

KENYA ELECTRICITY TRANSMISSION COMPANY (KETRACO)

TEMPLATE FOR FEASIBILITY STUDY REPORTS FOR TRANSMISSION LINES DEVELOPED THROUGH PPP FRAMEWORK

TO BE USED AS A GUIDE AND IS NOT MEANT
TO BE PRESCRIPTIVE - ALL REQUIREMENTS
FOR SECTION 32 OF PPP ACT, 2021 ARE TO BE
MET

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KETRACO TECHNICAL FEASIBILITY STUDY TEMPLATE

Project Title: [Insert name of the Transmission Project]

Date: [Insert date submitted to KETRACO]

EXECUTIVE SUMMARY

Provide an executive summary of the PPP. The Executive Summary should include the following areas:

- Briefly describe the power transmission project and how its goals align with the development of Kenya's transmission sector and infrastructure plans.
 - Demonstrate the technical feasibility of the project through options and scenarios development, screening, ranking, power system simulation analysis to confirm adequacy and cost effectiveness for justification of the preferred options in meeting the desired project objectives while complying with all relevant grid code requirements.
- Briefly summarize the most significant issues in concept design and specification.
 - Financial viability of the project
 - Environmental and social considerations
- Legal viability
 - Explain the potential mitigation measures to address identified potential risks

The power sector in any country requires the generation facilities (power plants) and the transmission and distribution systems (the grid) to transfer electrical energy from the generating plants to the load centers and ultimately to electricity consumers. Public Private Partnerships (PPPs) in Kenya and the region will essentially mitigate against the high risk of system bottlenecks, leaving generation assets stranded. Transmission requires design and construction of high-voltage substations and transmission lines and associated infrastructure to support the system. KETRACO expects consultant to ensure that design concept criteria and specifications conform with the Kenyan grid code, follow good engineering practices, and maximize cost effectiveness during the life cycle of the project.

INTRODUCTION

Provide an introduction to this PPP.

PROJECT DESCRIPTION

Provide a detailed description of the proposed project, including reference designs, sketches and alignment maps. Details to be covered include the following:

Project objectives

Transmission line route and length:

Capacity (MW) of the transmission line:

Type of transmission line (AC/DC):

Substations involved and their capacities:

Project timeline and estimated completion date:

PROJECT NEEDS ANALYSIS

Provide a comprehensive project needs analysis, including option analysis, description of the benefits to society and alignment with Government's infrastructure plan.

Project Needs Analysis:

Benefits to Society:

Alignment with Government's Infrastructure Plan:

Demonstrate the technical feasibility of the project:

- Options (TL routing, substation configuration etc.) and scenarios development, screening, ranking.
- Power system simulation analysis to confirm adequacy and cost effectiveness for justification of the preferred options in meeting the desired project objectives while complying with all relevant grid code requirements.

PRELIMINARY ENVIRONMENTAL AND SOCIAL ASSESSMENT & FEATURES OF THE PROJECT

Provide preliminary assessment with detailed description of the environmental and social features of the proposed project.

Environmental Features:

Social Features:

CLIMATE AND DISASTER RESILIENCE OF THE PROJECT

Provide a description of the project's climate and disaster resilience.

TECHNICAL DESCRIPTION OF THE PROJECT

Provide a detailed technical description of the project, including a construction schedule and requirements on enabler services.

KEY SPECIFICATIONS AND DESIGN CRITERIA

KETRACO will share with the consultant KETRACO's standard technical specifications for transmission lines and substations for guidance purposes. In evaluating the completeness of the feasibility report, KETRACO will look for design concept criteria, specifications, and standards that are acceptable in terms of equipment manufacture, testing, installation, and operation within the existing national grid infrastructure. The table that follows summarizes the requirements.

ITEM DESCRIPTION	EXPLANATION
Functional guarantees	Evaluate power transformer losses and transmission lines losses both at design and operations level. Maximum allowable loss levels shall be part of the performance requirement.
Environmental conditions	Works designed with extremes of temperature, rainfall, and humidity that exist in the area, considering altitude, air pollution, isokeraunic levels, and seismic activity.

