

**TERMS OF REFERENCE OF FEASIBILITY, CONCEPTUAL DESIGN,
AND TENDER DOCUMENTS OF TANZANIA – MALAWI 400 kV
TRANSMISSION LINE INTERCONNECTOR**

CONTENTS

1. Introduction and Project Background.....	4
2. Project Objective	4
3. Scope of Work	6
3.1. Study Implementation Structure	6
3.2. Capacity Building for TANESCO Staff.....	6
3.3. Gender Integration.....	7
4. Place of Performance	7
5. Work Requirements	7
5.1. Feasibility Study	7
5.1.1. Load Forecast.....	7
5.1.2. Generation and Transmission Expansion Plan.....	7
5.1.3. Optimal Route Selection.....	8
5.1.4. Network Analysis	8
5.1.5. Project cost.....	9
5.1.6. Project Viability	9
5.1.7. Schedule of implementation.....	10
5.1.8. Risk analysis.....	10
5.1.9. Environmental and Social Impact Assessment.....	10
5.1.10. Feasibility Report.....	10
5.2. Conceptual Design and Tender documents	11
5.2.1. Conceptual Design	11
5.2.2. Geotechnical investigations and complementary topographical works.....	11
5.2.3. Preparation of Bidding Documents and Assistance During Bidding Period	12
6. Period of performance.....	12
7. Schedule/Milestones/Deliverables	12
8. Acceptance Criteria.....	15
9. Obligations of the Consultant.....	15
10. Required Expertise	15
10.1.1.	16
10.1.2. Project Manager.....	16
10.1.3. Transmission System Specialist.....	16
10.1.4. Substation Specialist.....	16
10.1.5. Distribution System Specialist (Optional)	16

10.1.6. Network Analyst.....	16
10.1.7. Telecom and SCADA Specialist and/or Protection Specialists	16
10.1.8. Economist.....	17
10.1.9. Civil Engineer	17
10.1.10. Social/Environmental Scientist(s).....	17
10.1.11. Other Resources.....	17
11. Obligations of EAEP and TANESCO	17
12. Additional Information.....	18
13. ANNEX 1: Estimated Level of Effort	19
14. ANNEX 2: Existing and Relevant Documents to be Provided Upon Award.....	19
15. ANNEX 3: Template Non-Disclosure Agreement with TANESCO	20
16. Annex 4: ESIA Terms of Reference.....	25
16.1. Draft Environmental and Social Impact Assessment.....	25
16.2. Final ESIA.....	28

I. INTRODUCTION AND PROJECT BACKGROUND

The Southern African Power Pool Members (SAPP) have created a common power grid between their countries and a common market for electricity in the SADC region. SAPP was founded in 1995. The SAPP has 12 member countries including Tanzania and Malawi. Tanzania is still a non-operating member in SAPP. Similarly, Eastern Africa Power Pool (EAPP) is in the process of connecting its member countries including Tanzania. The interconnection of Tanzania and Malawi will link the two power pools (EAPP and SAPP) potentially allowing power trade from Northern to Southern Africa creating the longest vital transmission corridor in the world.

Both EAPP and SAPP members agreed to interconnect their power systems by developing and constructing a high voltage transmission line system. The main objectives of this 400 kV Tanzania-Malawi interconnector (hereafter referred to as “the Project”) are to: (i) enhance electricity trade through bilateral agreement or market participation; (ii) improve security and reliability of electricity supply; and (iii) foster economic development and regional integration.

Traditionally, countries in the region have planned and implemented their power system in an isolated manner with a view to satisfy the national demand growth. Bilateral power exchange agreements exist between EAPP and SAPP countries in the region; however, now SAPP is emphasizing the market participation where EAPP is still developing operationalization of its energy market.

Over the last decade considerable efforts have been undertaken to allocate a stronger importance to power trade among Eastern and Southern African countries. Both power pools conducted studies to determine whether further interconnection of the power systems among the member states (EAPP and SAPP countries) is technically feasible and economically viable.

All the members of the SAPP are interconnected except Tanzania, Angola, and Malawi. The SAPP countries also are currently implementing various programs and projects to increase their generation resources and transmission networks. In EAPP, the Ethiopia-Kenya and Kenya-Tanzania transmission interconnection projects will complete all high voltage interconnections those member countries. Tanzania is strategically located in linking the two power pools and is therefore the focus of this work.

Following the recent discovery of gas reserves in Tanzania, the country is at various stages of reinforcing its grid network together with implementation of the 2,115 MW Julius Nyerere Hydropower Project with commissioning in the near future. In addition, development of Gas-fired Power Plants at Kinyerezi, Somanga Fungu, and Mtwara has opened opportunities for power trade among the member countries in the region. Therefore, Tanzania is eager to execute construction of a 400kV interconnector from Tanzania (Kyela-Mbeya) to the Songwe border post at the frontier with Malawi. This project is among the prioritized investment projects of the SAPP. Upon completion it will facilitate power interconnection and trading in the SAPP grid from Tanzania through Malawi.

2. PROJECT OBJECTIVE

The overall objective of this assignment is for the Consultant to provide professional engineering services and prepare feasibility study, conceptual design, and design criteria for the 400kV Tanzania - Malawi interconnector project. This will be done by adapting existing systems including substation, protection and control systems ring based on IEC 61850. The system telecommunication shall be connected and integrated to the existing ring LAN system to fulfil n-1 criterion regarding connection failure.

The full feasibility study and conceptual design will be from Mbeya (Tanzania) to Songwe border post on the Tanzania/Malawi frontier (Malawi) - approximately 113 km. The Consultant shall make assessments on the line route, propose substations, interconnection points, the assumptions for demand scenarios, and the assumptions for power exchange between the countries. The Consultant will compile its findings and assessment into a comprehensive technical feasibility study including: the geotechnical investigation, design criteria, and conceptual design. Additionally, the full feasibility study will inform the subsequent production of tender documents. This Consultancy will support TANESCO in the preparation of the procurement documents for engagement of an EPC and Owners Engineer with TANESCO providing the necessary background on Tanzanian procurement laws and regulations. The objective of the Consultancy is to provide necessary documentation and studies for TANESCO to initiate a public procurement process for the Project.

