. The Consultant shall organize monthly meetings between the Client and all the contractors to review progress of the project, resolve any problems encountered during the progress of installation and report any challenges to the Client. Minutes

of the meetings shall be prepared by the Consultant and signed by all the participating parties. The Consultant shall be responsible to chair the meetings.

xi. Maintain detailed records of scope of the completed works.

xii. Take part in Joint Measurement Certifications, with client's technical team, review and confirm quantity and quality of works completed, and approve interim certificates for progress of payments and verify the quantities for such certificates and recommend for payment to the Client.

xiii. Verification of necessary statutory certifications/requirements for the completion of the project.

xiv. Verify and certify all the contractors' invoices to ascertain that the invoiced amount conforms to the works done.

xv. Examine the contractor's claims for variation, time extensions, contract amendments, additional compensation and prepare recommendation for approval by the Project Manager.

xvi. Take part in resolution of contractual issues in liaison with the Client.

xvii. Check and certify 'as-constructed' drawings/reports for the works done by all the contractors at the end of assignment and ensure that the client receives as constructed drawings. The 'as constructed' drawings/reports shall be maintained in the Facilities Database (FDB) system as required by the Client.

xviii. Prepare and submit monthly, quarterly and annual progress reports as outlined in chapter 10.

xix. Undertake any other tasks and responsibilities requested by the PIU from time to time.

Activity 3: Supervision and Monitoring of Adherence to the Management Strategies and Implementation Plans (MSIP) to manage the (ES) risks

The Consultant shall ensure that all the Environmental and Social impact mitigation measures included in the MSIP (including ESHSMP) are executed by the contractor and make written reports on any non-conformity of work with E&S guidelines.

The Consultant shall perform Environmental and social monitoring during all stages of the Project. The Consultant shall perform, among others, the following activities during the pre-installation and installation phases of the Project for each contract, through monthly inspection of the sites;

a. Checking proper storage and operation of equipment and maintenance by the contractor,
b. Ensure that during the commissioning and operation phase the contractor has undertaken the final clean-up operation,
c. Ensure that the contractor prepares an acceptable, detailed Installation ESHSMP and an HIV/AIDS Awareness and Prevention Plan prior to commencement of site preparation and installation activities,
d. Ensure that all the installation contractors implement the detailed Installation ESHSMP and HIV/AIDS Awareness and Prevention Plan and adhere to sound installation management guidelines,
e. Ensure the safety measures are followed during the implementation of the project.
f. Ensure Contractors adhere to OSHA Regulations.

g. Review of all E&S documentation of the contractor, including follow-up documentation on non-conformities, incidences and accidents, recruitments, internal grievance management, waste management, and all other documents as per the works contract, and check the quality of E&S reporting by the contractor.
h. Management of all ESHS non-conformities as per corresponding section of the works contract.
i. Review and ensure implementation of MSIP; The Installation and Community Health and Safety Management Plans, HR and Labour Influx Management Plans, Sexual Exploitation, and Abuse (SEA) prevention and response action plan, Stakeholder Engagement Plan.
j. Monitor and report on compliance with signed property easement forms for boreholes situated on private land.

The Consultant shall include in his quarterly report activities performed concerning all Environmental, Social, Health and Safety related issues. The reports shall be verified by REREC.

Activity 4: Training and Transfer of Knowledge

The Client considers this Consultancy services contract as an opportunity for knowledge transfer to a number of their staff and contractors' staff through formal courses combined with on-the-job training while the Client's staff monitor the Consultant and contractors.

During the Consultant's services contract, the Consultant shall organize the following training and transfer of knowledge sessions:

- Pre-installation 1: Organize a 3-day classroom training course on Solar PV Pumping Systems planning, sizing and design; installation; testing and commissioning, for at least 20 client technical staff.
- Pre-installation 2: Organize a 2-day classroom training course on the Installation Supervision Manual and Project Management, for at least 20 Client staff that would include engineers, financial management specialists, procurement specialists, environmental specialists and social management specialists. The goal of the session is to receive feedback and comments on the Manual.
- Installation: One (1) month after mobilization of all contractors: Organize a 1-day classroom training course on the Installation Supervision Manual, for at least 2 key staff from each contractor and at least seven (7) Client staff.
- Installation: Four (4) months after mobilization of all contractors: Organize a 1-day classroom training course on the Installation Supervision Manual, for at least 2 key staff from each contractor and at least 7 Client staff. The goal of the training session is to review current questions and issues on the procedures in the Manual, and receive suggestions and feedback on how to improve the Manual, including management of ESHS risks.
- Installation: Twelve (12) months after mobilization of all contractors: Organize a 1-day classroom training course on on-the-job training provided by Consultant to the Client and contractors for at least 2 key staff from each contractor and at least 20 Client staff. The goal of the training session is to review current questions and issues on the lessons learned on knowledge transfer through on-the-job training.