ITEM DESCRIPTION	EXPLANATION
Substations	
System voltages and ratings	Nominal system voltages between phases (earthing, system frequency, and highest system voltage; symmetrical short circuit at rated voltage rms). Auxiliary plant supplies shall be stated.
Minimum substation clearances	Air-insulated outdoor and indoor busbars and connections should have minimum clearances stated.
Substation standards	Substations should be designed in accordance with the latest applicable/ acceptable international standards.
Layouts	The substation layout should show an acceptable layout, compliant with the operational safety and access criteria. In addition, the layout should have provision to cater for any future expansion plans.
Seismic qualification of plant	Power transformers, circuit breakers, disconnectors and earthing switches, instrument transformers, surge arrestors, etc., should be supplied, qualified according to the requirements of acceptable standards (e.g., IEEE 693-2005).
Maintenance requirements	Maintenance clearances to applicable standards. Adequate space should be provided to allow access for maintenance equipment, mobile access platforms, and mobile cranes to any substation equipment.
Outage constraints	The design of the substation will permit installation, extension, operation with a maximum of one busbar, and one circuit only out of service or as acceptable.
Insulation requirements	All external insulation should be specified, of good quality, dimensionally accurate, and rated to suit the application. The basis of external creepage distance should be specified and comply with recommendation of the required standard.
Movement of conductors	Clearances specified are maintained under all conditions of movement of conductors due to wind, short circuit, or other external influences.
Movement of vehicles	The design should permit safe movement of vehicles within the station on designated routes. Adequate ground pressure should be provided on designated routes.
Substation equipment experience requirements	Should be from experienced manufacturers with minimum years stated.
Circuit breaker design criteria	Basic design criteria and standards should be stated.
Disconnectors and earth switches design criteria	Design criteria to apply to disconnectors and earth switches should be stated.
Current transformer (CT) design criteria	CT design criteria provided, and relevant standards cited.
Capacitor voltage transformer (CVT) design criteria	CVT design criteria provided, and relevant standard cited.
Power transformer	Power transformer design criteria provided, fulfilled system requirements stated, and International Electrotechnical Commission and any other applicable standards cited.
Busbar	Material used specified.
Substation overhead earthing wires	Ensure provisions to protect equipment from direct lightning strikes.
Protection systems and fault clearance requirements	Fault clearance time limits stated.
Substation control	Required provisions for monitoring, control, and communication with any existing system as agreed between the parties.
Substation communications equipment	Equipment stated and any reconfiguration of existing equipment ascertained.
Substation auxiliary supplies	Applicable voltages, batteries, and uninterruptible power supply (UPS) provided.
Earthing	Complies with acceptable standards.
Substation relay buildings	Number of rooms is stated; air-conditioned and meet local design codes.
Lightning and surge arrestors	Designed to meet the isokeraunic levels prevalent at the site.

ITEM DESCRIPTION	EXPLANATION
Transmission Lines	
Concept line design	An outline of concept line developed (line routes surveyed and sag and tension diagrams developed). Maximum force/loads predicted to occur on concept tower foundations, for each tower foundation, should be provided.
Technical description	For the applicable transmission line voltage, consider phase conductor code name, earthwire type, no. of circuits, no. of phases, no. of conductors/phases, no. of earthwires, circuit configuration, earthwire shielding angle, nominal system voltage, highest system voltage, insulator type, creepage distance, and lightning impulse.
General particulars	For applicable voltages, the general particulars governing the design and working system of the transmission line are provided. The system being in continuous operation, in varying atmospheric and climatic conditions occurring in all seasons. The minimum number of service years should be stated.
Required earth conductors	Earth conductors erected above each circuit of phase conductors.
Limit state design	The design method concept and adherence to "limit state."
Wind loads	Considerations of wind loads/stresses as per applicable standards during erection and completion of structures.
Strength coordination	Failure hierarchy of component design; failure occurrence in a predictable sequence.
Standards	Applicable KETRACO, Kenya, and internationally recognized standards should be stated.
Civil	
Geotechnical	Detailed geotechnical and interpretative reports for use in design.
Retaining walls	The method of construction/materials.
Drainage	Categories of drains (storm, contaminated, and sanitary).
Watercourse	Design criteria.
Landscaping	Works design/method statements for landscaping are provided.
Seismic design	Use of international building codes for design (operating-basis earthquake, design earthquake, response spectrum).
Wind loads	Wind loads on buildings and structures designed according to appropriate standards.
Foundations	Foundation designs should be based on predicted loads, site surveys, testing programs, and other considerations.