Furthermore, the Consultant shall take into consideration other studies related to other transmission lines and regional interconnections in the EAPP and SAPP as appropriate in compliance with EAPP and SAPP interconnection codes. These terms of reference at a minimum require the Consultant to complete:

1. Full Feasibility Study
 - a. Load Forecast
 - b. Generation and transmission expansion plan
 - c. Optimal route selection
 - d. Network analysis
 - e. Project Cost
 - f. Project viability
 - g. Schedule of implementation
 - h. Risk analysis
 - i. Full environmental and social impact assessment study (ESIA) in compliance with USAID regulations
2. Conceptual Design and Tender Documents
 - a. Conceptual design
 - b. Geotechnical investigations and complimentary topographical works
 - c. Procurement documents for an EPC and Owners Engineer
 - d. Tender documents and assistance in the bidding period

Note that the resettlement action plan is NOT part of the scope of work of this consultancy and will be the responsibility of TANESCO. Specifically, the Consultant shall undertake and prepare the following:

- (a) The technical and economic feasibility study of the project including the overall design of the 400kV Tanzania - Malawi Interconnector project. Both the technical and economic feasibility should integrate considerations from other relevant technical studies covering recent investments and further planning in the Tanzania, East Africa (EAPP), and SADC region to reflect the given development of power infrastructure in the wider geographical zone;
- (b) Identify and complement the interconnector routing and the Right-of-Way (ROW) in both Tanzania and Malawi;
- (c) Technical design;
- (d) Demand analysis and load flow scenarios in line with the least cost production plans for Tanzania and Malawi as well as the assumptions of the last available regional market analysis;
- (e) Geotechnical investigation and optimal line route survey of the preferred interconnector route (aerial survey);

- (f) Conceptual design and design criteria (transmission tower structures and components);
- (g) Capacity building for TANESCO, ESCOM Malawi, and other stakeholders to evaluate and approve the preliminary results of the studies.

The expected results to be achieved by the Consultant in compliance with TANESCO and ESCOM – Malawi standards are:

- (i). The Feasibility Study Report
- (ii). Technical Design Report and Design Criteria

3. SCOPE OF WORK

The Tanzania-Malawi 400 kV interconnector requires a feasibility study, conceptual design, and development of tender documents for the transmission line and associated substations. Each stage of the study **Error! Reference source not found.** will require review and approval from representatives from the East Africa Energy Program (EAEP), USAID Tanzania representative, and TANESCO technical representative.

3.1. Study Implementation Structure

The consulting firm selected will work closely with the Project Steering Committee (PSC). The PSC will be comprised of three members from TANESCO, three members from EAEP, and representatives from ESCOM-Malawi.

The PSC will ensure all necessary information is available in a timely manner, validate the findings of the study, and resolve any issues that might arise during the execution of the study. EAEP will be the Secretariat of this PSC as the contracting body.

TANESCO will provide technical guidance, participate in various phases of the study, monitor progress, and review reports on a regular basis with the Managing Director of TANESCO. All milestone and deliverable documents will require approval from TANESCO management.

EAEP – implemented by RTI International - will be responsible for fiduciary and administrative management of the Consultancy's contract.

3.2. Capacity Building for TANESCO Staff

In addition to the PSC-TANESCO staff, up to three TANESCO staff will join the Consultant in preparation of studies, data review, and fulfillment of this scope of work to develop skills associated with procurement of transmission line and substation terms.

It is anticipated that a minimum of two electrical engineers and one finance and economics specialist from TANESCO will join the Consultant. If travel or a change of duty station for TANESCO staff is anticipated, EAEP will secure the associated travel costs, logistics, and approvals. EAEP will confirm those details with the Consultant. Therefore, TANESCO associated travel and capacity building logistics costs should not be included in the Consultants cost estimates or proposal.

Additionally, the Consultant will provide formal training in power flow simulations using Power System Simulation for Engineers (PSSE) and other relevant software used by TANESCO in power planning to TANESCO staff in Dodoma. All trainings will undergo evaluation, and the Consultant will work closely with the EAEP monitoring, evaluation, and learning team, institutional performance improvement team, and communication team to ensure that performance was improved and appropriate branding/marketing was used. In addition, entry behavior of the personnel to be trained will be measured to enable evaluation of skills and knowledge gained at the end of the training program. The Consultant will be expected to put

in place mechanisms to enable transfer of knowledge to TANESCO staff, to ensure sustainability of initiatives to be implemented. The Consultant will be supported by EAEP's institutional and performance improvement team for the development of pre and post evaluations and sustainability measures.

3.3. Gender Integration

The Consultant is expected to assess how gender equality and female empowerment will be considered in project development.

The Consultant will be expected to facilitate regular sessions aiming at building the capacity of TANESCO to be consider the gender dimensions of the Project's development. This can include, but is not limited to, possible benefits that would accrue to men and women as a result of the line and recommended measures to support benefits to women.

4. PLACE OF PERFORMANCE

The Consultancy is expected to perform most of the work at its own facility; however, travel is anticipated for the Consultancy to the following locations (note that period of performance in each location is not limited):

- 1) Dodoma, Tanzania
- 2) On site at the proposed locations of the Tanzania - Malawi line

EAEP will manage the travel costs, logistics, and compliance of the Consultant when making travel arrangements and should NOT provide the detailed costing of logistical arrangements as a separate cost line in their bid.

5. WORK REQUIREMENTS

In order to achieve the specific scope of work outlined above, the studies will be carried out in two phases:

- 1) Full feasibility study
- 2) Conceptual design and development of tender documents

5.1. Feasibility Study

The Consultant will carry out feasibility studies based on the findings from the completed pre-feasibility study of the Tanzania - Malawi 400kV interconnector (2019, TANESCO) and the feasibility study completed for the Malawi-Tanzania 400kV (Malawi to the Tanzania border). The Consultant will use data from the pre-feasibility study and incorporate any new information likely to influence the optimization and determination of the economic viability of the whole project. The necessary team members will travel to the site during the interim reporting portion of deliverables.

5.1.1. LOAD FORECAST

The Consultant will review the TANESCO-provided load forecasts for the specific areas and work with the existing load forecasts at the national level. The economic life of the Project will be partitioned into discrete durations of 5, 10, 15, and 20 (20 years study with five years increments in total) years.

5.1.2. GENERATION AND TRANSMISSION EXPANSION PLAN

Based on TANESCO's national demand and export obligation, the Consultant is expected to perform necessary enhanced analysis of generation and transmission expansion plans that include the proposed interconnector. The analysis will be based on Tanzania's national demand obligations, transmission expansion plan, and generation plan. The Consultant will also propose scenarios for sensitivity analysis that will cover but not limited to:

- generation capacity and demand forecasts;
- Fuel/ Primary energy prices;
- regional power trade profiles; and
- any other parameter that may impact the economic justification of the Project.

5.1.3. OPTIMAL ROUTE SELECTION

The Consultant will carry out a review of the line route using maps of scale 1:50,000 and relevant satellite imagery. The maps and imagery will be digitized in a geographical information system (GIS) compatible with TANESCO software (ArcGIS) and the alternative line alignments superimposed on the resulting digital maps. A ground survey using GPS will be conducted along the entire line route to verify the results of the desk study.

The Consultant will propose a minimum of three optimal line route selections based on technical, geotechnical, environmental, economic, and financial analysis, considering the suggested terminal points.

