

# **ZANZIBAR ENERGY SECTOR TRANSFORMATION AND ACCESS PROJECT**

## **TERMS OF REFERENCE**

### **FOR**

## **CONSULTANCY SERVICES FOR DISTRIBUTION NETWORK REFURBISHMENT AND STRENGTHENING AND LAST-MILE CONNECTIONS**

### **1. INTRODUCTION**

Zanzibar is a semi-autonomous region of the United Republic of Tanzania and consists of two main islands, Unguja and Pemba. The two islands are located approximately 35 kilometers (km) off the coast of mainland Tanzania and are surrounded by a group of approximately 50 islets. Zanzibar's population was 1.6 million in 2019, with about 70 percent in Unguja and the rest in Pemba. Currently, over 60 percent of the inhabitants live in urban areas.

The two main islands of Zanzibar are dependent on power imported through submarine cables from mainland-Tanzania. Unguja imports its power from Tanzania Electric Supply Company Limited (TANESCO)<sup>1</sup> through a 39km, 132kV submarine cable with a maximum capacity of 100MW that was commissioned in March 2013. This cable was constructed to replace the old 132kV (45MW) oil filled submarine cable, installed in 1980, which was close to reaching its limits both in terms of capacity and economic lifetime, and had started experiencing faults. Pemba imports its power from TANESCO through a 75km, 33kV submarine cable, with a maximum capacity of 20MW that was commissioned in 2010. The commissioning of the 33kV Pemba submarine cable helped replace expensive and unreliable diesel-based power generation. Although the new submarine cables feeding Unguja and Pemba have improved reliability of supply, the risk of supply outages remains, due to the lack of supply redundancy. As a partial mitigation against this risk, ZECO owns 25MW of grid-connected back-up diesel generators on the Unguja island at Mtoni sub-station. These, however, have not been adequately maintained over the past years and are considered very expensive to run even as stand-by. Fifty-seven (57) percent of Zanzibar's population has access to electricity; the Revolutionary Government of Zanzibar (RGoZ) has set the objective of universal access to electricity by 2032.

Electricity demand in Unguja is driven by economic growth and the tourism sector. In recent years, the demand in Unguja has registered rapid growth - an average of about eight percent per year between 2014 and 2019. However, the economic shutdown due to the global pandemic led to a year-on-year drop in demand of about 15 percent between March and September 2020. Based on historical growth trends and planned development projects in Unguja, the electricity demand could exceed the available 100MW capacity of the submarine cable in the next three years.

The RGoZ has obtained funding from the World Bank to implement the Zanzibar Energy Sector Transformation and Access (ZESTA) Project to address key challenges in the sector arising from sole reliance on the limited submarine transmission capacity from mainland, which will, without additional supply options, result in supply rationing and load shedding during the peak demand period in Unguja. The other challenge in the sector is inadequate distribution system capacity that is causing high technical losses and preventing reliable and efficient supply and the acceleration of electricity access scale-up. The ZESTA Project thus aims to expand access to reliable and efficient electricity services and to scale up renewable energy generation in Zanzibar.

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<sup>1</sup> TANESCO is the vertically integrated power utility in mainland Tanzania that is responsible for power generation, transmission, distribution, and sales

The project is implemented by the Ministry of Water, Energy and Minerals (MoWEM) and the government-owned Zanzibar Electricity Corporation (ZECO), which is responsible for generation, transmission, distribution, and the sale of electricity in both Unguja and Pemba islands. The project will support (i) development of Zanzibar island's first grid-scale 18MWp solar PV generation plant and battery storage infrastructure to improve security of supply in Unguja and help to meet the growing electricity demand in the near term, while paving the way for future scale-up of renewable energy; (ii) construction of the first 132kV high voltage transmission backbone infrastructure to meet the growing power demand, evacuate power from the solar PV power plant and improve power supply quality and reliability across Unguja, as well as investments for distribution network refurbishment and strengthening and last-mile household connectivity scale-up; and (iii) project implementation, sector institutional strengthening, and design and implementation of key planning, strategy, and regulatory frameworks.

Against this backdrop, ZECO will be implementing the investments for distribution network refurbishment and strengthening and last-mile household connectivity scale-up and intends to procure a consulting firm or consortium to support the preparation, design, procurement, and supervision of the implementation of these investments.

## **2. DESCRIPTION OF THE DISTRIBUTION NETWORK REFURBISHMENT AND STRENGTHENING AND LAST MILE CONNECTIVITY INVESTMENTS**

The expected activities under the proposed distribution network refurbishment and strengthening and last-mile household connections include: (i) the design, supply, installation, and commissioning of the new 33kV and 11kV medium voltage (MV) and 400V low voltage (LV) distribution networks extension works in Unguja and Pemba islands; (ii) refurbishment and upgrade works on the existing 11kV network facilities (cables, transformers, ring-main units, and control and metering panels) around Stone Town; (iii) procurement/supply of last mile connection materials for households around Zanzibar (both Unguja and Pemba islands) targeting 70,000 connections; and (iv) installation of the household connections materials through various models that involve contractors for the distribution extension/densification works, labor-only contractors, and inhouse installations by ZECO. The exact scope and packaging into lots and sub-projects of the above works will be determined by the consultant during the implementation of this assignment.