The cost of this training shall be borne entirely by the Consultant (conference/training rooms, coffee breaks, audio-visual support, printed supports, software, fees for trainers, etc.). Per Diem, accommodation and transportation of REREC staff will be covered by REREC. Contractor's personnel cost (per diems, accommodation and transportation) to attend the trainings shall be borne by the Contractor.

After the delivery of the formal courses, during the remainder of the pre-installation phase and continuing into the installation phase of the consultant's assignment, the consultant shall continue with transfer-of-knowledge program to Client staff and contractors' staff.

The Consultant shall name a coordinator for the proposed program of formal and on-the-job knowledge transfer.

For the technical proposal, the Consultant shall describe the transfer of knowledge (training) program for both: (a) formal classroom courses and (b) follow-up on-the-job-training. The proposed program will be scored during technical evaluation in terms of: (i) the relevance of training program, (ii) training approach and methodology, and (iii) qualifications of the trainers (both consultant's own experts and experts from external institutions), as will also be indicated on the Instructions to Consultants (ITC) Data Sheet.

Activity 5: Project and Contracts Closure

In order to facilitate Project and Contracts closure, the Consultant will perform the following;

a. Issuance of Completion Certificates and Operational Acceptance Certificates.
b. Determine Snag list per contract lot and ensure that the snags are attended to by the contractors.
c. Verify digitization of the constructed Solar Water Pumps for Community Facilities in the REREC Facilities Database (FDB).
d. Verify As-Built drawings before being submitted to REREC.
e. Final Contracts (per lot) Bill of Quantities (BoQs) determination.
f. Materials reconciliation.
g. Financial reconciliation.
h. Review the O&M manuals developed by the contractors.
i. Review the O&M ESMPs developed by the contractors.
j. Report as stipulated in clause 10.4.
k. Carry out final inspection
l. Prepare final inspection report

7. Facilities to be provided by:

7.1. REREC

The "Client" will provide access to relevant information to the Projects.
The "Client" will NOT provide office accommodation or transport.

7.2. Consultant

The Consultant shall provide the following;

a) Office Accommodation

The consultant will establish a minimum of six (6) offices one of which will be the head office and located in Nairobi. This will be the head office of the firm.

The other five (5) offices will be used by the personnel supervising work in the following clusters:
(i) Taita Taveta, Lamu and Garissa Counties
(ii) Kilifi, Tana River and Kwale Counties
(iii) Mandera and Wajir Counties
(iv) Marsabit, Samburu and Isiolo Counties
(v) Turkana and West Pokot Counties

Note: The Narok County cluster could be administered from Nairobi office.

b) Transportation

The consultant shall provide six (6) vehicles for his own use during this assignment. One of these will be used by the Consultant's Team Leader at Head Office in Nairobi and the other five (5) will be based in the cluster offices for use by the Resident Engineers.

Vehicle specification - A standard production Double cabin, 4x4, off-road utility vehicle, designed for medium duty specifications, capable of operating in tropical conditions of mud and dust and most suitable for operating on both "on and off" road conditions.

The consultant shall provide

- Competent licensed drivers for each vehicle
- All necessary fuel, lubricant, tools, spares, full maintenance
- Temporary replacement vehicles for any vehicle under repair or maintenance for more than forty-eight (48) hours;
- Permanent replacement vehicles for vehicles beyond repair or during extensive repair period;
- Insurance and licences for normal operation on and off site and on and off duty

The price for the vehicles and associated costs shall include all expenses required for the duration of the Consultancy Service Contract such as insurance, registration and plate fees, and local customs, duties charges, etc. The local customs and duty charges should be quoted separately in the local currency.

The cost of the vehicles and its associated running costs for this Project shall be included in the consultancy service costs.

All vehicles, 6 No, will be handed over to the client (REREC) after completion of the projects in a standard serviceable condition with all relevant documents.

8. Conduct of Work

The consultant will be expected to be fluent in English and be able to work closely with the REREC staff, Contractors and other third parties associated with the implementation of this project.

All documentation shall be in English.

Standards for design and equipment used shall be based on IEC, IEEE, EIA/TIA, recommendations and/or other National standards approved by REREC, modified for Kenyan environmental conditions and the best practices.