After selection of the optimum line routes, the Consultant will prepare longitudinal and transversal profile drawings, including tower spotting, using digital elevation models generated from the Shuttle Radar Topography Mission. PLS-CADD or similar software will be necessary for this exercise.

The Consultant will also carry out geotechnical and other relevant investigations for the selected routes.

5.1.4. NETWORK ANALYSIS

The system studies will include, but are not limited to, the following:

- Load Flow Analysis:** Load flow studies will be performed to determine the load flows in normal (high and low load) and disturbed (loss of generation and major transmission lines) conditions. This analysis will be used to determine the system requirements of reinforcement and reactive power compensation, and for proper dimensioning of the transmission line and substation equipment.
- Fault Current/Short Circuit Study:** Fault current analysis for the complete range of fault types will be carried out. Based on the results of the study, the appropriate protection system and switch gear capacity will be designed for the interconnected system, taking into consideration other interconnection projects ongoing within the region. Low fault current study values will feed into distribution protection analysis.
- Network Stability Analysis:** Stability studies will be performed with the simulation of different abnormal conditions to determine the system requirement of stabilization and compensation. Stability analysis will include, but is not limited to, transient and sub-transient analysis, dynamic analysis, network islanding and restoration analysis, and voltage and angle stability analysis.
- Communication and Control System Study:** The existing and planned communication and control systems will be studied, and an appropriate communication and control system designed for the Project. The design of the transmission line should incorporate the installation of the optical ground wire with enough fibers as part of the communication system; this should cover lease-out cores as well as internal-use cores.
- Switching Surge Studies and Operating Guidelines:** switching studies and operating procedures should be included in the study to provide the transmission and/or system operators guidance on how to operate the interconnector under minimum and maximum loads as well as emergency conditions. These assessments present common ratings of high voltage equipment and switchgear and allow the tap changers of transformers to regulate voltage to nominal values in accordance with the EAPP Interconnection Code.

- f) **Other studies, as determined by the Consultant:** The Consultant should provide a list of recommended studies to ensure completion of the assignment in accordance with internationally accepted best practices and in compliance with the draft National Grid Code (Tanzania) and interconnection codes of EAPP and SAPP.

5.1.5. PROJECT COST

The Consultant will determine costs of project components and equipment based on current prices of inputs, such as metal prices and quotations from equipment suppliers. The costs will be prepared for equipment installation as well as the associated operation and maintenance of the transmission lines and associated substations.

The project cost estimate will be prepared by work component (transmission line, substation, protection and communication, civil works, and consultancy services) and by categories of expenses, and will be broken down into foreign and local components. The costs of the major components (e.g. transmission line) will be broken down in the highest detail possible (e.g. conductors, towers, insulators, breakers, switches etc.). The cost estimates will show operation and maintenance, physical contingency, price contingency, and taxes and duties levied separately.

5.1.6. PROJECT VIABILITY

The Consultant will determine the financial and economic viability of the Project. The Consultant will calculate the economic internal rate of return, the financial internal rate of return (IRR), benefit/cost ratio (BCR), and net present value (NPV). To perform such economic and financial analysis, the Consultant's tasks will include, but not be limited to, the following:

5.1.6.1. Project Benefits

The potential measurable benefits of this Project can include:

- 1) Increased reliability of the network
- 2) Reduced cost of reserve capacity in the country
- 3) Reduced cost of new generation due to economics of scale
- 4) Additional revenues from power exchanges
- 5) Increased direct female users

The Consultant will analyze the economic, social, and environmental externalities to determine the benefits, which they will use in the economic and financial evaluations. The Consultant will also identify other benefits the Project might generate in a modern power sector setting including climate change related impacts if relevant.

5.1.6.2. Economic Analysis

The Consultant will develop cost estimates for the implementation of the Project, including engineering, financing costs, mitigation measures, and the value of tangible benefits and drawbacks. The Project cost will include unit costs and estimates of quantities for project components and physical and price contingencies, as well as construction phase, operational phase, and line and equipment retirement phase costs. The Consultant will provide comparison costs for similar projects undertaken in different countries in the region.

Once the costs and benefits associated with the Project for the selected scheme have been calculated, the Consultant will determine the economic viability of the Project from indicators such as economic IRR, social benefit ratio, and NPV. The Consultant will carry out Sensitivity analysis and other factors determined in the economic evaluation of the Project. The Consultant will propose a methodology for

determining the adequacy of the tariff compared with the economic costs and requirements to meet financial targets.

5.1.6.3. Financial Analysis

The Consultant will determine and recommend a tariff scheme for (i) use of transmission lines to ensure cost recovery for capital and operation costs and (ii) an off-take and supply tariff for bulk energy and capacity depending on marginal costs. Financial analysis will determine the impact of the Project on the overall financial position of TANESCO and associated 'bankability' for affordable financing.

In the financial analysis, the IRR, BCR, and NPV will be calculated. The financial analysis for the Project will also include sensitivity analysis, which in addition to scenarios as defined above will cover variations in capital cost, cost of primary energy, amount of energy transmitted, and delay in project implementation.

5.1.7. SCHEDULE OF IMPLEMENTATION

The Consultant will put forward the shortest possible schedule for the Project's construction works. The programming of duties will be specific and comprehensive to produce a schedule implementation for competitive bids.

5.1.8. RISK ANALYSIS

The Consultant will analyze all the potential risks involved in the development of the Project, including, but not limited to, technical, financial, legal, regulatory, operational, commercial, delays in implementation, etc. The Consultant will analyze various risks and propose concrete measures for removing or mitigating them in a prioritized matrix format.

5.1.9. ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

The Consultant will complete an ESIA to identify potential impacts that the Project will have on those factors and determine measures to prevent, minimize, mitigate, or compensate for adverse impacts. The goal is to identify and integrate environmental enhancements into the planning and design of the project. Please refer to *Section 16: Annex 4: ESIA Terms of Reference* for details.

5.1.10. FEASIBILITY REPORT

Draft Feasibility Study Report: The Consultant will prepare a draft feasibility study report which will present all work carried out under this terms of reference, including the required maps, drawings, and figures to illustrate technical solutions. The report will contain clear conclusions as to the Project's economic, financial, and technical viability. The draft report will be submitted electronically to the PSC six months after the start of this Consultancy. EAEP can support printing provision of the hard copies to the in-country counterparts anticipating five hard copies to be provided to the PSC.

The draft feasibility study report will be reviewed by the PSC, and Tanzania Ministry of Energy, USAID representative, and relevant development partners two weeks after the Consultant's submission. The Consultant will be required to present in-person (Tanzania) and virtually (counterparts from Malawi and other stakeholders) the draft feasibility study in Dodoma, Tanzania. Note that travel will be guided under the RTI International COVID-19 protocols, approvals, and USAID compliance.

