

TANZANIA ELECTRIC SUPPLY COMPANY LIMITED



"We light up your life"

Terms of Reference for Provision of Consultancy services for supervision and management of the proposed 220Kv Benaco-Kyaka Transmission line in Kagera Region, Tanzania.

MAY, 2023

**TANESCO HEAD OFFICE - DODOMA,
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ACRONYMS

ADFD	Abu Dhabi Fund for Development
Aids	Acquired immunodeficiency syndrome
BADEA	Arab Bank for Economic Development in Africa
CV	Curriculum Vitae
EPC Contractors	Engineering Procurement and Construction Contractors
ESMP	Environmental and Social Management Plan
FAT	Factory Acceptance Test
GHG	Greenhouse Gas
GoT	Government of the United Republic of Tanzania
HIV	Human Immunodeficiency Virus
HVAC	High Voltage Alternating Current
Km	Kilometer
Kv	Kilovolts
LV	Low Voltage
MV	Medium voltage
MVA	Megawatts-Ampere
MW	Megawatts
OPEC	Organization of the Petroleum Exporting Countries
PAPs	Project Affected People
PCR	Project Completion Report
PIT	Project Implementation Team
PRI	Planning, Research and Investment
PSMP	Power System Master Plan
QAP	Quality Assurance Program
QPRs	Quarterly Progress Reports
SCADA	Supervisory Control and Data Acquisition
TANESCO	Tanzania Electric Supply Company
ToR	Terms of Reference
TSO	Transmission System Operator
UETCL	Uganda Electricity Transmission Company Limited

Terms of Reference

1. Background

Tanzania Electric Supply Company Limited (TANESCO) is a public Power Utility Company owned by the Government of the United Republic of Tanzania under the Ministry of Energy (MoE). TANESCO is the System Operator ranging from Power generation, transmission and distribution in Tanzania Mainland and sells bulk power to Tanzania Island of Zanzibar. TANESCO is also a Transmission System Operator (TSO) in Tanzania and therefore is responsible for demand and supply balancing in Tanzania.

Part of Kagera Region Specifically Districts of Kyerwa, Karagwe, Misenyi, Bukoba Municipal and Bukoba Districts are supplied power from Masaka west substation in Uganda via 132kV Transmission line under bilateral contract with Uganda Electricity Transmission Company Limited (UETCL) which will expire in June 2023. The possible way of meeting the demand for the mentioned Districts is to develop and implement transmission line link at the system voltage level of 220kV from the proposed Benaco substation in Ngara to Kyaka substation in Misenyi. The approximate distance is 166.17km.

The study area is rich with minerals such as gold and nickel, fishing, food and commercial crops such as banana and coffee, fishing, tourism etc hence having reliable and quality power supply can eventually boost the social and economic development. TANESCO decided to undertake the Full feasibility study of the proposed project. The proposed project will comprise the following component; -

The study proposed implementation of the project in a phased-approach in tandem with the various commissioning dates of ongoing and planned transmission and generation projects. In consideration of the short, medium and long term load forecast presented in the PSMP (2020Update), the Benaco – Kyaka transmission Project will be designed at 220kV double-circuit transmission line strung on both side.

2. Project Objectives

The ultimate development objective of the project is to improve power supply through provision of main grid electricity to the whole Kagera Region, the project will also provide reliability and affordability of electricity in the country, enhance power evacuation for the proposed 87MW Kakono HPP and job creation. The project will improve the supply of electricity in Tanzania in the short to long term by connecting the Power National grid to the isolated grid.

3. Project Descriptions

The 220kV Benaco - Kyaka Transmission Line Project comprises of:

- (i) Design and construction of 220kV transmission line from Benaco in Ngara District to Kyaka in District (166.17km).
- (ii) Design and construction of 2x40MVA, 220/33kV substation at Benaco in Ngara District.

The Project is funded by OPEC Fund for International Development, Abu Dhabi Fund for Development (ADFD), and Arab Bank for Economic Development in Africa (BADEA) (second phase), (OPEC, ADFD and BADEA herein referred to as the Financiers) and the Government of the United Republic of Tanzania (GoT). The Tanzania Electric Supply Company Limited (TANESCO) will be Implementing Agency on behalf of GoT.