Operations shall be under the Kenyan Law and statutes, including EMCA 1999, NEMA, NCA, KCA, WATER ACT, and ENERGY ACT 2019.

9. Qualification and Experience

9.1 Qualifications of the Consultancy Firm

The supervision consultant will be a firm or a consortium of firms. Interested consultancy firms/consortium must have at least 10 years of experience and must have undertaken similar assignments in a developing country within the last 5 years.

9.2 Qualifications of the Key Personnel

The assignment shall be managed by a single team leader. The members of the team will have the skill and experience necessary to undertake the range of tasks set out in these terms of reference. Each individual on the team must be personally available to do the work as and when required. The Team Leader will be held accountable, in terms of the consultancy contract, for ensuring project deliverables and for the professional conduct and integrity of the team.

The Consulting firm shall select key personnel to meet the specific requirements of the assignment. The firm will consist of one (1) Team Leader, Six (6) Resident Engineers and one (1) ESHS Specialist. The team shall comprise of the following minimum mandatory requirements but not limited to:

A. Team Leader – 1 No.

Strong technical and analytical background, and knowledge of international best practices pertaining to design and deployment of solar PV installation, particularly in water pumping or borehole projects.. The team leader should be highly experienced in addressing the range of issues typically encountered in the process of identifying and characterizing in solar PV installation, particularly in water pumping or borehole projects. He/she is expected to bring an established and recognized track record of experience leading teams in undertaking comparable efforts in other countries. The team leader must have:

a. A Bachelor's degree in electrical/civil/mechanical/renewable energy engineering. A Master's degree will be an added advantage.
b. 10 years' experience in electrical/PV power projects management/supervision.
c. Strong leadership, management and communication skills.
d. At least 10 years' experience in design, procurement and installation of solar PV installation, particularly in water pumping or borehole projects.
e. Registered as a professional Engineer with Engineers Board of Kenya (EBK) for local Engineers, or equivalent for foreign/International Engineers.
f. Demonstrated experience in design, installation, testing and commissioning of at least 5 Contracts specifically on solar water pumping or borehole projects. One of which must have been in Sub-Saharan African countries.
g. Have done at least 10 solar PV water pumping or borehole projects.
h. Demonstrated ability to utilize PV systems design software such as PVSyst, Homer etc.
i. Demonstrated knowledge of local or international PV standards for equipment and systems including SPVP Systems.
j. Working Experience of Balance of Systems components (Solar PV modules array, submersible motor-pump set, submersible cables, electronics controller (VFD/Solar Pump Inverter), wiring / cabling, mounting structures and all necessary civil works) sizing, installation, and interconnection.
k. Fluency in English language.

B. Resident Engineers– 6 No

The Resident engineers shall demonstrate ability to work within a multi-disciplinary project team with counterparts and other stakeholders. They should also be expected to be able to review PV power systems and civil and structural designs for quality and efficiency and suggest means by which errors can be rectified and designs improved. The resident engineer must have;

i. A Bachelor's degree in electrical/mechanical/civil/renewable energy engineering or equivalent.
l. At least 6 years' experience in design, installation and commissioning of solar PV installation, particularly in water pumping or borehole projects.
ii. Registered with Engineers Board of Kenya (EBK) for local Engineers, or equivalent for foreign/International Engineers.
iii. Demonstrated experience in design, installation, testing and commissioning of at least 5 Contracts specifically on solar water pumping or borehole projects.
iv. Demonstrated ability to utilize PV software such as PVSyst and Homer for solar water pumping systems design and performance simulation.
v. Working Experience of Balance of Systems components (Solar PV modules array, submersible motor-pump set, submersible cables, electronics controller (VFD/Solar Pump Inverter), wiring / cabling, mounting structures and all necessary civil works) sizing, installation, and interconnection.
vi. Knowledge of applicable laws, codes, regulations, and procedures.
vii. At least 3 years' experience in project management.
viii. Solar PV licensing by EPRA (T3) or equivalent will be an added advantage.
ix. Fluency in English.

D. Environmental, Social, Health and Safety (ESHS) Specialist – 1 No.

i. B.Sc. degree in Environmental Science/Environmental Engineering/Natural Resource Management/Social/Health/Safety degree or any related discipline with combination of appropriate trainings.
ii. 8 years' experience in managing Environmental, Social, Health and Safety issues in development projects.
iii. At least 2 years' experience in managing Environmental, Social, Health and Safety issues in projects in a Sub Saharan Country.
iv. Experience working on donor funded projects will be an added advantage.
v. Registration with NEMA will be an added advantage.
vi. Language proficiency in English language.