SCOPE

The scope for transmission lines should include detailed site and line route surveying, site geographical data, route selection process, voltage and technology selection, as well as design, fabrication, factory testing, supply, and erection of transmission line towers, foundations, conductors, insulators, hardware fittings, and accessories. It also should address stringing the conductors and earthwire, testing and commissioning the equipment, and managing operations and maintenance for the economic life of the project. Additional features that may fall within the scope are interties and augmentation of the existing system. All these need to be discussed in the report before determination and confirmation of scope, extent, design concept and associated works.

The scope for substations includes but is not limited to site investigations, preliminary site selection, selection of substation configuration, technology, layout, size, design, manufacture, factory testing, delivery, civil engineering, installation, and commissioning of substation equipment/facilities. It also may include additional augmentation work. All these need to be discussed in the report before determination and confirmation of scope, extent, design concept and associated works.

COST ESTIMATION

The table below lists some items that may be identified for procurement, based on an approved design concept and detailed engineering. The anticipated costs, entered into the right-hand column, will be based on recent or previous projects undertaken or on inquiries from the equipment manufacturers or suppliers. The components will be as detailed in the bill of quantities forming part of the Annexes.

ITEM DESCRIPTION	ANTICIPATED COSTS
Outdoor switchgear (circuit breakers and support structure, disconnectors, CTs, CVTs, surge arrestors, main busbars, primary connectors, clamps, identification plates, insulation, etc.)	
Building services (heating, ventilation, and air conditioning [HVAC]; lighting; and power for building)	
Autotransformers, earth auxiliary transformers, etc.	
Protection and control equipment (control panels, communication equipment, substation control system complete with human-machine interface workstations in power plants [as appropriate] and associated UPS, fault recorders, remote terminal units)	
Substation automation system	
Other (earthing grid, lightning protection system, battery systems, low voltage alternating current, switchyard lighting, circuit marshaling kiosks, etc.)	
Transmission line	
Canary aluminum conductor steel-reinforced wire	
Optical ground wire (OPGW)/no. of fibers	
Suspension towers	
Tension towers	
Terminal towers	
Insulators	
Earthing conductors	
Dampers	
Tower earthing system	
Net cost	
Contingency (typically 10% of net cost)	
Total cost	

KETRACO ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT TEMPLATE

Project Title: [Insert name of the Transmission Project]

Date: [Insert date submitted to KETRACO]

Project No.: [Insert number per KETRACO's instructions]

Location:

Project Stage: (design or implementation)

EXECUTIVE SUMMARY

In this summary section of the template, in as concise a manner as possible, the consultant should:

- Explain the purpose and importance of the Environmental and Social Impact Assessment (ESIA) in project implementation.
- Summarize anticipated environmental and social risks and impacts of the project and provide Environmental and Social Management Plan (ESMP) covering the project phases.
- Outline the guiding principles under the PPP Act 2022 and EMCA regulations (2003) focusing on the main aspects to consider when planning to undertake ESIA.
- Provide a short description of the project using the best available information.
- Identify possible Social and Environmental impacts and relevant mitigation measures.
- State the location and the geographical extent of the project.
- Name the project entities (project lead, partners, and other stakeholders) and their role in the project.
- Summary of the project (objectives, expected results / outcomes, main activities)

CONTENT OF THE ESIA

- Provide background information describing need / relevance and justification of the project.
- Describe the project in its entirety including location, the various components, a brief analysis of technologies and construction procedures, labour requirements, budget among others.
- Describe the available project alternatives including but not limited to “the project option”, site alternatives, alternative technologies among others.
- Project description – describe relevant national level environment and social content related to the project.
- Indicate the need for any process framework e.g., RAP, Indigenous People Development Plan
- ESIA methodology – Include overview of the approach and methodology, baseline selection, study area, tools. Justify methods used for data collection and analysis.