## **3. OBJECTIVE OF THE CONSULTANCY ASSIGNMENT**

The objective of the proposed consultancy assignment is to support the Client (ZECO) to carry out the distribution network refurbishment and strengthening and last-mile household connectivity scale-up by: (i) carrying out the necessary surveys and needs assessment to ascertain the scope and packaging of the works into lots/sub-projects to facilitate ease of procurement and implementation; (ii) preparing the necessary bid documents and providing procurement support to the Client; and (iii) providing project management services and construction supervision of the sub-projects.

In general, the Consultant shall work closely with Client counterpart staff to develop functional specifications and bidding documents, support the Client during the procurement of the supply and installation contractor for the proposed distribution network refurbishment and strengthening and last-mile household connectivity scale-up, and supervise the design, testing, installation, and commissioning of the works, including verification of the installed electricity connections.

#### 4. SCOPE OF SERVICES

The work under the consultancy services for the proposed distribution network refurbishment and strengthening and household last-mile connectivity scale-up in Zanzibar will consist of (a) conducting necessary surveys, feasibility studies, environmental and social safeguards studies, and any required investigations and tests; (b) technical appraisal and packaging of the subprojects, (c) preparation of engineering designs; (d) preparation of bidding documents for the different work streams; (e) support to the Client during the procurement phase; and (e) construction supervision, contract monitoring including periodic monitoring and reporting on environmental and social safeguards aspects, and support to the Client during the defects liability period (DLP).

The consultancy services under this assignment shall be provided in three phases and each phase will have a separate contract. The Phase 1 contract shall be a lumpsum; the Phase 2 and Phase 3 contracts shall be time-based.

The Consultant's tasks shall include:

##### **PHASE I – Pre-construction phase (lumpsum contract)**

- (a) Identify in collaboration with the Client the scope of the distribution network strengthening/upgrade works and household connectivity scale-up activities and discuss and agree an appropriate packaging and sequencing approach with the Client. As part of this task, the Consultant will undertake a rapid survey to determine the connection potential within Zanzibar, taking into account the existing and planned distribution network.
- (b) Review and where necessary update the existing design standards for distribution infrastructure electricity connections so as to ensure uniform standards are used in the roll-out of the network and connections throughout Zanzibar.
- (c) Develop functional specifications and prepare preliminary engineering designs for the proposed distribution network refurbishment and strengthening and last-mile household connectivity scale-up.
- (d) Prepare an Implementation Manual for rolling out the household connectivity scale-up activities. The Manual will spell out detailed implementation arrangements relating to the; (i) eligibility criteria for beneficiaries of connections; (ii) technical specifications to be upheld during installation of the connections; and (iii) verification process that will be undertaken to confirm the physical existence and technical soundness of the installed connections, and overall compliance with the eligibility criteria. The eligibility criteria will be aligned with Zanzibar's Energy Policy as well as government's directives and measures to address demand side affordability barriers for access scale-up.
- (e) Work closely with the Client to establish robust accounting, auditing and inventory management systems for the connection materials that will be bulk procured under the ZESTA project.
- (f) Undertake the necessary environmental and social safeguards studies as per the ZESTA Environmental and Social Management Framework (ESMF), Resettlement Policy Framework (RPF), Labor Management Procedures, and Stakeholder Engagement Plan (SEP).
- (g) Prepare detailed cost estimates based on the preliminary designs for discussion with the Client.
- (h) Prepare bidding documents for the proposed distribution network strengthening/upgrade works and household connectivity scale-up activities in line with World Bank procurement regulations.
- (i) Support the Client during the entire procurement process for the contractors and suppliers who will be retained for the distribution network strengthening/upgrade works and household connectivity scale-up activities. The support under Phase 1 will end upon finalization of contract award for the

contractors and suppliers of sub-projects of the proposed distribution network strengthening/upgrade works and household connectivity scale -up activities.

- (j) Provide transfer of knowledge and skills to the Client's technical staff during Phase 1.
- (k) Prepare a training program on electricity distribution network planning and maintenance that will be provided to 12-15 Client's technical staff during Phase II of the assignment.

**PHASE II – Construction phase (time-based contract)**

- (a) Review all the detailed designs prepared by the contractor/suppliers and issue approval prior to manufacturing, supply, and installation of equipment.
- (b) Ensure that appropriate measures are implemented by the contractors to mitigate the environmental and social impacts and risks of the proposed distribution network strengthening/upgrade works and household connectivity scale-up activities as outlined in the relevant instruments of the project: Environmental and Social Management Plan (ESMP); Environmental and Social Impact Assessment (ESIA); Heritage Impact Assessment (HIA) including a Cultural Heritage Management Plan; Stakeholder Engagement Plan, and overarching E&S Project documents.
- (c) Attend factory acceptance tests (FATs) of all major equipment to be supplied/manufactured for the various sub-projects of the distribution network strengthening/upgrade works and household connectivity scale -up activities on behalf of the Client and issue the necessary approvals prior to equipment manufacturing and supply. This will be done in conjunction with nominated Client counterpart staff.
- (d) Project manage, supervise, monitor, and report on distribution network strengthening/upgrade works and household connectivity scale -up activities to the client and other key stakeholders.
- (e) Certify works progress and payment requests by the contractors/suppliers.
- (f) Review and recommend for approval any additional scope of work and extension of time required for successful completion and operation of the distribution network strengthening/upgrade investments.
- (g) Participate in the witnessing of the distribution network strengthening/upgrade works commissioning activities and ensure that all relevant operation and maintenance manuals and as-built drawings are submitted to the Client as required by the supply/installation contracts.
- (h) Support the Client to ensure effective transfer of knowledge and skills by the contractors to the Client's technical staff during the design, manufacturing, supply and installation of the distribution network strengthening/upgrade works and household connectivity scale -up investments.
- (i) Provide training to 12-15 of the Client's technical staff on electricity distribution network planning and maintenance in line with the training program prepared during Phase I.
- (j) Assist and advise the Client with regard to any matter that may be subject to adjudication, arbitration, inquiry or litigation up to delivery certificate of completion.
- (k) Respond to requests for support from Client on any issues and questions that may arise during the Defects Liability Period (DLP), which is expected to be twelve (12) months after commissioning and hand-over of the distribution network strengthening/upgrade activities investments to the Client.
- (l) Provide all the necessary contract management support to the client to ensure all distribution network refurbishment works and last mile connections are successfully completed.
- (m) Hold regular planning and progress review meetings with the Client counterparts and contractors and identify any challenges to project implementation and their associated mitigation measures and prepare minutes of meetings.