Final Feasibility Study: The Final Report will be submitted within one month of receipt of the comments from the PSC. The Final Report will be submitted in electronic format. Note that all reports are to be submitted in English. Approval of the Final Feasibility Study Report will depend on the response of the Consultant to the PSC comments. A synopsis report will be produced in tandem and include key findings of the feasibility studies and high-level information for decision makers.

All electronic copies of reports will be provided in Microsoft Office software, diagrams in AUTOCAD, PSSE files, and maps in ArcGIS as applicable.

5.2. Conceptual Design and Tender documents

5.2.1. CONCEPTUAL DESIGN

The Consultant will carry out a conceptual design for the construction of the Project's power lines. The Consultant will refine the technical analyses and operating simulations of Tanzania's national grid, carried out during the preceding phases, with a view to preparing conceptual technical specifications of equipment, directives, and documents required for launching invitations to tender, as well as the execution of works.

5.2.1.1. Conceptual Engineering Design (Substation and Line)

The conceptual engineering design will include:

Protection, monitoring, and control equipment: The Consultant will establish conceptual diagrams for the protection, monitoring, control, and metering of the new transmission line. They will indicate on the diagrams all the settings to be shown on relays and automatic controls, as required at the level of a conceptual design.

High voltage Transmission lines: The Consultant will carry out longitudinal sections and define the constraints of conductor stringing. They will determine the number and characteristics of pylons, conductors and accessories, and the size of the pylon foundations. The Consultant will define the arrangements for the grounding of pylons as required at the level of a conceptual design.

The draft conceptual design report will be submitted in electronic copies, in English, within nine months of the beginning of this Consultancy. The conceptual design will contain: 1) the description of structures; 2) plans, maps, and diagrams; 3) details on standards used; technical specifications of equipment; and 4) the terms of reference for the supervision and monitoring of works.

The draft report will be reviewed by PSC and other development partners within two weeks of the Consultant's submission and revised as needed by the Consultant. The Consultant should anticipate travel to Dodoma for presentation of this inception report and EAEP will cover the costs associated with this travel. As stated above, travel will be subject to RTI International's COVID-19 protocols and USAID compliance.

The final conceptual design report will be submitted within nine months of the start of this Consultancy in electronic copies.

5.2.2. GEOTECHNICAL INVESTIGATIONS AND COMPLEMENTARY TOPOGRAPHICAL WORKS

The Consultant will carry out preliminary geotechnical investigations that will determine (i) soil features relating to their adequacy as foundations for pylons, and (ii) the stability of the talus. The Consultant will collect geotechnical information necessary for the construction of transmission line and substations.

The Consultant will case longitudinal sections and define the constraints of the stringing of conductors. The Consultant will keep a field book for staking-out that will indicate the types of pylons (anchorage, alignment, and angle) needed. The Consultant will prepare, as required at the level of a conceptual design, details on the staking that, at a minimum, indicate the locations of all the pylons which will be

shown by markers. The Consultant should estimate cost to conduct an ariel survey for the geotechnical investigation.

5.2.3. PREPARATION OF BIDDING DOCUMENTS AND ASSISTANCE DURING BIDDING PERIOD

5.2.3.1. Tender documents

The Consultant will prepare tender documents to issue a bid for the Project. The tender documents will comply with the following standards:

- the latest versions of the African Development Bank's Standard Bidding Documents, specifically the "Procurement for Plant, Design, Supply and Installation"¹
- Tanzania public procurement processes and standards

The draft tender documents will be submitted within nine months of the beginning of the Consultancy in electronic copies; all reports are to be submitted in English. The draft tender documents will be reviewed by PSC and relevant development partners two weeks after submission and revised as needed by the Consultant. The Final Tender documents will be within one month of the PSC comments.

5.2.3.2. EPC and Owners Engineer terms of reference

The Consultant will prepare the terms of reference to procure an EPC and Owners Engineer to implement the Project. These terms of reference will be prepared as part of the Project tender documents above and submitted with the same timeline.

5.2.3.3. Level of Effort for Bidding Assistance

The Consultant will provide that bidding assistance to TANESCO within three months of the approval of the final feasibility study, conceptual design, and tender documents to create a smooth procurement process for the Project. The level of effort will focus on supporting TANESCO to respond to bidder questions and answers. This level of effort will be limited to within 12 months of the project kick-off and should not be indefinitely available.

6. PERIOD OF PERFORMANCE

The period of performance for studies is nine (9) months, beginning on the day the selected Consultant signs the contract with RTI International. All work must be completed within this timeframe. Any modifications or extensions will be requested through EAEP.

7. SCHEDULE/MILESTONES/DELIVERABLES

The Consultant will produce the following reports over the course of the Project:

N°	Deliverable	Narrative Description	Travel Required	Delivered no later than	Milestone payment %
1	Kick-off	Kick-off meeting; programming of study and exchange of available and necessary studies. The Consultant will provide a meeting agenda in advance of the in-person meeting and minutes after to the PSC electronically.	Yes Location TBD	Within 1 month of contract signing	0%
2	Inception Report	The Inception Report shall include:	No	Within 1 month of	10%

¹ The African Development Bank Standard Bidding Documents user guide and information can be accessed online at this site: <https://www.afdb.org/en/projects-and-operations/procurement/resources-for-borrowers/standard-bidding-documents>

N°	Deliverable	Narrative Description	Travel Required	Delivered no later than	Milestone payment %
		<p>(i) review the tasks to be carried out, associated methodologies, and suggestions or agreements made with the PSC on any modifications and additions that may be required;</p> <p>(ii) prepare tasks scopes that generate a detailed work plan;</p> <p>(iii) Work plan including Consultancy schedules, data needs, and other inputs required to complete the tasks. The Consultancy will identify the key personnel required for each task. The proposed project schedule shall be broken down by tasks and sub-tasks and presented in Gantt chart form.</p>		Kick-Off (N. 1)	
3	Interim Report	Report describing the completed load forecast, generation and transmission expansion plan, and optimal route selection.	Yes Location TBD for presentation TBD and travel to site anticipated	Within 4 months of Inception Report (N. 2)	25%
Workshop and Presentation of findings	A workshop shall be organized in consultation with TANESCO/ESCOM (timing), which will then allow parties concerned to view interim progress and facilitate the preparation of the draft feasibility study.				
4	Draft Feasibility Study, Conceptual Design, and Tender Documents	<p>The draft feasibility study, conceptual design documents, and tender documents will be presented to the PSC and other stakeholders. The presentation will consider the remarks and proposals on all the investigated aspects with conclusions and suggestions concerning the reviewed material and the proposed purpose of the study.</p> <p>The draft deliverables shall be submitted 6 months after the commencement of the Consultancy for PSC review and approval.</p>	Yes Location TBD	Within 1 month of the interim report (N. 3)	25%
5	Final Feasibility Study, Conceptual Design, and Tender Documents	The Final Feasibility Study and Conceptual Design Documents, and tender documents will be completed incorporating comments from the PSC review in N. 4. The final report shall be submitted within 9 months after the commencement of the study. This deliverable payment is initiated after approval of the report by the PSC and no-objection by USAID.	No	Within 3 months of the Draft (N.4)	30%