- Analysis of policy, legal and administrative framework - Describe the international / national policy within which the ESIA will be carried out and compliance parameters. Outline safeguard standards that will be used.
- Stakeholders' identification and analysis – Clarify how different stakeholders should be involved, interests, influence (positive / negative).
- Baseline Data – Describe the current environmental and social conditions related to project impacts. Describe land and resources tenure, socioeconomic and cultural conditions.
- Describe how the project is likely to improve gender equality and women empowerment.
- Evaluation of environmental and social impacts – Describe the projects likely positive and negative impacts on Project Affected Persons (PAPs), Analyze direct and indirect risks (develop E & S risk matrix).
- Develop an Environmental and Social Monitoring plan for tracking the impact of project activities on various environmental and social parameters e.g., air quality, water quality, noise quality, biodiversity etc.

Provide a short description of the project covering the following details:

- How the ESIA activity will mainstream sustainability and resilience.
- Describe how the project will strengthen accountability to stakeholders.
- Describe the preliminary review of the potential environmental and social effects that could result from the project.
- The potential for community and stakeholders' acceptance or rejection of the proposed development.

IDENTIFYING AND MANAGING SOCIAL AND ENVIRONMENTAL RISKS: KEY POINTS TO CONSIDER

- What are the potential social and environmental risks? Where possible, outline the impact and the mitigation measures.
- What is the level of significance of the potential social and environmental risks?
- Describe the assessment and management measures for each risk; Can be rated as moderate, substantial, or high.
- What is the overall risk categorization? Can be rated as low, moderate, substantial, or high.
- Based on the identified risks, which project level standards are triggered? e.g., resettlement of communities etc.
- Develop a matrix for management of environmental and social risks.
- Provide a template to guide in the development of a Project Influx Management plan.

SOCIAL AND ENVIRONMENTAL RISK SCREENING CHECKLIST

Place an “X” in the appropriate column for Yes or No.

Check List Table (Tick)	YES	NO	REMARKS
Have the local communities or individuals raised socio - economic concerns regarding the project?			
Is there a risk that project regulators like NEMA do not have the capacity to meet their obligations of the project?			
Is there a risk that project affected persons do not have the capacity to claim their rights related to the project, e.g., compensation?			
Is there a possibility of discriminatory negative impacts on the marginalized, vulnerable and people living with disability?			
Are there potential adverse impacts on gender equality e.g., gender-based violence, women discrimination in project design and implementation?			
In terms of accountability, are there chances of excluding potential stakeholders from participating in the project and limit their views?			
Is there an established Grievance Redress Mechanism (GRM) to receive feedback from the stakeholders, developers, and the communities?			
Are there adverse impacts to habitats and /or ecosystems and ecosystem services?			
Is there potential risk to the endangered species due to encroachment of the habitat?			
Is there potential risk on forests, soils, agricultural land, conservancies, avifauna, terrestrial ecosystems?			
Are there potential impacts of climate change related to for example water pollution, drought?			
When it comes to health and safety, are there adverse impacts on ecosystems and ecosystem services relevant to community health?			
Are there adverse impacts to sites, structures, or objects with historical, traditional, or cultural values?			
Is there possibility of people displacement and resettlement, e.g., economic displacement, forced evictions?			
Does the labour and working conditions in the proposed project meet the national and international commitments?			
Is there a potential risk of delay in acquisition of environmental permits from the lead agencies?			
Is there a possibility of litigation by environmental conversation pressure groups?			
Is there a possibility of rerouting and / or change in alignment?			