## **ENVIRONMENTAL AND SOCIAL SAFEGUARDS**

The Consultant shall be required to support the Client in supervising, monitoring, and reporting on all environmental and social safeguards aspects of the project/sub-projects in line with national regulations and the World Bank's Environmental and Social Framework. These include:

- (a) Ensure that all construction contractors prepare acceptable Environmental, Social, Health and Safety (ESHS) work procedures including but not limited to ESHS Policy; Occupational Health and Safety work procedures, incident/accident investigation, management, and reporting procedure; waste management plans, labor management procedures including grievance redress, worker codes of conduct, SEA/SH action plans, cultural heritage protection etc.
- (b) Review and approve contractors' ESHS risk management plans for implementation.
- (c) Ensure that the Contractors' ESHS risk management plans are complied with and periodically evaluate and report on their implementation. Ensure that appropriate measures are implemented by the contractors to mitigate the environmental and social impacts of the proposed distribution network strengthening/upgrade works and household connectivity scale-up activities as outlined in the relevant instruments of the project: Environmental and Social Management Plan (ESMP); Environmental and Social Impact Assessment (ESIA); Heritage Impact Assessment (HIA) including a Cultural Heritage Management Plan; Stakeholder Engagement Plan, and overarching E&S Project documents.
- (d) Prepare and submit comprehensive monthly progress reports on the implementation of the environmental and social safeguards measures related to the project during implementation. The reports shall be based on a template pre-agreed with the Client.

### **PHASE III - Post construction phase (time-based contract)**

- (a) Undertake site inspection, identify snags, and issue instructions to the contractors to rectify all the identified snags.
- (b) Ensure that any defects are rectified by the contractors before the end of the defects liability period.
- (c) Assist and advise the Client on all matters that may be subject to adjudication, arbitration, inquiry, or litigation up to delivery certificate of completion.
- (d) Maintain detailed records of relevant events & activities, drawings and documents, and minutes of meetings.
- (e) Undertake project closure activities, final inspection of the project sites, and project closure report at the end of the defects liability period and issue take over certificates in accordance with provisions of the contracts.

The Consultant shall be required to make its own arrangement for office accommodation and transport throughout the duration of the assignment.

## 5. CONSULTANCY SERVICES DELIVERABLES AND REPORTING REQUIREMENTS

The Consultant shall submit the following reports to the client:

**Table 1: PHASE I LIST OF PROJECT DELIVERABLES**

<b>Report/Deliverable</b>	<b>Description</b>	<b>Submission deadline (from contract effectiveness date)</b>
<b>1. Inception Report</b>	<p>This will highlight the background, scope of the assignment, proposed approach and methodology, key deliverables, implementation schedule, and project team structure and composition. The Inception Report will also include:</p> <ul style="list-style-type: none"> <li>• An assessment of the current situation of the distribution network and household connectivity in Zanzibar.</li> <li>• Flowcharts visualizing the proposed methodology.</li> </ul> <p>The inception report, together with the corresponding power point presentation, will be submitted to the Client for approval before the Consultant can proceed with the rest of the assignment.</p>	1 month
<b>2. Draft report on project scope, works packaging, and engineering designs</b>	The Report will include details on the recommended scope, works packaging, and designs of the distribution network strengthening/upgrade and household connection scale-up activities, associated high-level BOQs and cost estimates, and implementation strategy and timelines. It will also include the Implementation Manual for rolling out the household connectivity scale -up activities.	4 months
<b>3. Final report on project scope, works packaging, and engineering designs</b>	Report on project scope, works packaging, and engineering designs incorporating comments provided by the Client.	5 months
<b>4. Environmental Impact Assessment Report</b>	Consultant to undertake environmental and social assessment of project activities throughout the project cycle as per the requirements of the project ESMF, SEP, and the World Bank Environmental and Social Framework. The ESIA should be supported by management plans to mitigate the identified impacts.	5 months
<b>5. Resettlement Action Plan</b>	Consultant to undertake Resettlement Action Plans of project activities throughout the project cycle as per the requirements of the project RPF, SEP, and the World Bank Environmental and Social Framework.	5 months
<b>6. Heritage Impact Assessment including A Cultural Heritage</b>	Consultant to undertake the assessment of project activities within and in the vicinity of the Stone Town. The activities include the refurbishment of existing 11kV substations and the replacement/upgrade of existing 11kV underground cables within and in the vicinity of the Stone Town area.	5 months