Project Components

Component Name	Component Description
Component A-(Lot 1): 220kV Transmission Line	Construction of 166.17km of high voltage alternating current (HVAC) 220kV double circuit transmission line strung with two circuits, running from Benaco to Kyaka in Kagera region.
Component A - (lot 2) :Substations	Construction of a new 220/33kV Benaco substation by installation of 2x40MVA transformer

4. Project Financing

- a. The 220kV Benaco - Kyaka Transmission Line Project and associated substation at Benaco will be funded by OPEC Fund for International Development, Abu Dhabi Fund for Development (ADFD), Saudi Fund (SFD) and with a contribution from GoT.
- b. The rural electrification and reinforcement of Distribution network (medium and low voltage distribution lines) around Benaco and Kyaka substations will be funded by Arab Bank for Economic Development in Africa (BADEA).

5. Project Executing Agency

The Tanzania Electricity Supply Company (TANESCO) will be the Implementing Agency of the project.

6. Project Coordination

To ensure effective coordination and implementation of the project, TANESCO will establish project implementation Team (PIT) for the purpose of implementing the project components assisted by a competitively recruited Project Supervision and Management Consultant. The consultant will be responsible for supervision and management of the project implementation including contractor's detailed engineering design, construction supervision and monitoring of the project as well as the implementation of the Environmental and Social Management Plan (ESMP) under phase II of the consultancy services contract. The overall responsibility of both phase I for detailed engineering conceptual design, technical studies and investigations and Phase II for the Project management and supervision lies with the consultant.

7. Project Site Organization

- 7.1 The Project site organization shall be set up by the Consultant in order to control all aspects of the implementation of the Project. All staff of the Project shall be under the sole responsibility of the Consultant. However, in order to enhance the in-house capability of TANESCO in Project Management and Supervision, Counterpart Staff shall be assigned by TANESCO as required to the Project Site Organization established by the Consultant.
- 7.2 The main Project coordination office shall be located in Karagwe District. The Project Coordinator and Project Implementation Team and the Consultant Project Manager will be located in the same office block in Karagwe.

The Project implementation structure is described under Annex-1 of this TOR.

8. Site Supervision

The Consultant Project Supervision Staff should be available full time during the construction activity of each lots of the Project.

The Consultant shall assign the following site supervisors during the progress of various construction activities as required;

- (i) Transmission Line: Transmission line erection engineers with civil works monitoring proven experience for transmission lines. Each lot will have its own independent site supervisor;
- (ii) Substations: Substation electromechanical erection work engineers, substation test and commissioning engineer, protection, communication, control and commissioning engineers and substation civil work engineers;
- (iii) Environmental and Social Monitoring: Environmentalist and Social Specialist.

TANESCO shall assign competent counterpart staff for the supervision of construction works. However, the overall responsibility of site supervision shall remain with the Consultant.

9. Project Implementation Schedule

Construction of each Transmission Line, Substation and Rural Electrification is expected to be completed within 24 months from contract commencement date. The critical milestones for Project implementation are given below: -

No.	Activities	Target Date
1.0)	Consultancy Service	
	Issue of Request for proposal (RFP) to Consultants	3 rd Quarter, 2023

	Submission of Proposal	3 rd Quarter 2023
	Consultancy contract negotiation and signing	4 th Quarter 2023
	Mobilization by the Consultant	4 th Quarter 2023
2.0)	Bidding Stage for Construction Contractors	
	Update technical studies and site investigations including soil and geotechnical detailed investigations	1 st Quarter 2024
	Undertake a full detailed engineering conceptual design of the line section from Nyakanazi to Kigoma, Rural Electrification works at Kigoma and prepare a comprehensive study of the layout of the line route	1 st Quarter 2024
	Preparation of Bidding Documents for rural electrification component	1 st Quarter 2024
	Issue of bid documents to Contractors and procurement support to TANESCO by responding to bidder's queries	2 nd Quarter 2024
	Bid evaluation and approval by all concerning bodies (Clients and all Financiers)	1 st Quarter 2024
	Contract negotiation and signing with contractors	2 nd Quarter 2024
3.0)	Construction and Supervision	
	Advance payments to contractors and construction contract commencement	3 rd Quarter 2024
	Completion of design, manufacturing, delivery to site, site construction, erection, testing and commissioning	3 rd Quarter 2024-3 rd Quarter 2026
	Issue of Operational Acceptance Certificates	4 th Quarter 2026
	Finalization all disbursement and submission of Project Completion Report (PCR)	1 st Quarter 2027

10. Scope of the Consultancy Services

10.1 Objective(s) of the Assignment

The general objective of the consultancy services is to ensure that the employer obtains, value for money and economic solutions of high technical standards and that the project is planned and implemented in a timely and efficient manner to meet the particular objectives of the project.