10. Reports

10.1 Inception report

The Consultant shall submit inception reports within one month of the contract award. The report will outline the Consultant's work plan including but not limited to:

a. consultant's interpretation of the terms of reference
b. the technical approach to the work
c. confirmation of design data
d. time allocation schedule
e. detailed work plan
f. assignments for each individual in the team
g. project management tools and technique
h. installation Supervision Manual

10.2 Monthly Progress Reports

The consultant shall compile, summarize and submit monthly progress report on the activities carried out during the month. The progress report will include work charts as against scheduled timeframe of implementation. Challenges (including ESHS non-conformities) encountered during project implementation shall be highlighted and the respective corrective measures adopted (or to be adopted) shall be documented. For cases where REREC's intervention is required in order to resolve/ mitigate the challenge(s), the report shall document the date when the challenge was communicated to REREC, whether it has been resolved and how long it took to be resolved.

10.3 Quarterly Progress Reports (QPRs)

The Quarterly Progress Reports shall cover all aspects of Project implementation: - disbursement schedules, project progress vis-à-vis Monitoring and Evaluation Plan (as per requirement in activity 1) and implementation of environmental and social mitigation measures in respect of ESMP (Environmental and Social Management Plan). The QPRs shall also highlight issues affecting Projects implementation and proper corrective actions. The QPRs should be received by the Client no later than 10 days after the end of each quarter.

All reports shall be submitted in 3 copies. The reports shall also be submitted in electronic form. Format of the report shall be discussed and agreed upon with the Project Manager.

10.4 Project Completion Report (PCR)

Upon completion of the project installation activities, the Consultant shall prepare a Project Completion Report (PCR) in accordance with client requirements. The PCR will form a comprehensive record of the design, installation and erection works accomplished including:

i) Project achievements against set objectives,
ii) A description of changes or modifications to the designs,
iii) Problems encountered and solutions adopted, including a specific section concerning environmental, social, health and safety issues
iv) Overall installation volume, quantities and costs and
v) Lessons learned

10.5 Final Inspection Report (FIR)

Upon the End of the Defects Liability Period the contractor shall carry out the final inspection and prepare the final inspection report (FIR). The FIR will form a confirmation record of the PCR:

The reports shall be submitted as mentioned below;

Report	No. of Copies	Due Date	Submitted To
Inception Report cum supervision manual	4 + (soft copy)	Within one month of contract agreement	Project Manager
Monthly Implementation Progress Reports	4 + (soft copy)	First week of succeeding Month	Project Manager
Quarterly Progress Reports	4 + (soft copy)	Within 10 days of completion of Quarterly reporting period.	Project Manager
Project Completion Reports	4 + (soft copy)	One Month from completion of works	Project Manager
Final Inspection Reports	4 + (soft copy)	One Month from End of Defects Liability Period	Project Manager
Other Reports		As requested by Project Manager	Project Manager

11. Person-Month Allocation

The consultant shall indicate in his proposal sufficient person-months for proper execution of the Project. Considering the technical and financial evaluation, contract shall be awarded to a single consultant whose entire result reflects the evaluation criteria. The consultant shall provide a schedule with breakdown for various activities called for in the TOR, including the home office and field activities.

The estimated maximum proposed person-months by the consultant shall be as follows:

KEY STAFF	QTY.	ESTIMATED PERSON-MONTHS		
		During Project Implementation	3 Months Before the end of the DLP	Total Persons-Month
Team Leader	1	6	2	8
Resident Engineer 1	1	6	2	8
Resident Engineer 2	1	6	2	8
Resident Engineer 3	1	6	2	8
Resident Engineer 4	1	6	2	8
Resident Engineer 5	1	6	2	8
Resident Engineer 6	1	6	2	8
ESHS Specialist	1	6	2	8
TOTALS	**8**			**64**

Appendix 1 - Solar PV Pumping Systems Locations

Appendix 1.1- Isiolo County

Code	County	Sub-County	Project Name
1	Isiolo	Merti	Bullesa old
2	Isiolo	Merti	New Lakole
3	Isiolo	Merti	Dogogicha
4	Isiolo	Merti	Urura
5	Isiolo	Merti	Yamicha
6	Isiolo	Isiolo	LMD-Kilimani

Appendix 1.2- Marsabit County

Code	County	Sub-County	Project Name
1	Marsabit	Kargi	Bagasi
2	Marsabit	Moyale	Badanrero
3	Marsabit	Moyale	Ambalo 1
4	Marsabit	Moyale	Ambalo 2
5	Marsabit	Moyale	Kobb Adadi
6	Marsabit	Moyale	Golole 2
7	Marsabit	North Horr	Ramat Os Tullow
8	Marsabit	Saku	Shegel III
9	Marsabit	Saku	Dololo Dokatu