<b>Report/Deliverable</b>	<b>Description</b>	<b>Submission deadline (from contract effectiveness date)</b>
<b>Management Plan</b>	Consultant is to assess the significance of all the potential impacts and risks on cultural heritage, identify adequate mitigation measures to address the impacts/risks, and carry out relevant consultations with key stakeholders such as the Stone Town Conservation and Development Authority (STCDA) and UNESCO. A cultural heritage management plan will then be prepared based on the Heritage Impact Assessment (refer to the requirements of project ESMF (Annex II) and the World Bank ESS8).	
<b>7. Draft project connection materials accounting system</b>	The report will include details of the system that will be used by ZECO to account for the household electricity materials that will be bulk-procured through the project proceeds and measures to ensure that the materials are used as intended under the ZESTA project and not for regular ZECO connection activities.	5 months
<b>8. Final project connection materials accounting system</b>	Project connection materials accounting system/report incorporating comments provided by the Client.	6 months
<b>9. Draft Bidding Documents</b>	The draft bidding documents shall be prepared in line with the World Bank procurement regulations and applicable standard bidding documents. The draft bidding documents will be submitted for review by the Client. The duration of review by the client shall not exceed 15 working days.	5 months
<b>10. Final Bidding Documents</b>	Upon receipt of comments from the Client on the draft bidding documents, the consultant shall revise and finalize the bid documents.	7 months
<b>11. Tender Evaluation Reports</b>	The Consultant will assist the Client in the evaluation of the tenders and participate in contract negotiations. The Consultant will participate in all iterations necessary to complete the tender evaluation and contracts negotiations satisfactorily.	10-12 months
<b>12. Finalization of Contract Awards</b>	The Consultant will work closely with the Client in finalizing the award of contracts for proposed works packages.	12-15 months

**Table 2: PHASES II AND III LIST OF PROJECT REPORTS AND DELIVERABLES**

<b>Report/ Deliverable</b>	<b>Date of Submission</b>
Monthly progress reports, which includes reporting on connection materials accounting and verification of installed connections	5 working days after the last day of the reporting month
Quarterly progress reports, which includes reporting on connection materials accounting and verification of installed connections	10 working days after the last day of the reporting quarter.
Draft Project Completion Report, including accounting on connection materials and verification of installed connections	Within one month of the contractor successfully completing the performance guarantee tests.
Project Completion Report, including accounting on connection materials and verification of installed connections	Within two months of the contractor successfully completing the performance guarantee tests.
Project closure report	Within 1 month after DLP period

The progress reports shall contain, at a minimum, the detailed progress of the services and works both in the contractor’s office and on-site including bar charts indicating work accomplished versus the work schedule, reasons for delay, if any, and proposed measures to be undertaken, project expenditures, etc.

The project completion reports shall contain, at a minimum, the services and works performed including completion dates of all the major stages of supply and installation of the system against the original schedule, final cost against original contracted cost, major deviations in design compared with the original one, final operating performance against the original specifications, operation and maintenance manuals and as-built drawings for the various sub-projects that will be financed under this activity.

The above documents and reports (in Table 1 and Table 2) shall be submitted electronically via email and through four (4) hard copies.

## **6. CONSULTANCY SERVICES SCHEDULE**

Phase I of the consultancy assignment is expected to take about 12-15 calendar months and Phase II shall take approximately eighteen (18) calendar months. A tentative schedule for the Phase I contract is as shown in Table 1. A tentative schedule for the Phase II contract is shown in Table 3 and Figure 1 below.

**Table 3: Tentative activity timelines for Phase II contract**

<b>S/N</b>	<b>Activity</b>	<b>Duration (months)</b>	<b>Start</b>	<b>Finish</b>
1.0	Contract effective date	0	Month 1	
2.0	Kick off meetings for the various sub-project contracts	2	Month 1	Month 2
3.0	Mobilization by contractors	3	Month 2	Month 4
4.0	Review and Approval of contractors’ designs	3	Month 5	Month 7
5.0	Manufacture of equipment and delivery to site (incl. software)	6	Month 7	Month 12
6.0	Delivery of materials to site, installation and erection, testing, and commissioning	8	Month 10	Month 17

7.0	Preparation and submission of Project Completion Report	2	Month 17	Month 18
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7.0	Project closure report	Within one month after DLP period
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The proposed Work Plans for Phases II & III are as per Figures 1 & 2 below.