10.2 General Scope of the Consultancy Services

The scope of the consultancy services shall include; review of conceptual design, preparation of bidding documents, assist TANESCO during procurement of EPC Contractor(s), tender evaluation and evaluation and all other activities necessary to achieve the supervision and management for engineering design, supply, installation,

testing and commissioning of 220kV transmission line from Benaco to Kyaka and associated substations at Benaco. The scope of the consultancy service will include but not limited to the following:

10.2.1 Procurement of Contractors

The consultant shall review the conceptual design, prepare bidding documents using the existing bidding documents that were prepared by TANESCO and shall assist TANESCO during procurement of EPC Contractor(s) from clarification responding, tender evaluation and negotiations for EPC contract(s). Cost related to this assignment shall be clearly indicated in the financial proposal.

10.2.2 Supervision and Monitoring

- a) The consultant shall be responsible in overall project supervision and monitoring;
- b) The Consultant shall review and advise TANESCO on approval of Contractor's detailed design in accordance with the Employer's requirements, international standards and technical specifications in the contract;
- c) The Consultant shall provide guidance on the required approvals, cost control, budget reviews, resource planning and interim/progress report on the construction in order to assure that it is conducted properly in accordance with the contract;
- d) Supervise the Contractors' environmental mitigation measures.

10.2.3 Project Management

- a) To ensure quality in project implementation, the Consultant shall develop and implement a Quality Assurance Program (QAP). The QAP shall ensure that the transmission line and equipment supplied and installed meet the performance standards and technical characteristics of the technical specifications. The QAP shall cover all aspects of the project implementation including review and approval of design, quality of works during construction, monitoring schedule, inspection of materials before shipment, upon arrival and upon erection; review of documents to assure quality of delivered goods and comparison of as-built drawings to design. Furthermore, shortcomings in any of the aforementioned areas shall be addressed adequately by QAP.
- b) The Consultant shall manage the project in collaboration with TANESCO including preparation of comprehensive project management plan.
- c) Convene technical meetings and review meetings with the EPC Contractor(s) when required and ensure that minutes are distributed to all relevant parties.
- d) Certify interim certificates and recommend to TANESCO for payment to the EPC Contractor(s).
- e) Supervise the Contractor's HIV and Aids awareness and preventions measures.

10.2.4 Testing and Commissioning

- a) For the EPC Contract, the Consultant shall supervise the testing and commissioning. All components of the lines, substations connection, control, communications and protection will be subject to an acceptance test to

demonstrate their capability to meet warranted design criteria. For each component subject to test, the Consultant will review the Contractor's test procedures for compliance with manufacturers' requirements and design criteria.

- b) The Consultant shall witness the tests and review the test results. If test results are not satisfactory, the Consultant shall ensure that any lack of compliance is addressed and that the equipment and overall systems shall be re-tested until compliant results are achieved.
- c) The Consultant shall assist TANESCO in this phase of the project and coordinate with the Contractor(s) and other parties in addressing any issues with the project components that are unsatisfactory. At the end of this period, and when all acceptance tests have been completed to the Consultant's satisfaction, the Consultant will advise TANESCO that the construction is complete and all the project components are ready to be declared fully operational.
- d) The Consultant shall also prepare and recommend a provisional taking over certificate whenever due for the works or part of the works and alert TANESCO of work deficiencies and outstanding items, if any.
- e) The Consultant shall hand over the completed Project including issuance of completion certificates, provisional acceptance and final acceptance certificates to TANESCO.
- f) Ensure that the Contractor supplies necessary operation and maintenance manuals, system drawings, documentation and training.
- g) Review and comment on hand-over manuals and as-built documentation from the EPC Contractor and verify that all documentation has been prepared and delivered.
- h) Take part in hand-over meetings.

10.2.5 Capacity building /Skills transfer for TANESCO staff

The consultant shall develop professional abroad trainings which will impact professional skills for fifteen (15) TANESCO employees. Training of fifteen (15) TANESCO staff with duration of approximately four (4) weeks; cost of the same shall be clearly stated in the consultant proposal;

The training shall be arranged for the following staffs: -

- a) Two transmission line engineers
- b) Two substation engineers
- c) Three investment officers
- d) Two planning engineers
- e) Two SCADA and Tele-communication engineers
- f) One civil engineer
- g) One procurement specialist
- h) One Environmental expert

A comprehensive training program shall be submitted in the technical proposal and

shall be part of the evaluation process; training program shall be based on comprehensive project Management certification but not limited to include ethical leadership, project monitoring and evaluation and effective report writing and minutes taking. The training proposal shall include methodology, content, dates and venue for the training and costs. Consultant shall cover training fees, accommodation, visas, transportation, covid-19 testing and daily allowance as per government rate to TANESCO staff attending the training;

10.2.6 Defect Liability Period

Consultant shall Assist TANESCO during the defect liability period i.e. three (3) months before end of the liability period whereas the consultant's Resident Project Manager shall ensure that all defects and remarks are properly cleared /removed by contractor and prepare a final report of the project.