Appendix 1.3 Taita Taveta County

Code	County	Sub-County	Project Name
1	Taita Taveta	Taveta	Rekeke booster pump
2	Taita Taveta	Taveta	Bura Ndogo-C Borehole
3	Taita Taveta	Taveta	Mrabani Primary shallow well
4	Taita Taveta	Voi	Kisimenyi Primary
5	Taita Taveta	Mwatate	Mvita/KwaScaver BH
6	Taita Taveta	Voi	Birikani Kisimenyi
7	Taita Taveta	Mwatate	Msau Polytechnic Borehole
8	Taita Taveta	Mwatate	Manoa Borehole
9	Taita Taveta	Mwatate	Nyangoro borehole
10	Taita Taveta	Wundanyi	Kishushe sharp corner
11	Taita Taveta	Wundanyi	Kisima borehole/Kishushe
12	Taita Taveta	Wundanyi	Paranga Borehole
13	Taita Taveta	Taveta	Lutheran Borehole
14	Taita Taveta	Taveta	Lessesia Borehole
15	Taita Taveta	Taveta	Eldoro Borehole
16	Taita Taveta	Taveta	Ulawani community borehole
17	Taita Taveta	Taveta	Chumvini water project
18	Taita Taveta	Taveta	Njukini borehole
19	Taita Taveta	Taveta	Wololo borehole

Appendix 1.4 Lamu County

Code	County	Sub-County	Project Name
1	Lamu	Lamu East	Ndau Desalination Plant
2	Lamu	Lamu East	Mkokoni Desalination Plant
3	Lamu	Lamu West	Maishamash
4	Lamu	Lamu West	Kisuke Primary School
5	Lamu	Lamu West	Mikinduni Primary School
6	Lamu	Lamu West	Holy Angels Primary School
7	Lamu	Lamu West	Sefu Primary
8	Lamu	Lamu West	Jericho Primary School
3	Lamu	Lamu East	Faza Primary School
5	Lamu	Lamu West	Soroko Primary
7	Lamu	Lamu West	Poromoko Primary School
8	Lamu	Lamu West	Rehema Primary
9	Lamu	Lamu West	Bahati Primary School
14	Lamu	Lamu West	Mini Valley Primary School
15	Lamu	Lamu West	Bomani Primary School

Appendix 1.5 Kilifi County

Code	County	Sub-County	Project Name
1	Kilifi	Kilifi North	Mtondia Kwa ngonyo
2	Kilifi	Kilifi North	Kwa katana wa chome Majaoni
3	Kilifi	Kilifi North	Tezo agriculture borehole
4	Kilifi	Kilifi North	Samson Nyanje borehole
5	Kilifi	Kilifi North	Mwambani Kwa Mundu
6	Kilifi	Kilifi North	Mkunguni Chumani
7	Kilifi	Kilifi North	Wesa Ngerenya borehole
8	Kilifi	Kilifi North	Roka Maweni
9	Kilifi	Kilifi North	Kadenge paka borehole
10	Kilifi	Malindi	Sea breeze Msabaha wa juu
11	Kilifi	Malindi	Takaye Kwa Diwani
12	Kilifi	Malindi	Takaye Kwa chiguba (chigunda)
13	Kilifi	Malindi	Msoloni Kwa jasho
14	Kilifi	Malindi	Gahaleni
15	Kilifi	Magarini	Magarini Mabrui
16	Kilifi	Magarini	Majengo Centre Borehole
17	Kilifi	Kilifi North	Kwa Muye Bh
18	Kilifi	Kaloleni	Mwakanga Walea Primary BH
19	Kilifi	Kilifi South	Mzambaraoni(kwa Abdla heri) BH
20	Kilifi	Kaloleni	Mwakonzi BH
21	Kilifi	Kilifi South	Shariani Kwa Akida BH
22	Kilifi	Ganze	Migodomani BH
23	Kilifi	Kilifi North	Kwa William Shida
24	Kilifi	Kilifi North	Roka Youth Polytechnic
25	Kilifi	Kilifi North	Kadenge Kavumbe Borehole
26	Kilifi	Malindi	Msabaha Kwa mwasaha