**Figure 1: Proposed Tentative activity timelines for Phase II contract**

S/N	Activity	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18
1	Contract effective date	■																	
2	Kick off meetings for the various sub-project contracts	■	■																
3	Mobilization by contractors		■	■	■														
4	Review and Approval of contractors' designs					■	■	■											
5	Manufacture of equipment and delivery to site (incl. software)							■	■	■	■	■	■						
6	Delivery of materials to site, installation and erection, testing, and commissioning										■	■	■	■	■	■	■	■	■
7	Preparation and submission of Project Completion Report																	■	■

**Figure 2: Proposed Tentative activity timelines for Phase III**

Activity	Duration (months)	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30
(a) Undertake site inspection, identify snags, and issue instructions to the contractors to rectify all the identified snags.	9	■	■	■	■	■	■	■	■	■			
(b) Ensure that any defects are rectified by the contractors before the end of the defects liability period.	10		■	■	■	■	■	■	■	■	■	■	
(c) Assist and advise the Client on all matters that may be subject to adjudication, arbitration, inquiry, or litigation up to delivery certificate of completion.	3										■	■	
(d) Maintain detailed records of relevant events & activities, drawings and documents, and minutes of meetings.	11		■	■	■	■	■	■	■	■	■	■	■
(e) Undertake project closure activities, final inspection of the project sites, and <b>Project Closure Report</b> at the end of the defects liability period.	4									■	■	■	■

## 7. MINIMUM QUALIFICATIONS OF THE FIRM AND THE TEAM

The consulting firm is required to have the following corporate experience:

- A. Core business and years in business
  - i) At least ten (10) years' experience in consulting work in power sectors of which five (5) years) must be in similar assignments.
- B. Relevant similar experience, which should specifically include the following:
  - i) Must have successfully carried out at least five (5) assignments of similar nature and scope in electricity sectors in the Sub-Saharan Africa region or similar conditions.
- C. Technical and managerial capability of the firm in planning, design, supervision and operation of electricity distribution infrastructure and installation of last mile connections. In addition, the firm should have experience in capacity building/training/knowledge transfer that is relevant in these areas.

## 8. PERSONNEL

The Consultant shall provide all personnel necessary for the execution and successful completion of the assignment. The tentative key personnel list shown below is only for guidance. The Consultant may propose a staffing plan and skills mix necessary to meet the objectives and scope of services based on its proposed technical methodology. If all the required skills are not available within the firm, consultants may associate with other firms.

**Table 4: Tentative key experts list**

**Table 4A: Phase 1: Pre construction**

SN	Key Expert	Qualifications	Role
1	Project Director	<ul style="list-style-type: none"> <li>• At least fifteen (15) years' experience managing projects of a similar nature and scope.</li> <li>• Minimum of a Bachelor's Degree in Electrical Engineering, Electronic Engineering, Mechanical Engineering, Civil Engineering, or equivalent from a recognized institution.</li> <li>• The Project Director shall have managed at least three (3) projects of similar nature and scope within the last ten (10) years.</li> <li>• Demonstrable experience in team management and resource management, with excellent communication skills in the English language, both written and verbal and a high sense of organization to ensure required results are met.</li> <li>•</li> <li>• Registration with professional bodies will be an added advantage</li> </ul>	Overall responsibility for the delivery of the project; ensuring that the team is adequately resourced to undertake the assignment successfully.
2	Project Manager	<ul style="list-style-type: none"> <li>• At least ten (10) years' experience managing projects of a similar nature and scope.</li> <li>• Minimum Bachelor's Degree in Electrical Engineering, Mechanical Engineering, Civil Engineering, or equivalent from a recognized institution.</li> <li>• The Project Manager shall have managed at least three (3) projects of similar nature and scope within the last ten (10) years, including planning and management of large-scale roll-out of access related work in any service sector such as electricity, water, telecoms, IT, etc.</li> </ul>	Overall responsibility for the day-to-day activities of the assignment; main interlocutor between the client and the consultant's team.

SN	Key Expert	Qualifications	Role
		<ul style="list-style-type: none"> <li>• Demonstrable experience in team management and resource management, with excellent communication skills in the English language, both written and verbal and a high sense of organization to ensure required results are met.</li> <li>•</li> <li>• Registration with professional bodies will be an added advantage</li> </ul>	
3	Distribution Network Planning Engineer	<ul style="list-style-type: none"> <li>• At least ten (10) years' experience in the distribution network planning, simulation, and analysis.</li> <li>• Minimum Bachelor's Degree in Electrical Engineering, Electronic Engineering, Computer Science, Mechanical Engineering, Civil Engineering, or equivalent from a recognized institution.</li> <li>• The Distribution Network Planning Engineer shall have experience in planning, simulating, and analysis of at least two (2) electricity distribution networks similar to that of Zanzibar within the last five (5) years.</li> <li>•</li> <li>• Registration with professional bodies will be an added advantage</li> </ul>	Overall responsibility for the planning, simulation, and analysis of the existing and proposed developments in the distribution network.
4	Distribution Substation Engineer	<ul style="list-style-type: none"> <li>• At least ten (10) years' experience in the design, testing, installation, and commissioning of indoor and outdoor substations and switchgear. Minimum Bachelor's Degree in Electrical Engineering, Electronic Engineering, Computer Science, Mechanical Engineering, Civil Engineering, or equivalent from a recognized institution.</li> <li>• The Distribution Substation Engineer shall have worked on at least two (2) projects of similar nature and scope within the last seven (7) years.</li> <li>•</li> <li>• Registration with professional bodies will be an added advantage</li> </ul>	Responsible for the design and specifications of the substations and switchgear elements of the project.
5	Distribution Line Engineer	<ul style="list-style-type: none"> <li>• At least ten (10) years' experience in the design, testing, installation, and commissioning of medium voltage and low voltage distribution systems, pole-mounted and ground-mounted</li> </ul>	Responsible for the design and specifications of the distribution line elements of the project.