10.3 Payment of Consultant Services

It is proposed that the payment of the Consultancy services shall be divided in two Phases as narrated below;

- (i) Lumpsum payment for the design review, preparation of Bidding Documents, and assistance during procurement of contractor(s);
- (ii) Time based payment for the supervision, monitoring and management phase;

11. Design Approvals and Supervision

The consultant will be responsible for review of contractor's detailed engineering design, construction supervision and monitoring of the project as well as the implementation of the Environmental and Social Management Plan (ESMP). Overall responsibility of the project supervision and management lies with the consultant.

The Consultant shall assign full time site supervisors during the construction of the transmission lines and substations. The Consultant and his staffs shall undertake close follow up of site activities to ensure that all works are constructed, erected and completed in accordance with approved drawings and specifications and international technical standards.

12. Supervision and Quality Control of Construction Works

The Consultant shall supervise the construction of the transmission lines and Substations and Rural Electrification (Distribution) projects during all the construction periods. The Consultant shall submit monthly and quarterly progress reports, and approve the of payment requests by contractors to enable the Project Implementation Units of TANESCO to authorize the payment requests.

The supervision works shall include the inspection of the commissioning of substations, transmission lines and Rural Electrification (Distribution) projects, control and protection systems, communication systems as carried out by the contractors.

The Resident Project Manager of the Consultant and his staffs shall undertake close follow up to ensure that all works are constructed, erected and completed in accordance with approved drawings and specifications and international technical standards.

Transmission Line

The Consultant shall provide Electrical Transmission Line engineer for the following works for TANESCO: -

- Supervise contractor's construction procedures,
- Monitor the transmission lines construction schedules.
- Advise on the interpretation of contractual matters.
- Supervise the delivery of equipment and materials to site.
- Supervise construction progress, test and commissioning procedures
- Witness and approve contractors on site tests and commissioning

Substations

The Consultant shall provide Electrical Engineers, Civil Engineers and Protection and control etc., engineers or the following works for Employer (TANESCO): -

- Supervision contractor's electromechanical construction procedures,
- Supervision contractor's civil works construction procedures
- Monitoring the electromechanical and civil works construction schedules.
- Advising on the interpretation of contractual matter.
- Supervision of the delivery of equipment and materials to site.
- Supervision of construction progress, test and commissioning procedures
- Witnessing and approving contractors on site test and commissioning

13. Environmental Mitigation Measures and Project's Environmental Follow up

The Consultant must ensure that all the environmental and social impact mitigation and monitoring measures as stipulated in Project's Environmental and Social Impact Assessment (ESIA) and the Environmental and Social Management Plan (ESMP) are appropriately executed by TANESCO and contractors to National and International standards.

The Consultant shall perform environmental monitoring once every 6 months after commencement of the construction and during all stages of the Project. The Consultant shall perform, among others, the following activities during the construction phase of the Project.

- a) Checking proper storage and operation of equipment facilities and maintenance,
- b) Consideration of on-site clinic and staff assistance for construction labourers and the provision of medical emergency facilities,
- c) Ensure that during the commissioning and operation phase the contractor has undertaken the final clean-up operation,
- d) Ensure that all construction contractors include a general environmental, social, health

and safety management plan (ESHS-MP) in their bid proposal, based on the ESMP for the Project,

- e) Ensure that all construction contractors prepare an acceptable, detailed ESHS-MP and an HIV/AIDS Awareness and Prevention Plan prior to commencement of site preparation and construction activities and
- f) Ensure that all construction contractors implement the detailed HSES-MP and HIV/AIDS Awareness and Prevention Plan and otherwise adhere to sound construction management guidelines.
- g) Submit a detail Environmental and social quarterly Progress report

The Consultant shall carry out the necessary environmental monitoring activities together with environmental monitoring unit of TANESCO.