Code	County	Sub-County	Project Name
27	Kilifi	Kilifi North	Dungicha BP
28	Kilifi	Kilifi	Tsalu BP
29	Kilifi	Rabai	Masaani Booster pump
30	Kilifi	Kilifi South	Mapawa Kolewa BP
31	Kilifi	Ganze	Mweza Bp
32	Kilifi	Ganze	Mbonga BP
33	Kilifi	Ganze	Palakumi BP

Appendix 1.6 Tana River County

Code	County	Sub-County	Project Name
1	Tana River	Tana River	Bububu
2	Tana River	Tana River	Duwayo Borehole
3	Tana River	Tana River	Hola Water Supply B
4	Tana River	Tana River	Rhoka
5	Tana River	Tana River	Laini
6	Tana River	Tana River	Ghalamani
7	Tana River	Tana River	Chanani
8	Tana River	Tana Delta	Gadeni Furaha
9	Tana River	Tana River	Hola Water Supply A
10	Tana River	Tana North	Bura Water Works
11	Tana River	Tana Delta	Ngao Water Supply
12	Tana River	Tana Delta	Tarasaa Secondary
13	Tana River	Tana Delta	Kipini Secondary
14	Tana River	Tana Delta	Arap Moi Primary
15	Tana River	Tana Delta	Baomo
16	Tana River	Tana Delta	Buyani Secondary School
17	Tana River	Tana Delta	Majiweni Primary School
18	Tana River	Bangale	Maramtu A
19	Tana River	Tana Delta	Ziwani
20	Tana River	Bangale	Taleo Kolati
21	Tana River	Tana North	Chewele Ghaigopa Msikitini
22	Tana River	Tana Delta	Wema Kulesa
23	Tana River	Tana Delta	Bara Moyoo
24	Tana River	Tana River	Nyangwani

Appendix 1.7 Kwale County

Code	County	Sub-County	Project Name
1	Kwale	Lungalunga	Ganda
2	Kwale	Lungalunga	Kifuku
3	Kwale	Lungalunga	mabafweni
4	Kwale	Matuga	Kidiani ecd
5	Kwale	Matuga	Mwanamkuu
6	Kwale	Matuga	Haraka
0	Kwale	Matuga	Mwagodzo
8	Kwale	Matuga	Bowa

Code	County	Sub-County	Project Name
9	Kwale	Matuga	Kombani central
10	Kwale	Matuga	Madibwani
11	Kwale	Matuga	Magundo
12	Kwale	Matuga	Jeza A
13	Kwale	Matuga	Mwananyahi
14	Kwale	Matuga	Mazumalumee
15	Kwale	Msambweni	Mbuwani
16	Kwale	Msambweni	Kibarani
17	Kwale	Msambweni	Darigube
18	Kwale	Matuga	Muungano
19	Kwale	Lungalunga	Godo
20	Kwale	Matuga	Mwamnyuti
21	Kwale	Msambweni	Vumilia
22	Kwale	Lungalunga	Mahuruni
23	Kwale	Msambweni	Mwendo Wa Bure
24	Kwale	Msambweni	Vukani
25	Kwale	Msambweni	Kandarasi
26	Kwale	Lungalunga	Mwamose
27	Kwale	Msambweni	Ngori
28	Kwale	Msambweni	Maphombe

Appendix 1.8 Narok County

Code	County	Sub-County	Project Name
1	Narok	Narok central	Katakala borehole
2	Narok	Narok central	Katakala C/o Saoli
3	Narok	Narok central	Olopito water point (spring)
4	Narok	Narok South	Ichangipusi inside building hope academy school
5	Narok	Narok South	Ole pariata borehole
6	Narok	Narok South	Olkirankawuo
7	Narok	Narok South	Nkoben
8	Narok	Narok central	Nkareta BH
9	Narok	Transmara south	Oldonyorok bh
10	Narok	Transmara east	Mugenyi/ njipship BH
11	Narok	Narok South	Sogoo
12	Narok	Narok South	Marinwa
13	Narok	Transmara east	Simutwet shallow well
14	Narok	Narok North	Enesampulai BH
15	Narok	Narok East	Kitororonyi BH
16	Narok	Narok West	Mpuaai
17	Narok	Narok West	Mosimowok/ laluk
18	Narok	Narok West	Nkamurunya
19	Narok	Narok East	Olepunywa/ olchoro leletuya
20	Narok	Narok East	Oloikumkum bh
21	Narok	Narok East	Olooiturot BH
22	Narok	Narok West	Omomet bh