KETRACO RESETTLEMENT ACTION PLAN TEMPLATE

Project Title: [Insert name of the Transmission Project]

Date: [Insert date submitted to KETRACO]

EXECUTIVE SUMMARY

In this summary section of the template, in as concise a manner as possible, consultant should:

- Explain the purpose of the Resettlement Action Plan (RAP)
- Outline the guiding principles essential when planning to undertake the RAP.
- Summarize the key activities to be undertaken during the development of RAP.
- Highlight the evaluation and monitoring framework to be considered.
- Outline in detail the RAP costs including a schedule.

INTRODUCTION

- Explain the purpose and scope of the Resettlement Action Plan
- Describe the proposed project and the associated stakeholders for the specific project.
- Describe project components requiring land acquisition and resettlement.
- Explain how displacement is necessary to achieve the project objectives and how the intervention can support project outcomes.
- Provide description and overview of the land tenure on the selected route and identified social impacts.

PROJECT DESCRIPTION

- Describe the objectives and justification of the resettlement.
- Describe the efforts and measures to minimize displacement and expected outcomes of these efforts and measures.
- Provide description of the communities affected by the power transmission line.
- Ensure the marginalized and the vulnerable groups are well captured and the possibility of developing a Vulnerable and Marginalized Groups Plan (VMGP) and Social Assessment report.
- Identify gender issues and the need to develop a Gender Action Plan (GAP)
- Identify community needs and possible Corporate Social Responsibility / Investment (CSR/I) projects.
- Provide brief description on Gender Action Plan (GAP), Labour Management Plan (LMP) and Social Impact Assessment.

Provide a short description of the project covering the following details.

a) Socioeconomic surveys

- Describe the survey approach and methodology.
- Identify all Project Affected Persons (PAPs) and stakeholders potentially affected by displacement activities and potential impact of each.

b) Legal framework

- Describe all relevant international, national, local, and community laws and customs that apply to displacement and resettlement activities.
- Describe in detail the free, prior, informed consent in relation to resettlement of indigenous communities if applicable.
- Outline the compensation policies for each type of impact.
- Describe the reference national policy and the method of valuation used for the affected structures like trees, crops, structures.
- Conduct a Social Assessment (SA) and recommend development of a Vulnerable and Marginalized Group plan where applicable.

c) Livelihood restoration for resettlement sites

- Identify Project Affected Persons (PAPs) whose livelihoods will be affected and provide livelihood restoration strategies for each.
- Identify PAPs who will be relocated, and relocation assistance required for each as per the agreed plan.
- Describe how affected people have been involved in a participatory process to identify resettlement sites including identification of the accepted agricultural land.
- Outline the participation of PAPs in the development of a strategy for housing replacement.
- Describe the feasibility studies conducted to determine the suitability of the proposed relocation sites and housing.
- Provide in detail the mechanism for procuring, developing, and allotting resettlement sites through the gender lens.

d) Income restoration

- Identify Project Affected Persons (PAPs) whose incomes will be affected and outline the restoration measures.
- Attach reviews of opportunities to restore and improve incomes.
- Outline additional rehabilitation measures necessary.
- Spell out the restoration strategies for each category of impact and describe their financial aspects.
- Describe the process of consulting with affected populations and their participation in finalizing strategies for income generation.

- Describe risk mitigation strategies for the PAPs to guide smooth implementation of the resettlement programs.
- Describe the process for monitoring the effectiveness of the income restoration measures.

e) Grievance redress

- Outline consultations with PAPs on applicable grievances redress mechanism available at the community level.
- Describe the process for registering and addressing grievances and provide specific details regarding registration, response time and communication mode.
- Outline the mechanism for appeal.
- Describe the alternative dispute resolution mechanism if other options fail.