14. Factory Test Witnessing

The equipment to be supplied under this project should be inspected and tested in the manufacturers testing stations. The Consultant shall be responsible for quality assurance of all equipment and material to be supplied under all contracts. The Consultant together with TANESCO personnel shall inspect and witness all factory tests for major equipment in order to ensure strict follow up of the testing process. It is not required to assign permanently an inspector in the manufacturer country. Inspection of factory manufacturing shall be organized periodically. The costs for factory inspection shall be covered by contractors. This will include all Consultant personnel expenses, travel, and hotel and allowance expense (For minimum of 40 trips of accommodation of minimum 7 days per travel). Written report shall be provided by the consultant on each test witnessed by him or together with TANESCO.

The procedure for testing should be prepared by the manufacturer/contractor in coordination with the consultant and should be reviewed and submitted to the client six (6) weeks prior to the test date.

Assistance in Commissioning and Provisional acceptance testing (onsite)

15. Site Meetings

The Resident Project Manager and the Consultant staff shall hold site meetings regularly as required with the contractors' site representatives and TANESCO's Staff.

The meeting shall deal with the following matters.

- (i) Approval or rejection of executed work elements;
- (ii) Contractor's work schedule
- (iii) Contractor's work method,
- (iv) Temporary works and additional works (if any)

Minutes of the meeting shall be prepared and signed by the participating parties. Copies of the minutes shall be given to the participants and to the TANESCO's Project Implementation Units. Other members of the Resident Engineer's field staff shall also attend the meeting.

The Resident Project Manager shall chair the liaison meetings with the respective TANESCO Project Coordinator with the contractors of each lot respectively. The consultant shall be responsible to chair the meetings and handling of the minutes. The main objectives of the meetings are to review the project progress reports, and to evaluate the actual site progress.

16. Reports

16.1 General

The Executing/ Implementing Agency and financiers of the Project consider of utmost importance the timely submission of project reports during the course of the project implementation. All reports shall be submitted in 5 copies to the Executing/implementing agency with all required information for all sections of the line and substations. Format of the report should be discussed and agreed upon with the Employer. The Quarterly Progress Reports (QPRs) including implementation of the Environmental and Social Management Plan (ESMP) shall cover all aspects of Project implementation, including the status of progress against agreed implementation and disbursement schedules for all lots of the project. The QPRs will provide updated information in relation to the baseline data in line with the Project Appraisal Report.

16.2 Inception report

The Consultant shall submit inception reports to the executing agency. The inception report shall be submitted within one month of commencement of the consultancy contract. It will outline the Consultant's work plan, define the review and implementation schedule by task, specify submission dates for each one of the required reports in draft form, and assign the personnel by name and date period to each task. The proposed Project schedule shall be broken down by tasks and sub-tasks and presented in chart form in an acceptable form using Microsoft Project.

16.3 Progress Reports

The Project Manager of the Consultant shall prepare and submit monthly and quarterly progress report to TANESCO's, Project Coordinator. The quarterly progress reports shall be prepared to satisfy the requirements of the respective financiers. For ease of preparing the Project Closure Report, the first quarterly progress report will provide baseline information (as of 2023) in regard to number of last-mile (gender segregated) connections, demand, quality/availability of supply, number of temporary/permanent jobs created, reduction in GHG emissions, number of PAPs including land acreage affected, length of existing MV& LV lines, etc. The subsequent quarterly reports will update the information over the project duration.

The Resident Project Manager of the Consultant shall compile, summarize and

submit monthly and quarterly progress report to the Project Coordinator as per the agreed formats of the meeting between TANESCO and Consultant.

The quarterly progress reports shall be prepared in accordance with the Banks guidelines which shall be agreed by financiers of this project. The reports by contracts shall at least include.

Written description of:

- a) Progress of the works, consultancy services and expenditure to-date;
- b) Progress of the works & consultancy services during the month;
- c) Future planned works & consultancy services and expenditure;
- d) Summary of the prevailing weather conditions at site during the reporting period.
- e) Technical problems, if any; with their remedies
- f) Delays of any kind, if any
- g) List of Consultant's and Contractors' personnel staff
- h) List of machinery and equipment scheduled and made available of the works by the contractors; and
- i) Any other issues, which could facilitate or affect the progress of the work.
- j) Tabulated summary of work progress
- k) Graphical presentation of:
 - Physical progress planned/actual;
 - Cash flow planned/actual
 - Expected future progress and expenditure; and
 - Labour force size.
- l) Diagrams, Graphs, Illustrations should be colour printed

16.4 Project Completion Report:

After completion of works, testing and commissioning of installations, the Consultant shall prepare a Project Completion Report (PCR), outlining inter alia, achievements in relation to objectives and targets.