Code	County	Sub-County	Project Name
23	Narok	Narok central	Sheep and goats
24	Narok	Transmara south	Angata-barrakoi
25	Narok	Narok West	Ilmedeketa bh
26	Narok	Narok South	Enkoseremai
27	Narok	Narok South	Morijo Loita
28	Narok	Narok South	Intasati
29	Narok	Narok South	Iladoru
30	Narok	Narok West	Endonyo Narasha
31	Narok	Narok South	Enkejuarro
32	Narok	Narok South	Koseka
33	Narok	Narok West	Entagotuo
34	Narok	Narok West	Ole Tarkash
35	Narok	Narok West	Olkinyei water project

Appendix 1.9 Samburu County

Code	County	Sub-County	Project Name
1	Samburu	Samburu West	Ngambo
2	Samburu	Samburu West	Miyai Borehole
3	Samburu	Samburu West	Lemisigiyo
4	Samburu	Samburu West	Seketet
5	Samburu	Samburu West	Lesidai
6	Samburu	Samburu West	Loibor
7	Samburu	Samburu West	Rangau
8	Samburu	Samburu West	Sirata
9	Samburu	Samburu West	Nkenju
10	Samburu	Samburu West	Ledero
11	Samburu	Samburu West	Malta
12	Samburu	Samburu West	Shabaa
13	Samburu	Samburu West	Simiti
14	Samburu	Samburu East	Jelmen
15	Samburu	Samburu East	Loijuk
16	Samburu	Samburu East	Lderkesi
17	Samburu	Samburu North	Bendera 1
18	Samburu	Samburu North	Baragoi boys

Appendix 1.10 West Pokot County

Code	County	Sub-County	Project Name
1	West Pokot	Pokot West	KatikomorPri School
2	West Pokot	Pokot West	Auskiyon
3	West Pokot	Pokot West	Habari Njema
4	West Pokot	Pokot West	Kariwo
5	West Pokot	Pokot West	Tamugh
6	West Pokot	Pokot West	Kotimoril
7	West Pokot	Pokot West	Kapkata
8	West Pokot	Pokot West	Cheptuya

Code	County	Sub-County	Project Name
9	West Pokot	Pokot West	Tilak Pri School
10	West Pokot	Pokot South	Chelombai
11	West Pokot	Pokot South	Pserum St. Mary's Sec Sch.
12	West Pokot	Pokot South	Tomoi
13	West Pokot	Pokot South	Senetwo
14	West Pokot	Pokot Central	Rorok
15	West Pokot	Pokot Central	Poto
16	West Pokot	Pokot Central	Weiwei Sec School
17	West Pokot	Pokot central	Cheprukot
18	West Pokot	Kacheliba	Kopulio pri.School
19	West Pokot	Kacheliba	Lokii ECDE Borehole
20	West Pokot	Kacheliba	Katuwot borehole
21	West Pokot	Kacheliba	Longolesia Borehole
22	West Pokot	Kacheliba	Reretiang borehole
23	West Pokot	Kacheliba	Kaskuroi ECDE borehole
24	West Pokot	Kacheliba	Losam Borehole
25	West Pokot	Kacheliba	Lamada borehole
26	West Pokot	Pokot North	Mbaru borehole
27	West Pokot	Kacheliba	Nasakam borehole
28	West Pokot	Pokot North	Kasei boys
29	West Pokot	Pokot North	Cheporon Borehole
30	West Pokot	Pokot North	Lochariamonyang borehole
31	West Pokot	Pokot North	Naruoro borehole
32	West Pokot	Pokot North	Oron borehole
33	West Pokot	Pokot North	Lodonyo Borehole

Appendix 1.11 Turkana County

Code	County	Sub-county	Site name
1	Turkana	Loima	Kanyangpus
2	Turkana	Loima	Lokatul
3	Turkana	Loima	Namoruakwak
4	Turkana	Loima	Turkwel centre
5	Turkana	Turkana Central	Nasurut water supply
6	Turkana	Turkana Central	Lorengelup
7	Turkana	Turkana Central	Kadinyangole
8	Turkana	Turkana East	Lotubwae
9	Turkana	Turkana East	Katilia Girls
10	Turkana	Turkana East	Lokwii SDA
11	Turkana	Turkana North	Lomenguru(Napeto)
12	Turkana	Turkana North	Lokumwae
13	Turkana	Turkana North	Koriomoreng
14	Turkana	Turkana North	Nimwae
15	Turkana	Turkana North	Lowarengak
16	Turkana	Turkana North	Murueris
17	Turkana	Turkana North	Naurkorio