f) Stakeholders / Institutional arrangement

- Identify all the project stakeholders and outline the role of each stakeholder.
- Describe the stakeholders or institutions or agency responsible for income restoration programs and coordination of RAP associated activities.
- State how coordination issues will be addressed and implemented in the long terms under the livelihood restoration strategy.
- Describe mechanism for ensuring independent financial audit of the RAP.
- Outline the implementation schedule listing the chronological steps in implementing the RAP.
- Describe the participation and consultation of stakeholders in the promotion and dissemination of RAP process.
- Identify suitable communication strategies for each stakeholder.

g) Monitoring and Evaluation

- Describe the M & E process for the entire RAP process capturing all the key actions and deliverables.
- Identify Stakeholders Engagement Plan, Grievance Redress Mechanism, Livelihood Restoration Plan, Gender Action Plan, Corporate Social Responsibility / Investment and Labour Management Plan monitoring indicators.

h) Costs and Budgets

- Provide clear statements on funds for resettlement, compensation payments, costs related to livelihood restoration.

KETRACO STAKEHOLDER OUTREACH PLAN TEMPLATE

Project Title: [Insert name of the Transmission Project]

Date: [Insert date submitted to KETRACO]

EXECUTIVE SUMMARY

In this summary section of the template, in as concise a manner as possible, consultant should:

- Explain the benefits of the stakeholder outreach plan outlining its relevance to the project.
- Outline the guiding principles to consider when planning to develop the stakeholder outreach plan in reference to PPP Act 2021 standard and procedures.
- Provide the list of the internal and external stakeholders relevant to the project – name, role, interests, influence.
- Best approach to allow for acceptability of a project by stakeholders.

MAIN CONTENTS FOR A STANDARD STAKEHOLDER OUTREACH PLAN

- Stakeholders' identification, mapping, and analysis report (primary and secondary stakeholders)
- Provide stakeholders responsibility and matrix of all actors aligned to the proposed project.
- Communication structure including frequency, tools, approach, and information type.
- Mechanism for addressing grievances and complaints related to the stakeholders.
- Include plan for involving the marginalized and vulnerable in the outreach plan.
- Strategies to mitigate risks related to stakeholders' engagement.
- Outline the interest level for each stakeholder (e.g., leading, supporting, neutral, resistant, unaware).
- State the influence level on the project and give stakeholders rating labels (very high, high, medium, low, very low).
- Outline the Stakeholder Engagement Plan, Labour Management Plan, Gender Management Plan and Grievance Redress Mechanism to guide engagement with project stakeholders on environmental and social issues).

Provide a short description of the following issues related to stakeholder outreach plan.

- Describe the main stakeholder's groups basing it on high interest and high influence; high interest and low influence, high influence and low interest; low interest and low influence.
- Outline strategies to reduce project risks, trust building, improving decision making and how to promote synergy.
- Monitoring and evaluation framework to guide stakeholders' engagement plan.

STAKEHOLDER'S MATRIX – IMPORTANT ELEMENTS

Address the following characteristics of stakeholders:

- Level of involvement expected.
- Stakeholders predicted input.
- What activities involve or impact on the stakeholders?
- What mode of communication will be employed to disseminate information?
- Outline the stakeholder's area of interest, expectations, engagement approach, engagement method and frequency.
- Display using a template the current level of engagement – current and the desired.
- Tool indicating stakeholder type, communication purpose, communication strategy and the tools preferred.
- Stakeholders mapping using role and priority.
- Tool outlining stakeholder involvement, responsibility and authority
- Template outlining stakeholders title, type, project role, influence, priorities and concerns.

STAKEHOLDERS OUTREACH PLAN CHECKLISTS

The outreach plan should contain the following individual checklists:

- Communication plan checklist
- Risk management checklist.
- Project plan checklist
- Project evaluation checklist

KETRACO LEGAL FEASIBILITY TEMPLATE

Project Title: [Insert name of the Transmission Project]

Date: [Insert date submitted to KETRACO]

EXECUTIVE SUMMARY

For this concise summary, consultant should:

- Briefly describe the power transmission project and how its goals align with the development of Kenya's transmission sector.
- Assess the legal readiness of the authorities involved and to what extent. Authorities here refer to any corporate body, individual, local/ international authorities that would take part in the respective project.
- Highlight the key legal considerations and potential risks identified via the legal feasibility assessment.
- Explain the potential mitigation measures to address identified potential risks.
- Summarize the project's legal feasibility.