N°	Deliverable	Narrative Description	Travel Required	Delivered no later than	Milestone payment %
6	Training	<p>The Consultant shall provide appropriate training to TANESCO (in-person) and ESCOM (virtual) staff on conducting feasibility studies and conceptual designs, of interconnector projects throughout the life of the Consultancy.</p> <p>With the submission of the final deliverables, the Consultant will conduct a training program on the feasibility study, conceptual design, and tender document development process, lessons learned, highlights to implementation, and recommendations for successful procurement of the Project. The training content (manual, agenda, instruction design, pre/post evaluations, and presentation materials) must be approved EAEP institutional performance improvement team, communications team, and monitoring, evaluation, and learning team. The Consultant will collect a participant register (details to be provided by EAEP) and summary training report to initiate payment.</p>			5%
7	Bidding Assistance	<p>The Consultant will aid TANESCO during the bidding process within three months of the final approval of the feasibility study, conceptual design, and tender documents. This assistance will give TANESCO the ability to respond to bidder questions and facilitate a smooth procurement process. Note that this assistance will be provided remotely and must be completed before 12 months of the commencement of the project.</p>	No	Within 12 months of Kick-off (N.I)	5%

The Consultant shall submit all reports/documents in the following manner:

Reports:	Medium
Monthly flash reports (max. 4 pages)	digital copy only by email
Interim report	digital copy only by email
Final project reports	digital copy only by email

In addition to the above, the Consultant shall note the following requirements regarding documentation.

Network analysis	System models shall be in PSSE
Drawings	Shall be in editable format – AUTO CAD
Transmission line design	Shall be in PLS CAD and compatible with GIS

8. ACCEPTANCE CRITERIA

Progress reports will be submitted every months in electronic format (e-mails) to the PSC, beginning one month after the final inception report submission. Progress reports will include information on work in progress and completed; a staffing matrix outlining each team member's level of effort associated with each task; and the estimated percentage of work completed by task. Progress reports will also address any challenges that cause or could cause delays, as well as a financial summary indicating amounts to be invoiced and disbursed. The inception, feasibility, conceptual design, and tender documents will first be produced in draft version and then finalized after they have been reviewed by PSC.

9. OBLIGATIONS OF THE CONSULTANT

The Consultant will be entirely responsible for carrying out the deliverables listed in this terms of reference. The Consultant will supply specialists, support staff, and logistics necessary for the required execution of the Project. The Consultant will, for each phase of the study, define in detail which activities will be carried out. Note that EAEP will provide related travel logistics and associated costs as detailed in the deliverables schedule.

10. REQUIRED EXPERTISE

The Consultant will have a solid background and knowledge in electric power system planning and transmission line project evaluation and analysis. Experience in each of these fields should not be less than 10 years. In particular, the following knowledge is required:

- 1) Conducting feasibility studies of transmission line projects that interconnect national power grids and grids of contiguous countries,
- 2) Conducting power system planning studies at a national and regional levels for the purpose of cross-border grid interconnections,
- 3) Conducting Power System modeling and analysis for the purpose of cross-border transmission interconnections,
- 4) Carrying out geological and route surveys for transmission line projects,
- 5) Conducting an economic and financial analysis of HV transmission lines projects,
- 6) Developing detailed design documents for HV transmission lines projects,
- 7) Experience producing successful tender document packages for projects of a similar size, nature, and preferably location/region.
- 8) Experience in conducting ESIA's for projects of similar size, nature, and preferably location/region.

All key staff must have clear written and spoken English skills for the Consultancy. The Consultant will be required to demonstrate successful execution of three similar assignments in the last five years by submitting documented evidence in the form of completion certificates and references to support each of the above-required levels of expertise (template provided in the RFP). Consultants are also encouraged to include local professionals among personnel directly involved in executing the assignment.

The Consultant is encouraged to involve the local/national key staff in the Consultant's key personnel in order to create national expertise. The consultant is required to provide an organizational structure to demonstrate how the proposed team will be managed, including relations with EAEP. Further the team

should be dedicated to deliverables listed above. Personnel will not be replaced without written pre-authorization from the PSC.

The following expertise are required:

10.1.2. PROJECT MANAGER

The Project Manager shall have at least a master's degree in Electrical Engineering and proven performance records and shall have a professional experience not less than 12 years in transmission operations and planning, designing, managing, and supervising works related to bulk power systems up to and including 400 kV HVAC. The Project Manager shall present evidence of having managed and coordinated at least three projects of a similar nature to international turn-key contracts. The Project Manager shall be an individual with effective communication skills in the English language, both written and verbal and a high sense of organization and responsibility. The Project Manager shall have experience in similar project coordination in emerging market countries in sub-Saharan Africa. The Project Manager may take the task of one of the below-mentioned fields of specialization. The Project Manager will be assisted by a Deputy Project Manager, who could also be a staff member in the below mentioned fields.

10.1.3. TRANSMISSION SYSTEM SPECIALIST

The Transmission System Specialist shall have a master's degree in Electrical or Civil/Structural Engineering and have proven performance records with a minimum ten years of relevant work experience in Transmission line design up to 400 kV, line route survey and profiling and line costing. The Specialist shall have experience in similar project activities in developing countries in sub-Saharan Africa (preferred).

10.1.4. SUBSTATION SPECIALIST

The Substation Specialist shall have a degree in Electrical Engineering and have proven performance records with a minimum ten years of relevant working experience in HV Substations design up to 400 kV, control, telecommunication and protection design and costing. The Specialist shall have experience in similar project activities in developing countries in sub-Saharan Africa (preferred).

10.1.5. DISTRIBUTION SYSTEM SPECIALIST (OPTIONAL)

The Power Distribution specialist shall have a degree in electrical engineering with a minimum ten years of relevant working experience in power distribution systems and have a good understanding of distribution patterns in African countries. Shall furthermore be familiar with questions related to house connections and modern metering. The specialist shall have experience in similar project activities in developing countries in sub-Saharan Africa.

10.1.6. NETWORK ANALYST

The power Network specialist shall have a degree in Electrical Engineering with a focal basis in Power System Studies/analysis with a minimum of ten years of relevant working experience. The analyst shall be conversant with different software packages on the market for power system analysis such as PSSE. It shall be noted that TANESCO uses PSSE. The analyst shall have experience in similar project activities in developing countries in sub-Saharan Africa (preferred).