16.5 Progress Payments

16.5.1 The contractors shall submit to the Consultant, statement showing costs for executed works up to the end of the month. The form of the statement shall be in accordance with standard format agreed by TANESCO and the Consultant. All relevant measurement sheets and quality schedules shall be submitted together with the statement signed by client's supervisors, employers' representatives and the consultant's site supervisors.

16.5.2 The Resident Engineers of the Consultant shall compare the statement with their own records and solve issues of differences with the contractor's representative. The updated master copies of progress charts shall be submitted to TANESCO Project Office along with the monthly statement, the progress charts, the duplicate sheet, the works diary, the monthly site financial

statement, etc.

16.5.3 The Consultant Project Manager or the Deputy Project Manager shall prepare and sign payment certificates with the Project Coordinator of TANESCO for works executed. The disbursements shall be indicated in the progress report.

16.5.4 TANESCO shall check the monthly statement(s) endorsed by the respective Resident Project Manager of the Consultant and authorize the payment

16.6 Completion and Operational Acceptance Certificate

The Consultant shall carry out final inspection in liaison with TANESCO and issue completion and Operational certificates.

17. Training

On Job Training

17.1 TANESCO consider these contracts as an opportunity to train a number of relevant staff by attaching them to the consultant and the contractors as counterpart staff. The on job training shall be conducted during the construction stage of the project in the contractor's design and manufacturing premises as well as at site;

- a) On-job training on contractor's design approval by attaching TANESCO engineers during the design approval stage for the man-month allocated in Tanzania for the consultant design team.
- b) On-job training for supervision of construction works and project management during the construction phase for TANESCO's supervision staff.

The training shall be arranged for the following staff: -

- i) Five transmission line engineers
- j) Five substation engineers
- k) Five planning engineers
- l) Two operation and maintenance engineers
- m) Two SCADA and Tele-communication engineers
- n) Two accounting and procurement specialists.
- o) Project and Contract Management Training for 10 engineers
- p) 15 operators for maintenance of HV Line and substations
- q) Two Environmental & Social experts

17.2 The Consultant shall monitor the training courses provided by Contractors in the framework of their contracts, the training should be arranged for senior experienced engineers for each field.

18. Transportation

The consultant shall purchase a maximum of six latest double cabin (D4D Toyota Hilux) vehicles to be used by the consultant staff during the whole project duration and vehicles will be handed over to TANESCO after the completion of the project. Vehicles will be inspected by TANESCO before handing over and TANESCO will accept only vehicles which are in good condition.

The consultant shall cover all the related costs for maintaining those vehicles (insurance, maintenance, fuel, drivers, etc.) during the entire project duration.

18.1 Minimum specifications for Latest Double Cabin Vehicles

The vehicles provided shall be fully air-conditioned vehicles with front and side airbags and to be approved by the employer before placing an order to buy;

Dimensions:

- Number of Doors: 4 doors/5-seater;
- Overall height: 1815mm;
- Overall length: 5335mm;
- Overall width: 1855mm;
- Wheelbase: 3090mm;
- Gross weight: 2800kg.

Engine: -

- Drive Line: 4-wheel drive;
- Engine: 3.0L & above, DOHC, DUAL VVT-I (2TR-FE);
- Transmission: 6-speed Manual, TURBO;
- Fuel type: Diesel; -Fuel tank capacity: 80L & above;
- Maximum torque: 42.9/4000 KG-M/RPM.

Safety Features:

- Anti-Lock Brake System (ABS) + Brake Assist (BA);
- Electronic Brake Force Distribution (Ebd);
- Tire Inflation Pressure Warning;
- Vehicle Stability Control (Vsc);
- Rear View Camera; - Power window automatic.

The cost for provision of the above vehicles shall be deemed to be included in the schedules of prices.

19. Project Completion Report (PCR)

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

- i) A description of changes or modifications to the design,
- ii) Problems encountered and solutions adopted,

- iii) Overall construction volume, quantities and costs and
- iv) Lesson learned
- v) Impact, Outcomes & outputs presented in the Project Appraisal Report.

20. Assistance During completion of the project construction activities

The consultant shall:

- Ensure that all defects and remarks are properly marked and documented.
- Ensure that all operation and maintenance manuals and all type of as-built drawings are submitted and handed over to TANESCO as per the requirement and quantity specified in the contracts.
- The Consultant should also take part in the final inspection after the completion of the project construction activities before issuing the Operational Acceptance Certificate.
- At the end of the project construction activities, the consultant's Resident Project Manager shall perform a one-week assignment to prepare a final report..