Code	County	Sub-county	Site name
18	Turkana	Turkana North	Natedelim
19	Turkana	Turkana North	Loitangule
20	Turkana	Turkana South	Katilu
21	Turkana	Turkana south	Lokichar[Chinese borehole]
22	Turkana	Turkana south	Kapelbok
23	Turkana	Turkana south	Lomeleku
24	Turkana	Turkana south	Kasuroi
25	Turkana	Turkana south	Lomoonyang
26	Turkana	Turkana south	Loupwala
27	Turkana	Turkana South	Nagetei
28	Turkana	Turkana West	Loteteleit
29	Turkana	Turkana West	Lokichioggio UN compound
30	Turkana	Turkana West	Locheriangamor
31	Turkana	Turkana West	Akalaliot
32	Turkana	Turkana West	Nakwangat 2
33	Turkana	Turkana West	Oropoi w/s

Appendix 1.12 Garissa County

Code	County	Sub-County	Project Name
1	Garissa	Fafi	Nanighi Sec
2	Garissa	Ijara	Hara borehole
3	Garissa	Ijara	Kotile borehole
4	Garissa	Fafi	Sadh gosa borehole
5	Garissa	Lagdera	Shanta-abaq borehole
6	Garissa	Lagdera	Kathalash
7	Garissa	Lagdera	Gurufa bh
8	Garissa	Dadaab	Abakeile BH
9	Garissa	Dadaab	Gubakibir
10	Garissa	Dadaab	Kadakso
11	Garissa	Dadaab	Kulan borehole 2
12	Garissa	Dadaab	Sheldub
13	Garissa	Dadaab	Homajo
14	Garissa	Dadaab	Damajale BH
15	Garissa	Dadaab	Dad quran
16	Garissa	Dadaab	Liboi BH 1 police camp
17	Garissa	Dadaab	Landiig BH
18	Garissa	Lagdera	Lolol BH
19	Garissa	Lagdera	Qone BH 1,2,3,4
20	Garissa	Ijara	Hulugo water point

Appendix 1.13 Mandera County

Code	County	Sub-County	Project Name
1	Mandera	Mandera North	Barwaqo
2	Mandera	Mandera North	Rhamu
3	Mandera	Mandera North	Morothile

Code	County	Sub-County	Project Name
4	Mandera	Mandera North	Daidai
5	Mandera	Banisa	Malkamari
6	Mandera	Banisa	Eymole
7	Mandera	Banisa	Birkan
8	Mandera	Mandera West	Darwed
9	Mandera	Mandera West	Dandu
10	Mandera	Mandera West	Wangai Dahan
11	Mandera	Mandera West	Kobadadi
12	Mandera	Mandera South	Elele
13	Mandera	Mandera South	Qoloy
14	Mandera	Mandera East	Koromey
15	Mandera	Lafey	Hareri
16	Mandera	Lafey	Gari
17	Mandera	Lafey	Waranqara
18	Mandera	Lafey	Lafey
19	Mandera	Lafey	Alungu
20	Mandera	Mandera South	Borehole 11
21	Mandera	Mandera South	Kabo
22	Mandera	Mandera South	Shimbir Fatuma 1
23	Mandera	Mandera South	Shimbir Fatuma 2
24	Mandera	Mandera South	Qalanqalesa
25	Mandera	Mandera South	El Tul
26	Mandera	Mandera South	Harbate
27	Mandera	Mandera East	Bida
28	Mandera	Mandera East	Omar Jillo

Appendix 1.14 Wajir County

Code	County	Sub-County	Project Name
1	wajir	Khorofarar	Konton
2	wajir	Dadajabula	Lagdub borehole
3	wajir	Basir	Basir Tito2
4	wajir	Danaba	Qarari
5	wajir	Danaba	Qarsabula
6	wajir	Batalu/Buna	Batalu
7	wajir	Sarman	Mashin ben
8	wajir	Sarman	Kabatula
9	wajir	Benane	Sariba borehole
10	wajir	Admasajida	Lagdima borehole
11	wajir	Admasajida	Wara borehole
12	wajir	Hadado ward	Baragothey borehole
13	wajir	Hadado	Athibohol borehole2
14	wajir	Hadado	Hadado new borehole
15	wajir	Lagbogol	Allan-uss

Appendix II – Distribution of Resident Engineers in the Lots and Counties

CLUSTER	LOTS	COUNTY	NO. OF RESIDENT ENGS
1	1 &6	Isiolo, Marsabit & Samburu,	1
2	2 & 9	Taita Taveta, Lamu & Garissa	1
3	3 & 4	Kilifi, Tana River & Kwale	1
4	7 & 8	West Pokot &Turkana	1
5	10 & 11	Mandera & Wajir	1
6	5	Narok	1