10.1.7. TELECOM AND SCADA SPECIALIST AND/OR PROTECTION SPECIALISTS

The Consultant will propose other specialists, such as Telecom and SCADA Specialist, Protection specialist with relevant degrees in Electrical or Telecom Engineering with a minimum eight years' experience in planning, designing, managing, and supervising works related to telecommunication,

SCADA and integration works and electrical protection respectively, on the level of substations and transmission networks up to 400 kV. The recommended specialist(s) shall have experience in similar project activities in developing countries in sub-Saharan Africa (preferred).

10.1.8. ECONOMIST

The Financial Expert-Economist shall have a degree in a relevant discipline with a minimum of ten years' experience, particularly in economics of energy projects. The economist shall have experience in similar project activities in developing countries in sub-Saharan Africa (preferred).

10.1.9. CIVIL ENGINEER

The Civil engineer shall have a degree in Civil Works Engineering with a minimum eight years in planning, designing, managing, and supervising works similar to those of the present project. The Engineer shall have a gained experience in Transmission systems and cover geotechnical investigations. The engineer shall have experience in similar project activities in developing countries in sub-Saharan Africa.

10.1.10. SOCIAL/ENVIRONMENTAL SCIENTIST(S)

The Consultant will propose one or more environmental and social development specialists to conduct the ESIA using Environmental and Social Performance Standards. Note this position could be one person or more depending on the Consultant's recommendation. Requisite background below:

Environmental Specialist/Planner. The Planner should have at least ten years of progressively senior experience in the environmental planning of major infrastructure projects, particularly HV transmission lines. A significant portion of this experience will have been in Sub-Saharan Africa. S/he will have demonstrated expertise in the design and implementation of environmental data collection and analysis programs to support feasibility studies and the preparation of ESIA's required by national governments and international lending agencies. S/he will have demonstrated skills in working effectively with public sector clients, and in implementing effective consultation programs with project area peoples, especially in Sub-Saharan Africa.

Social Development Specialist. The Specialist should have at least ten years of progressively senior experience in the socio-economic planning of major infrastructure projects, particularly HV transmission lines and associated substations. A significant portion of this experience will be in Sub-Saharan Africa, and in addressing involuntary resettlement issues. S/he will have demonstrated expertise in the design and implementation of socio-economic data collection and analysis programs to support feasibility studies and the preparation of ESIA's required by national governments and international lending agencies, particularly AfDB, World Bank, European Investment Board, EU etc. S/he will have demonstrated skills in working effectively with public sector clients, and in implementing effective consultation programs with project area peoples, especially in Sub-Saharan Africa.

10.1.11. OTHER RESOURCES

The Consultant may complement the staffing through other competencies such as Topographer, Geologist, Surveyor, as required.

11. OBLIGATIONS OF EAEP AND TANESCO

EAEP, TANESCO and ESCOM Malawi will form the PSC that will work closely with the Consultant for coordination of data collection and analysis, site visits, and liaising with other institutions.

TANESCO: Fully responsible for review and acceptance of all milestone and final deliverables for content. TANESCO is responsible for providing responses to deliverables within two weeks of Consultant submission.

ESCOM: Responsible for review and comments on the milestone and deliverable documents as a participant of the PSC. ESCOM is responsible for providing responses to deliverables within two weeks of Consultant submission.

EAEP: Responsible for guiding the Consultant and approving final deliverables for contract requirements. EAEP is similarly responsible for providing responses to deliverables within two weeks of Consultant submission.

The PSC will serve as a liaison between the Consultant and the various agencies and government departments associated with or interested in the Project. The Consultant, however, will be fully responsible for collecting data and information from these agencies. The Consultant will be given unhindered access to the relevant agencies and the country of Tanzania in order to carry out the study. This access will be provided once a non-disclosure agreement has been signed with TANESCO.

12. ADDITIONAL INFORMATION

The Consultant must recognize that the activities will be conducted in Tanzania and take into consideration the travel requirements (visas, COVID-19 testing, USAID travel authorizations) to complete the work effectively.

Bidders are reminded to review all the contracting terms and conditions as detailed in the attachments (links) to this RFP such as, but not limited to required insurances, indemnity clauses and Intellectual Properties. RTI's subcontract terms and conditions can be found here:

https://www.rti.org/sites/default/files/msa_template_v1_13_2016.pdf

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13. ANNEX 1: ESTIMATED LEVEL OF EFFORT

EAEP estimates that the Consultancy can be completed in approximately 9 calendar months; however, the Consultant, based on the complexity of each activity and understanding of the required services to be rendered, will propose their level of effort for required personnel to complete the activity within this time frame. Note that a workday is defined as a maximum of eight hours per day and working five days a week.

14. ANNEX 2: EXISTING AND RELEVANT DOCUMENTS TO BE PROVIDED UPON AWARD

- 1) Tanzania - Malawi 400kV Pre - Feasibility Study (2019, TANESCO)
- 2) Malawi - Tanzania 400kV Feasibility Study
- 3) Map of TANESCO System
- 4) Gas Power Plant – Site selection report
- 5) Transmission Master Plan
- 6) Financial parameters to assist with Net Present Value and project total cost comparisons (in 2013 Masterplan)
- 7) Line load capacity simulations
- 8) TPDC gas price in USD/GJ

15. ANNEX 3: TEMPLATE NON-DISCLOSURE AGREEMENT WITH TANESCO

NON-DISCLOSURE AGREEMENT

Entered into by and between

Tanzania Electric Supply Company Limited (TANESCO) with its registered address
 _____ represented by
, Managing Director
(Hereinafter “the Disclosing Party”)

AND

[Consulting firm], firm’s address and details, **(Hereinafter collectively referred to as “the Receiving party”)**

THIS NON-DISCLOSURE AGREEMENT (“Agreement”) is made as of this
 _____ (“Effective Date”) with reference to the following facts:

- A. For the purpose of carrying out the objectives of the [Contract number] to facilitate Receiving party’s submission of relevant information. Receiving Party wishes to receive information that TANESCO wants to keep confidential relating to TANESCO’s proprietary information.
- B. TANESCO, in order to permit the Receiving Party to make such a determination, wishes to disclose to the Receiving Party certain confidential information of TANESCO.

NOW, THEREFORE, in consideration of the mutual promises and covenants contained in this Agreement, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties hereto agree as follows:

1. Definition of Confidential Information

1.1 For purposes of this Agreement, “**Confidential Information**” means any data or information that is proprietary to the Disclosing Party and not generally known to the public, whether verbal or written, disclosed by TANESCO to the Receiving Party and relating to the TANESCO’s project feasibility, strategies, and research, including, without limitation, Institution confidential information, product design information, client, customer, vendor, prices and pricing policies not otherwise published, and projects under development. The Receiving Party acknowledges that the Confidential Information is proprietary to the Disclosing Party, has been developed and obtained through great efforts

by the Disclosing Party and that Disclosing Party regards all its Confidential Information as institutional secrets.