21. Removal and/or Replacement of Personnel

Except as the Client may otherwise agree, no changes shall be made in the Key Personnel. If, for any reason beyond the reasonable control of the Consultant, such as retirement, death, medical incapacity, among others, it becomes necessary to replace any of the Key Personnel, the Consultant shall provide as a replacement a person of equivalent or better qualifications”, the Consultant should be assured that the proposed key personnel for this consultancy service agreement should be available for the duration of the contract. Therefore, after contract award, the consultant cannot issue a request for replacement of any key personnel, unless it is beyond the Consultant’s reasonable control such as retirement, death, and medical incapacity which shall be proved to have happened. The Consultant, when nominating the key personnel on his technical proposal, should carefully check the medical fitness and the age of the key personnel to avoid unnecessary dispute with the Clients for replacement of the key personnel after contract award. This issue has become of prime importance from recent experience and has become intolerable any more for the clients.

The Consultant’s Project Coordination Office, Site Organization and Home Office shall comprise of the following key personnel but not limited to: -

The Consultant team shall include: -

21.1 Residence Office staff

- (i) Project Director
- (ii) Transmission Line Design Engineer
- (iii) Civil Works design engineer
- (iv) Substation Equipment Design Engineer
- (v) Protection and Control systems design engineers
- (vi) Communication and SCADA design engineers

- (vii) Distribution Engineers

21.2 Project Offices in Tanzania Site Staff

- (i) Resident Project Manager
- (ii) Substation Electromechanical Supervision Engineer
- (iii) Transmission Line Supervision Engineer
- (iv) Substation Civil Works Supervision Engineer
- (v) Protection and Control Commissioning Engineer
- (vi) Distribution Supervision engineer
- (vii) Social and Environmentalist Specialist
- (viii) Communication and SCADA Commissioning Engineer
- (ix) Local Engineers Assistants

21.3 Man-Month Allocation

The Consultant shall indicate in his proposal sufficient man-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. Construction of the transmission lines, rural electrification and substations shall progress in parallel in all Project locations and all interfaces shall be carefully coordinated and monitored as envisaged below.

The Consultant must provide a schedule with breakdown for the various activities called for in the TOR's, including the home office and field activities. The consultant should clearly indicate the man-months to be spent on activities in Project Site in Tanzania, and Home Office. Separate Staff shall be assigned for the work in Tanzania. The man-months activities shall be indicated clearly. The consultant will be evaluated with the total man-month proposed. The estimated man-months by the clients are as indicated in the table below.

The consultant should clearly indicate the man-months to be spent on activities in Project Site in Tanzania and Home Office. The site man-months shall be based on the activities in Tanzania.

The minimum proposed man-months by the Consultant shall not be less than the estimated man-months by the clients for each key personnel and activity involved.

Person-Month Estimate: The total minimum estimate of person-months by the clients is 224 person-months spread over a period of 48 calendar months. However, the consultant, based on the complexity of each activity and understanding of the required services to be rendered, shall propose their own quantities of person-months for any of key personnel and the total person-months shouldn't be less than the total minimum estimated by the client (s).

21.4 Project Supervision and Management - Estimated Minimum Man-months

No.	Number of Key Staff	No.	Total Man-months		
			Home office	In Tanzania	Total
	Project Office and Site Office in Tanzania				
	Home office Staff				
1	Project Director	1	1.5	2	3.5
2	Transmission Line Design Engineer	1	3	2.5	5.5
3	Civil Works design engineer	1	3	2.5	5.5
4	Substation Equipment Design Engineer	1	1.5	5	6.5
5	Protection and Control systems design engineers	1	1	2	3
6	Communication and SCADA Design Engineer	1	1	2	3
7	Distribution engineer	1	1	2	3
	Sub Total		12	18	30
	Project Office and Site Office Staff				
1	Resident Project Manager Kagera	1	0	24	24
2	Substation Electromechanical Supervision Engineer	2	0	33	33
3	Substation Civil Work Supervision Engineer	1	0	12	12
4	Communication and SCADA Commissioning Engineer	1	0	5	5
5	Protection and Control /Commissioning Engineer	1	0	3	3
6	Transmission Line Supervision Engineers.	2	0	33	33
7	Social and Environmental Specialist	2	0	10	10
8	Distribution Supervision Engineer	1	0	18	18
9	Local Engineers assistants 2 TL and 1 Distribution	3	0	42	42
10	Other Support Staff	3	0	8	8
	Sub Total		0	198	198
	Total Minimum Man-month		12	216	224

21.5 Qualifications

The Consultant must be highly qualified and should have sufficient reference in design,

specification and Bidding document preparation, contractor's design review and approval and supervision of HV Transmission/substation projects and for that purpose should submit evidence of firm's previous experience in works associated with supervision and construction management, training and technology transfer and specifically of projects located in Africa if any.