SN	Key Expert	Qualifications	Role
		<p>transformers, and last mile connections.</p> <ul style="list-style-type: none"> <li>• Minimum Bachelor's Degree in Electrical Engineering, Electronic Engineering, Computer Science, Mechanical Engineering, Civil Engineering, or equivalent from a recognized institution.</li> <li>• The Distribution Line Engineer shall have worked on at least two (2) projects of similar nature and scope within the last seven (7) years, including large-scale roll-out of electricity connections.</li> <li>•</li> <li>• Registration with a professional body will be an added advantage</li> </ul>	
6	Environmental Safeguards Expert	<ul style="list-style-type: none"> <li>• At least eight (8) years' work experience in environmental impact assessment, environmental management associated with the development and operation of electricity infrastructure.</li> <li>• A bachelor degree in Environmental Studies, Environmental Engineering.</li> </ul>	Responsible for ESIA preparation.
7	Social Safeguards Expert/ RAP Expert	<ul style="list-style-type: none"> <li>• At least eight (8) years' work experience in social impact assessment, social management associated with the development and operation of linear infrastructure in line with international standards/ development institutions requirements.</li> <li>• At least eight (8) years' experience in undertaking RAPs for linear infrastructure in line with international standards / development institutions requirements.</li> <li>• A Bachelor degree in anthropology, social studies, or similar</li> </ul>	<ul style="list-style-type: none"> <li>• Work with the Environmental Safeguards Specialists to prepare ESIA and other E&amp;S documentation.</li> <li>• Preparation of the RAP(s) in line with Project RPF</li> </ul>
8	Cultural Heritage Expert	<ul style="list-style-type: none"> <li>• Qualified heritage professional with relevant knowledge and at least 10 years' work experience;</li> <li>• Minimum bachelor's degree in cultural heritage conservation.</li> </ul>	Responsible for the preparation of HIA and Cultural Heritage Management Plan.
9	Civil Engineer	<ul style="list-style-type: none"> <li>• At least eight (8) years' experience in design and construction supervision of civil/building works</li> <li>• Minimum Bachelor's Degree in Civil Engineering.</li> </ul>	Responsible for the design/specifications of all civil works required for the proposed distribution works.
10	Procurement Specialist	<ul style="list-style-type: none"> <li>• Minimum Bachelor's Degree in Procurement, Business Administration, Economics, Commerce, Engineering or</li> </ul>	Responsible for the entire procurement process for the supply and installation

<b>SN</b>	<b>Key Expert</b>	<b>Qualifications</b>	<b>Role</b>
		<p>Law.</p> <ul style="list-style-type: none"> <li>• At least eight (8) years' experience in procurement with at least five (5) years working on projects funded by the World Bank or other Multilateral Development Banks.</li> <li>• Experience in high value procurements for works, goods and services that are subject to international competitive bidding. Experience under World Bank funded project is preferred .</li> </ul>	<p>contractors of the proposed distribution and access scale-up activities. The Procurement Specialist's roles will include preparation of bidding documents, tender evaluation, and pre-contract award discussions/negotiations.</p>
11	Power Line Surveyor	<ul style="list-style-type: none"> <li>• Minimum Bachelor's Degree in Survey or equivalent from a recognized institution\</li> <li>• At least five (5) years' experience as surveyor for power sub-transmission and distribution lines</li> <li>• Must be able to manage data collection and electronic mapping using state-of-the art Real Time Kinematics (RTK) survey technology.</li> <li>• The Power Line Surveyor shall have worked on at least three (3) projects of similar nature and scope within the last seven (7) years.</li> <li>• Registration with professional bodies will be an added advantage.</li> </ul>	<p>Responsible for carrying out all surveys that will be required for the proposed distribution works</p>

**Table 4B: Phase 2: Construction**

<b>SN</b>	<b>Key Expert</b>	<b>Qualifications</b>	<b>Role</b>
1	Project Director	<ul style="list-style-type: none"> <li>• At least fifteen (15) years' experience managing projects of a similar nature and scope.</li> <li>• Minimum Bachelor's Degree in Electrical Engineering, Electronic Engineering, Mechanical Engineering, Civil Engineering, or equivalent from a recognized institution.</li> <li>• The Project Director shall have managed at least three (3) projects of similar nature and scope within the last ten (10) years.</li> </ul>	<p>Overall responsibility for the delivery of the project; ensuring that the team is adequately resourced to undertake the assignment successfully.</p>
2	Project Manager	<ul style="list-style-type: none"> <li>• At least ten (10) years' experience managing projects of a similar nature and scope.</li> <li>• Minimum Bachelor's Degree in Electrical Engineering, Mechanical Engineering, Civil Engineering, or equivalent from a recognized institution.</li> </ul>	<p>Overall responsibility for the day-to-day activities of the assignment; main interlocutor between the client and the consultant's team.</p>