1.2 Notwithstanding anything in the foregoing to the contrary, Confidential Information shall not include information which: (i) was known by the Receiving Party prior to receiving the Confidential Information from the Disclosing Party; (b) becomes rightfully known to the Receiving Party from a third-party source not known (after diligent inquiry) by the Receiving Party to be under an obligation to Disclosing Party to maintain confidentiality; (c) is or becomes publicly available through no fault of or failure to act by the Receiving Party in breach of this Agreement; (d) is required to be disclosed in a judicial or administrative proceeding, or is otherwise requested or required to be disclosed by law or regulation, although the requirements of section 4 hereof shall apply prior to any disclosure being made; and (e) is or has been independently developed by employees, consultants or agents of the Receiving Party without violation of the terms of this Agreement or reference or access to any Confidential Information.

2. Use of Confidential Information

The Receiving Party agrees to use the Confidential Information solely in connection with the contemplated potential in research and not for any purpose other than as authorized by this Agreement without the prior written consent of an authorized representative of the Disclosing Party.

3. Term

This Agreement shall remain in effect for 3-year term (subject to a 2 years' extension if the parties are still discussing and considering the research at the end of the started period). Notwithstanding the foregoing, the parties' duty to hold in confidence Confidential Information that was disclosed during term shall remain in **effect for three (3) years from the Effective Date**.

4. Compelled Disclosure of Confidential Information

The Receiving Party may disclose Confidential Information pursuant to any governmental, judicial, or administrative order, provided that the Receiving Party promptly notifies, to the extent practicable, the Disclosing Party in writing of such demand for disclosure so that the Disclosing Party, at its sole expense, may seek to make such disclosure subject to a protective order or other appropriate remedy to preserve the confidentiality of the Confidential Information; provided in the case of a broad regulatory request with respect to the Receiving Party business (not targeted at Disclosing Party), the Receiving Party may promptly comply with such request provided the Receiving Party gives the Disclosing Party prompt notice of such Disclosure.

5. Remedies

Both parties acknowledge that the Confidential Information to be disclosed hereunder is of a unique and valuable character, and that the unauthorized dissemination of the Confidential Information would destroy or diminish the value of such information. The damages to Disclosing Party that would result from the unauthorized dissemination of the Confidential Information would be impossible to calculate. Therefore, both parties hereby agree that the Disclosing Party shall be entitled to injunctive relief preventing the dissemination of any Confidential Information in violation of the terms hereof. Such injunctive relief shall be in addition to any other remedies available hereunder, whether at law or in equity. Disclosing Party shall be entitled to recover its costs and fees, including attorneys' fees, incurred in obtaining any such relief. Further, in the event of litigation relating to this Agreement, the prevailing party shall be entitled to recover its attorney's fees and other expenses.

6. Return and Review of Confidential Information

The Receiving Party shall immediately upon completion of the research send to the Disclosing Party, all tangible material embodying the Confidential Information provided to the Disclosing Party for review and approval before publication. Hereunder and all notes, summaries, and all copies of any of the foregoing, including "copies" that have been converted to computerized media in the form of image, data or word processing files either manually or by image capture) based on or including any Confidential Information, in whatever form of storage or retrieval, upon the earlier of (i) the completion or termination of the dealings between the parties contemplated hereunder; (ii) the termination of this Agreement; or (iii) at such time as the Disclosing Party may so request. Notwithstanding the above, the Receiving Party may retain one copy of Proprietary Information solely for compliance purposes.

7. Notice of Breach

Receiving Party shall notify the Disclosing Party immediately upon discovery of any unauthorized use or disclosure of Confidential Information by Receiving Party or its Supervisors, or any other breach of this Agreement by Receiving Party or its Supervisors, and will cooperate with efforts to help the Disclosing Party regain possession of Confidential Information and prevent its further unauthorized use.

8. Dispute Resolution

(a) Amicable solution:

Any dispute or differences between the parties arising out of this Agreement shall in the first instance be settled amicably by submitting such a dispute to a panel of senior representatives of the Parties to consider and resolve the Dispute. Each senior representative serving on such panel shall have full authority to settle the Dispute.

(b) Litigation:

"If the parties cannot settle the dispute amicably, the matter shall be referred to national courts of competent jurisdiction."

9. Governing Law

This Agreement shall be governed in all respects by the laws of the Republic of Tanzania. This Agreement shall be binding upon the successors and assigns of the respective parties.

10. Termination

This Agreement may be terminated from time to time provided such termination is done with prior notice of 30 days by either party given in writing. In the case of termination of this agreement, the obligations of non-disclosure of confidential information provided under this agreement shall survive the termination event as prescribed in Article 3.

11. Warranty

The parties acknowledge that although they shall each endeavor to include in the Confidential Information all information that they each believe relevant for the purpose of this Agreement, the parties understand that no representation or warranty as to the accuracy or completeness of the Confidential Information is being made by the Disclosing Party. Further, neither party is under any obligation under this Agreement to disclose any Confidential Information it chooses not to disclose. Neither Party hereto shall have any liability to the other party nor to the other party's Representatives resulting from any use of the Confidential Information except with respect to disclosure of such Confidential Information in violation of this Agreement. The Disclosing Party shall have no liability to the Receiving Party (or any other person or entity) resulting from the use of the Disclosing Party's Confidential Information or any reliance on the accuracy or completeness thereof.

12. Miscellaneous

- 12.1 In the event that any of the provisions of this Agreement shall be held by a court or other tribunal of competent jurisdiction to be illegal, invalid or unenforceable, such provisions shall be limited or eliminated to the minimum extent necessary so that this Agreement shall otherwise remain in full force and effect.
- 12.2 This Agreement supersedes all prior discussions and writings and constitutes the entire agreement between the parties with respect to the subject matter hereof.
- 12.3 This Agreement may not be modified or amended except by an instrument in writing signed by the parties hereto. Accordingly, no course of conduct shall constitute an amendment or modification of this Agreement.
- 12.4 Any failure by either party to enforce the other party's strict performance of any provision of this Agreement will not constitute a waiver of its right to subsequently enforce such provision or any other provision of this Agreement.

By signing below, the Disclosing Party and the Receiving Party acknowledge terms and conditions contained within this Agreement and further acknowledge that this Agreement represents a complete contract between the Disclosing Party and the Receiving Party.

“For and On behalf of the Disclosing Party”

TANESCO MD

Print Name

Signature

Date

“For and on Behalf of Receiving Party”

[Consultant]

Print Name

Signature

Date

16. ANNEX 4: ESIA TERMS OF REFERENCE

16.1. Draft Environmental and Social Impact Assessment

The Consultant team of experts will provide the draft documents for the feasibility study including the:

- Load Forecast
- Generation and transmission expansion plan
- Optimal route selection
- Network analysis
- Project Cost
- Project viability
- Schedule of implementation
- Risk analysis

In development of those documents, the Consultant's Environmental/Social Scientist(s) will review documents and determine if there is increased access to sensitive natural habitats because of access roads or other works, the study area will need to incorporate the zone of influence. In all cases, the impacts of associated and ancillary features of the project, including access roads and the like, will need to be addressed and measured by induced, indirect and cumulative impacts.