INTRODUCTION

Explain the purpose and scope of the legal feasibility study.

PROJECT DESCRIPTION

Provide a short description of the project covering the following details:

- Transmission line route and length
- Capacity (MW) of the transmission line
- Type of transmission line (AC/DC)
- Substations involved and their capacities
- Project timeline and estimated completion date

KENYA LEGAL AND REGULATORY FRAMEWORK FOR TRANSMISSION PROJECTS

Provide a comprehensive analysis of all legal and regulatory aspects related to the project, showing how the project will comply with all relevant legislation and regulations at the national and county levels. Please include the following areas:

- Regulatory compliance:** Highlight all the relevant applicable national and county level laws and regulations and explain how the project will comply with each—for example, transmission license; compliance with grid codes and standards.
- Land acquisition and rights of way:** Provide a legal analysis of the project's intended land acquisition and rights of way that will be required, including any zoning changes, land-use restrictions, and negotiation of leases and/or land purchase/ wayleave/easement agreements with the respective landowners.

- c. **Environmental compliance:** Provide an assessment of the environmental impact of the project, including impact on wildlife, air and water quality, social and cultural impacts, etc. Show how the project will ensure compliance with all applicable environmental laws and regulations.
Indicate if there are any environmental clearances exemptions that are applicable to the site/project.
- d. **Public consultation and stakeholder engagement:** Outline all impacted stakeholders, including affected communities and residents. Provide a public consultation and stakeholder engagement plan, with time frames that align with all applicable legislation and regulations.
- e. **Construction considerations:** Identify any potential legal issues related to construction of the project, such as safety regulations and standards and permitting required for temporary construction activities.
- f. **Permitting and approvals:** Provide a list of the various permits and approvals required for the project, indicating the associated regulatory authority and a plan with timeline for how such permits and approvals (e.g., zoning, construction, right-of-way) will be obtained.
- g. **Financial aspects:** Legal feasibility of the selected type of public support or guarantees where needed.
Approval process for public support and authorities involved.
Legal restrictions and limitations for charging private sector end-users if applicable.
Legal ability to develop collateral businesses (advertising, retail, leisure, and so on).
- h. **Employment issues:** Consequences for public sector employees if existing assets are to be taken over by the private sector.
- i. **Taxation and accountancy:** Regime applicable to the project.
Regime applicable to imports (when significant equipment is included in project Capex).
- j. Provision of tax exemptions and potential specific tax benefits for FDI.

LEGAL STRUCTURE

Outline the proposed legal structure for the project, indicating:

- Ownership structure (public, private, public–private partnership [PPP])
- Funding and financing arrangements, such as securing loans or grants and ensuring compliance with Kenya’s financial regulations
- Contractual relationships, including with landowners; engineering, procurement, and construction contractors; equipment suppliers

All of the above should show compliance with the relevant laws and regulations.

CONTRACTS AND AGREEMENTS REQUIRED FOR THE PROJECT

Provide a list of all contracts and agreements required for the project (for example, construction contracts, grid connection agreements, interconnection agreements, transmission agreements) and the parties involved. Outline a plan for how these contracts and agreements will be negotiated and finalized, and supply time frames.

INTELLECTUAL PROPERTY

Provide a description of intellectual property considerations in the development of the project including patents, trademarks, and copyrights. Provide a plan to ensure that all intellectual property laws will be complied with to mitigate any risks to the project’s development and operation.