SN	Key Expert	Qualifications	Role
		<ul style="list-style-type: none"> <li>The Project Manager shall have managed at least three (3) projects of similar nature and scope within the last ten (10) years.</li> </ul>	
3	Distribution Network Planning Engineer	<ul style="list-style-type: none"> <li>At least ten (10) years' experience in the distribution network planning, simulation, and analysis.</li> <li>Minimum Bachelor's Degree in Electrical Engineering, Electronic Engineering, Computer Science, Mechanical Engineering, Civil Engineering, or equivalent from a recognized institution.</li> <li>The Distribution Network Planning Engineer shall have experience in planning, simulating, and analysis of at least two (2) electricity distribution networks similar to that of Zanzibar within the last five (5) years.</li> </ul>	Overall responsibility for the planning, simulation, and analysis of the existing and proposed developments in the distribution network.
4	Distribution Substation Engineer	<ul style="list-style-type: none"> <li>At least ten (10) years' experience in the design, installation, and commissioning of indoor and outdoor substations and switchgear.</li> <li>Minimum Bachelor's Degree in Electrical Engineering, Electronic Engineering, Computer Science, Mechanical Engineering, Civil Engineering, or equivalent from a recognized institution.</li> <li>The Distribution Substation Engineer shall have worked on at least two (2) projects of similar nature and scope within the last seven (5) years.</li> </ul>	Responsible for the design and specifications of the substations and switchgear elements of the project.
5	Distribution Line Engineer	<ul style="list-style-type: none"> <li>At least ten (10) years' experience in the design, installation, and commissioning of medium voltages and low distribution lines, and pole-mounted and ground-mounted transformers.</li> <li>Minimum Bachelor's Degree in Electrical Engineering, Electronic Engineering, Computer Science, Mechanical Engineering, Civil Engineering, or equivalent from a recognized institution.</li> <li>The Distribution Line Engineer shall have worked on at least two (2) projects of similar nature and scope within the last seven (7) years</li> </ul>	Responsible for the design and specifications of the distribution line elements of the project.
6	Environmental Safeguards Expert	<ul style="list-style-type: none"> <li>At least eight (8) years' work experience in environmental impact assessment, environmental management associated with the development and operation of electricity infrastructure.</li> </ul>	Responsible for the supervision of the implementation of Environmental and Social Management Plan (ESMP)

<b>SN</b>	<b>Key Expert</b>	<b>Qualifications</b>	<b>Role</b>
		<ul style="list-style-type: none"> <li>• A Bachelor’s degree in environmental studies, Environmental Engineering.</li> <li>•</li> </ul>	and Contractor ESMP.
7	Social Safeguards Expert	<ul style="list-style-type: none"> <li>• At least eight (8) years’ work experience in addressing social issues on projects with a similar scope for projects funded by development institutions</li> <li>• A Bachelor’s degree in Anthropology, Social Studies or similar.</li> <li>• The Social Specialist shall have worked on at least two (2) projects of similar nature and scope within the last eight (8) years</li> </ul>	Responsible for the supervision of the implementation of Environmental and Social Management Plan (ESMP) and Contractor ESMP and other social safeguards plans/procedures
8	Cultural Heritage Expert	<ul style="list-style-type: none"> <li>• Qualified heritage professional with relevant knowledge and at least 10 years’ work experience;</li> <li>• Minimum bachelor’s degree in cultural heritage conservation.</li> </ul>	Responsible for the supervision of the implementation of Cultural Heritage Management Plan.
9	Occupational, Health, and Safety Expert	<ul style="list-style-type: none"> <li>• A Bachelor’s degree in engineering with a Diploma/Certificate in Occupational Health and Safety.</li> <li>• At least five (5) years working experience in OHS management of similar works including experience in supervision, inspection, audit and monitoring.</li> </ul>	Responsible for the supervision of the implementation of Health and Safety Management Plan.
10	Civil Engineer	<ul style="list-style-type: none"> <li>• At least eight (8) years’ experience in design and construction supervision of civil/building works</li> <li>• Minimum Bachelor’s Degree in Civil Engineering.</li> </ul>	Responsible for the design/specifications of all civil works required for the sub-projects under the proposed distribution works and household connectivity scale-up.
11	Power Line Surveyor	<ul style="list-style-type: none"> <li>• Minimum Bachelor’s Degree in Survey or equivalent from a recognized institution\</li> <li>• At least five (5) years’ experience as surveyor for power sub-transmission and distribution lines</li> <li>• Must be able to manage data collection and electronic mapping using state-of-the art Real Time Kinematics (RTK) survey technology.</li> <li>• The Power Line Surveyor shall have worked on at least three (3) projects of similar nature and scope within the last seven (7) years.</li> </ul>	Responsible for carrying out all surveys that will be required for the proposed distribution works