Public Consultation Process & Participation Plan. The Consultant will identify all interested and affected people (IAPs) (e.g. people affected by construction activities and during operation) and facilitate dissemination of information to relevant authorities regarding the proposed Project. The Consultant should also consult those NGOs and government departments and agencies that may have a stake in the Project.

The Consultant will prepare a Stakeholder Consultation and Participation Plan, providing an opportunity for the relevant authorities and IAPs to raise issues and concerns pertaining to the proposed power lines, and allow the identification of the additional alternatives and recommendations. The Plan will describe a schedule for public consultation with these different groups, including number and timing of public input, and the methods to be employed (e.g. media announcements, town hall meetings, questionnaires, one-on-one meetings, public steering committees). Public consultation should occur, at least, during the inception and collection of baseline information, and at the draft report stage. The participation plan should span the duration of project development and implementation.

An annex of the ESIA should summarize the public consultation and participation process and the results inclusive of achievements and challenges of the consultation process. The Consultant will gather more detailed information to outline anticipated issues not raised by the IAPs; those will be addressed by the ESIA report. The Consultant will focus the ESIA on relevant issues and recommend specific investigations to make the ESIA useful to TANESCO, its decision-makers, and addresses the concerns of IAPs.

Legal and Administrative Framework. The Consultant will describe the pertinent regulations and standards at both the international, national, and local level that govern environmental quality, health, safety, protection of sensitive areas, protection of endangered species, land use control, etc. The Consultant will describe the current administrative arrangements for environmental regulation, enforcement, and management in environmental and social management issues, to ensure that an eventual environmental and social management plan (ESMP) will be effectively implemented.

Description of the Environment/Project Setting. Assemble, evaluate, and present baseline data on the relevant environmental and social characteristics of the study area. In addition to the data being used

for determining and assessing impacts it will be used as a baseline against which future changes caused by the Project can be measured and monitored. The data should include any information on changes anticipated before the Project commences. The description should contain relevant descriptions of the following:

- **Physical environment:** geology, topography, soils, climate, and meteorology; ground water and surface hydrology
- **Biological environment:** flora; fauna; forests; rare or endangered species; sensitive habitats including parks and reserves; wetlands; significant natural sites, etc.; species of commercial importance; and species with potential to become nuisances, vectors or dangerous.
- **Socio-cultural environment:** (include both present and projected where appropriate); population affected (numbers and subsistence systems); land use where appropriate and property (including houses, crops, trees, plants, other properties, etc.); planned development activities; public health; cultural characteristics (including cultural property and heritage); and gender differentiation.
- **Economic activities:** livelihood; employment; gender composition; cross-border migration.

Some examples of the specific activities are: recording plant species that occur along the route, based on field surveys; identification of any species of special concern, namely species with conservation status or endemic to the area including birds; commentary on conservation status of specific species; compilation of a broad scale vegetation or habitat map of the area indicating the extent to which the power line would affect each vegetation or habitat type; description of current land use and compilation of a broad land use map.

ESIA Methodology used. As a chapter of the ESIA report, the Consultant will describe the methods used for conducting the ESIA (scoping and bounding, impact analysis and public consultation process, etc.). The Consultant will include a public participation plan with a stakeholder identification process, stakeholders identified, stages within the ESIA process where stakeholders have participated, and the different levels of participation used. The assessment of impacts will include the identification of the important environmental components, and selection criteria used for identifying significant impacts (positive and negative) whenever possible. Significant levels may be determined through the application of scoring system if the Consultant feels that such an approach is warranted. The Consultant will employ an environmental economic analysis where applicable, particularly to justify significant impacts to be mitigated.

Potential Impacts of the Proposed Project. Using the collected baseline data and the system of monitoring and evaluation, the Consultant will take a systematic approach to identification, mitigation and evaluation of all impacts and will identify potential changes, which the Project may cause. These would include, but not be limited to, changes in the following:

- Physical environment
- Biological environment
- Socio-cultural environment
- Economic activities
- Employment opportunities
- Safety issues, including:
 - measures to assure safety of local residents with respect to exposure to electromagnetic radiation;
 - measures to ensure transformers and equipment at the substations do not contain polychlorinated biphenyls;
 - ensure that the safety and health concerns of temporary and migrant workers are addressed; and

- an HIV/AIDS program for workers and affected communities.
- Hazards for birds such as potential electrocution of birds or adjustment to habitat and how to manage this impact
- Construction phase impacts
- Impacts of work camps
- Waste management for the entire project, including the work camps and construction sites
- Changes in land use, land tenure patterns and land grabbing because of improved access, including:
 - residential patterns;
 - agricultural practice;
 - livestock management (pastoralism);
 - commercial use;
 - traditional use (herb, firewood collection, sacred sites etc.);
 - access to public services (health, education etc.).
- Impacts of access roads and how to mitigate risks. This could include closure or immobilization of access roads. In case of improved access to sensitive natural and critical natural habitats through access roads to be constructed under the project, an Induced Access Management Plan will be prepared, in order to manage longer term impacts on natural habitat.
- Traffic density, safety, and dust control
- Land acquisition and resettlement as per the IFC standard guidelines.

The Consultant will analyze at a minimum:

- Positive and negative impacts;
- Direct and indirect impacts, both short-term and long-term;
- Impacts that are avoidable/unavoidable, reversible/irreversible;
- Pre-construction actions to avoid or minimize negative impacts;
- Construction and operational phase impacts;
- Cumulative impacts occurring because of other activities in the project area: existing activities, projects under construction or planned activities within a reasonable time frame;
- Impacts in critical and non-critical habitats; and
- Identify the potential risk of the spread of HIV/AIDS and other sexually transmitted diseases during the construction period and prepare a detailed plan for awareness and prevention including resource implications.

Wherever possible, the Consultant will describe impacts quantitatively, in terms of environmental costs and benefits, and assign economic values when feasible. Impact analysis should be divided between construction and operation impacts.

The draft ESIA report should be organized by:

- Executive summary
- Policy, legal and administrative framework
- Project Description
- Baseline Data
- Environmental Impacts
- Analysis of alternatives
- Environmental Management Plan
- Appendices:
 - List of persons who prepared and contributed to the ESIA
 - Records of coordination and consultation meetings and events

- References

The draft ESIA should be prepared in parallel to the development of other technical documents in the full feasibility study. Once completed, the ESIA will be submitted with the draft feasibility study suite of documents/studies for approval by the PSC.

16.2. Final ESIA

The final ESIA will be submitted with the completed feasibility study documents/studies. The final ESIA will have incorporated the comments and suggestions from the PSC during the draft review process outlined in the deliverables table.