The Consultant Project Director, Resident Project Manager, Project Site Manager and other experts should have an extensive experience in Project management of transmission line, substations and Distribution line Projects.

The Project Director should have a minimum of Master's degree in engineering with a minimum of 15 years of experience in project management role, the Resident Project Manager and Project site Manager should have a minimum of Bachelor degree in engineering with not less than 12 years of experience in project management role.

The Transmission Line Design Engineer, Civil Works design engineer, Substation Equipment Design Engineer, Protection and Control systems design engineers, Communication and SCADA design engineers and Distribution Engineers should have at least Bachelor degree with 10 years of experience in transmission line, substations and Distribution line projects.

The Substation Electromechanical Supervision Engineer, Transmission Line Supervision Engineer, Substation Civil Works Supervision Engineer, Protection and Control Commissioning Engineer, Distribution Supervision engineer, Communication and SCADA Commissioning Engineer and Local Engineers Assistants should have at least Bachelor degree with 8 years of experience in transmission line, substations and Distribution line projects.

The Social and Environmentalist Specialist should have at least Bachelor degree with 8 years of experience in Social and environmental issues.

All supervision staff should have adequate experience outside of their country similar to the project area. In addition, it is required that all field personnel of the Consultant be proficient in international communication skills, especially in English language.

The Consultant should prepare and submit a description of the organization planned to be set up for the project and the list of his key personnel with their Curriculum Vitae (CV) to be assigned to work in Tanzania for effective supervision and project management of the project.

22. Consultant's Fee

Fees and Expenses of the Consultant shall include:

- i. Home Office Coordination;
- ii. Project Coordination Unit, Supervision and Management
- iii. Project Implementation Units and Site Organization Supervision and Management

- iv. All travel expenses excluding FAT costs;
- v. All personnel expenses;
- vi. All field expenses including working equipment and materials, house accommodation, etc. for the Project Manager and others;
- vii. Expenses of the workshop Meetings including, travel expenses, accommodation, meals, International transport, allowances/per diem, travel insurance cost of venue, etc.
- viii. Project Office Costs.

The Financial Proposal shall be clear and formal as possible with breakdowns of each subtotal into remuneration, reimbursable, miscellaneous and grand total. The evaluation will take care of consideration for all items on the same basis and on equal ground for comparison. All items in the Technical Proposal incurring expense must be supported with a corresponding financial proposal

23. ORGANIZATION OF OFFICES

It is required that the Consultant costs includes the cost for establishment of Local Project Offices located in Karagwe to make it easy for project staff to access information as well as making execution of the consulting activities as defined in the scope of works run smoothly.

The offices shall have enough space and furnishing to accommodate staff of consultant and counterpart personnel, and TANESCO Project Implementation Team (PIT) offices. Communications facilities including internet shall be provided to PIT offices as well.

Project Implementation Team meetings will be held at the consultant's offices in Karagwe. The offices shall therefore have enough space, furnishing and equipment for this purpose.

The Consultant shall provide for the entire duration of the Contract for the sole use of the Clients' and the consultant's personnel fully furnished, air conditioned, sound and weatherproof offices complete with all electrical fittings, plumbing and sanitary systems clean and provided with windows to give a sufficient supply of natural light. The client's office shall be equipped with Heavy Duty Photocopy and printer machines

The construction contractors under all lots shall provide on a 24-hour basis, the vehicles, computers and photocopying equipment as specified in the Price Schedules for the use of the consultant and the clients' project staff. Details of the vehicles, facilities, services, repair and maintenance including drivers and other persons such as mechanic(s) etc., shall be included in the construction bidding documents.

24. SERVICES TO BE PROVIDED BY THE EMPLOYER

The Employer(s) shall also avail staff who shall work closely with the Consultant and represent the Client(s) and assist in provision of existing project information and data when required, participate in the review and approval of detailed designs and any submissions by the EPC contractor(s) that require approval, follow-up on the site works, monitoring environmental implementation plans, participate in installation, commissioning and witnessing tests including

factory acceptance tests. These staff shall, however, be under the control of and be paid by the Employer. They shall not be held responsible for any failure on the consultant to deliver the project with the desired quality.

Annex-1 Project Implementation Structure