**Table 4C: PHASE III - Post construction phase**

<b>SN</b>	<b>Key Expert</b>	<b>Qualifications</b>	<b>Role</b>
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<b>SN</b>	<b>Key Expert</b>	<b>Qualifications</b>	<b>Role</b>
1	Project Director	<ul style="list-style-type: none"> <li>• At least fifteen (15) years' experience managing projects of a similar nature and scope.</li> <li>• Minimum Bachelor's Degree in Electrical Engineering, Electronic Engineering, Mechanical Engineering, Civil Engineering, or equivalent from a recognized institution.</li> <li>• The Project Director shall have managed at least three (3) projects of similar nature and scope within the last ten (10) years.</li> </ul>	Overall responsibility for the delivery of the project; ensuring that the team is adequately resourced to undertake the assignment successfully.
2	Project Manager	<ul style="list-style-type: none"> <li>• At least ten (10) years' experience managing projects of a similar nature and scope.</li> <li>• Minimum Bachelor's Degree in Electrical Engineering, Mechanical Engineering, Civil Engineering, or equivalent from a recognized institution.</li> <li>• The Project Manager shall have managed at least three (3) projects of similar nature and scope within the last ten (10) years.</li> </ul>	Overall responsibility for the day-to-day activities of the assignment; main interlocutor between the client and the consultant's team.
3	Distribution Substation Engineer	<ul style="list-style-type: none"> <li>• At least ten (10) years' experience in the design, installation, and commissioning of indoor and outdoor substations and switchgear.</li> <li>• Minimum Bachelor's Degree in Electrical Engineering, Electronic Engineering, Computer Science, Mechanical Engineering, Civil Engineering, or equivalent from a recognized institution.</li> <li>• The Distribution Substation Engineer shall have worked on at least two (2) projects of similar nature and scope within the last seven (5) years.</li> </ul>	Responsible for the design and specifications of the substations and switchgear elements of the project.
4	Distribution Line Engineer	<ul style="list-style-type: none"> <li>• At least ten (10) years' experience in the design, installation, and commissioning of medium voltages and low distribution lines, and pole-mounted and ground-mounted transformers.</li> <li>• Minimum Bachelor's Degree in Electrical Engineering, Electronic Engineering, Computer Science, Mechanical Engineering, Civil Engineering, or equivalent from a recognized institution.</li> <li>• The Distribution Line Engineer shall have worked on at least two (2) projects of similar nature and scope within the last seven (7) years</li> </ul>	Responsible for the design and specifications of the distribution line elements of the project.

## 9. TENTATIVE LEVEL OF EFFORT FOR THE KEY EXPERTS

**Table 5: Tentative level of effort for the assignment**

**Table 5A: Phase I: Pre-construction**

SN	Key Expert	Level of effort(person-months)		
		Home Office	Field	Total
1	Project Director	1.5	0.5	2.0
2	Project Manager	1.0	5.0	6.0
3	Distribution Network Planning Engineer	1.5	0.5	2.0
4	Distribution Substation Engineer	2.0	5.0	7.0
5	Distribution Line Engineer	2.0	6.0	8.0
6	Environmental Safeguards Expert	1.0	4.0	5.0
7	Social Safeguards Expert	1.0	4.0	5.0
8	Cultural Heritage Expert	1.0	4.0	5.0
9	Civil Engineer	1.0	2.0	3.0
10	Procurement Specialist	5	1	6
11	Power Line Surveyor	1	6	7
<b>TOTAL</b>		<b>18.0</b>	<b>38.0</b>	<b>56</b>

**Table 5B: Phase II: Construction**

SN	Key Expert	Level of effort(person-months)		
		Home Office	Field	Total
1	Project Director	1.0	0.5	1.5
2	Project Manager	2.0	14.0	16.0
3	Distribution Network Planning Engineer	2.0	1.0	3.0
4	Distribution Substation Engineer	1.0	10.0	11.0
5	Distribution Line Engineer	1.0	10.0	11.0
6	Environmental Safeguards Expert	1.0	3.0	4.0
7	Social Safeguards Expert	1.0	3.0	4.0
8	Cultural Heritage Expert	1.0	3.0	4.0
9	Occupational, Health, and Safety Expert	1.0	6.0	7.0
10	Civil Engineer	1.0	3.0	4.0
11	Power Line Surveyor	1.0	3.0	4.0
<b>TOTAL</b>		<b>13</b>	<b>56.5</b>	<b>69.5</b>

**Table 5C: Phase III: Post construction**

SN	Key Expert	Level of effort(person-months)		
		Home Office	Field	Total
1	Project Director	0.25	0.25	0.5
2	Project Manager	0.5	0.5	1.0
3	Distribution Substation Engineer	0	1.0	1.0
4	Distribution Line Engineer	0	1.0	1.0
TOTAL		0.75	2.75	3.5

The total level-of-effort is estimated at 129 person-months for Phase1, Phase 2 and Phase 3 contracts.

## 10. TENTATIVE PAYMENT SCHEDULE FOR PHASE 1 CONTRACT

**Table 6: PHASE I TENTATIVE PAYMENT SCHEDULE**

MILESTONE/DELIVERABLE	PAYMENT (% Contract sum)
1. Advance payment*	10
2. Approval of Inception Report	10
3. Approval of the final report on project scope, works packaging, and engineering designs, and Implementation Manual for rolling out the household connectivity scale -up activities.	20
4. Approval of the Environmental Impact Assessment Report and Resettlement t Action Plan	20
5. Approval of the Heritage Impact Assessment Report (including Cultural Heritage Management Plan)	10
6. Approval of project connection materials accounting system	10
7. Approval of Final Bidding Documents	10
8. Completion of Tender Evaluation process and award of contracts	10
TOTAL	100

*\*Advance payment shall be made against an Advance Payment Bank Guarantee acceptable to the Client.*

## 11. INPUT AND SUPPORT TO BE PROVIDED BY THE CLIENT

- a) The Client shall assign a Project Manager for supervision and management of the project who will be empowered to take all day-to-day decisions required for the implementation of the project. The Project Manager will manage all the activities connected with the project and shall be the main link between the Consultant and the Client.

- b) The Client will provide the Consultant with all relevant and available documentation of the power system, including copies of existing relevant in-house feasibility study reports.
- c) The Client shall review all project deliverables and provide comments within 15 working days from date of submission by the Consultant.
- d) The Client will assist the consultant to obtain, from the Tanzania/Zanzibar authorities, the necessary visas, work permits, and other clearances required for performance of the services. The Consultant however remains responsible for adhering to relevant national procedures and requirements.