RISK ASSESSMENT AND MITIGATION STRATEGIES

Provide a comprehensive assessment of all potential risks throughout the project's life cycle, together with a mitigation plan for each risk. Some examples of risks are:

- Legal challenges from landowners and communities
- Legal challenges related to environmental and social issues
- Delays with licenses and permits

DISPUTE RESOLUTION

Provide a dispute-resolution mechanism to address any disputes that may arise during the project's life cycle. The dispute-resolution mechanism must comply with applicable Kenyan laws.

ANNEXES

Include any significant additional information and documentation to support the legal feasibility study, as necessary. Clearly label each annex.

KETRACO RISK ANALYSIS AND ALLOCATION MATRIX TEMPLATE

Project Title: [Insert name of the Transmission Project]

Date: [Insert date submitted to KETRACO]

EXECUTIVE SUMMARY

Briefly summarize the most significant risks the project faces, together with a mitigation plan to address the risks.

COMPREHENSIVE RISK ANALYSIS AND ALLOCATION MATRIX TABLE

Populate each of the blank tables **a** through **i** below. Each table addresses a particular risk category. The risk categories are as follows:

RISK CATEGORY	EXPLANATION
Financial and insurance risks	Risks related to credit, inflation and interest rates, foreign exchange rates, etc.
Technical and technology risks	Risks related to project design and engineering; risks associated with the use of any new or emerging technology.
Land acquisition and right-of-way risks	Risks related to difficulties in acquiring land or rights of way from landowners.
Construction risks	Risks such as material and equipment availability and supply; construction delays; safety and security issues on site; delays, accidents, or quality issues during construction.
Environmental and social risks	Risks involving environmental and social impact challenges due to violations, resettlement of local communities and impacted residents, compensation, etc.
Political, legal, and regulatory risks	Risks such as delays with permitting, approvals, and licenses from regulatory agencies; changes in legal provisions; etc.
Operational performance risks	Risks such as the project being unable to achieve the agreed-upon performance and reliability performance metrics and standards; damage to asset equipment; vandalism, theft, etc.
Force majeure risks	Risks related to unforeseen events that are beyond anyone's control and that delay or impede the implementation of the project or performance—for example, natural disasters, social unrest, acts of war.
Other risks	Any other additional risks identified.

The column heads used in tables **a** through **i** are defined as follows.

- **Risk** refers to the name of the risk.
- **Category and Description** refers to comprehensive details about the risk, and its impact on the implementation of the project.

- **Allocation:** refers to who will be allocated the risk based on their ability to best manage and mitigate it. Examples include: the developer/owner; landowner; regulatory agency (be specific: e.g., Energy and Petroleum Regulatory Authority [EPRA]), National Treasury, Public–Private Partnership Directorate, Ministry of Energy); contracting authority (KETRACO); engineering, procurement, and construction contractor; etc.
- **Proposed Mitigation:** refers to the steps and actions that will be taken to either avert the risk or properly manage any adverse impacts on the successful implementation and operation of the project.
- **Residual Risks for Government:** refers to any further residual risks to the Government.
- **Notes:** refers to any further general observations or notes.

a. Financial and Insurance Risks

Risks		Allocation				Proposed Mitigation from PP PDR	Proposed mitigation from CA perspective	Residual Risks for Government	Notes
Category Description	&	Public	Shared	Private	Details				
		Scale of 1 to 9, where 1 is entirely with the public sector and 9 is entirely with the private sector.							
		123	456	789					

b. Technical and Technology Risks

Risks	Allocation							
Category & Description	Public	Shared	Private	Details				
	Scale of 1 to 9, where 1 is entirely with the public sector and 9 is entirely with the private sector.							
	123	456	789					

c. Land Acquisition and Right-of-Way Risks

Risks	Allocation			Details	Proposed Mitigation from PP PDR	Proposed mitigation from CA perspective	Residual Risks for Government	Notes
Category & Description	Public	Shared	Private					
	Scale of 1 to 9, where 1 is entirely with the public sector and 9 is entirely with the private sector.							
	123	456	789					

d. Construction Risks

Risks	Allocation			Details	Proposed Mitigation from PP PDR	Proposed mitigation from CA perspective	Residual Risks for Government	Notes
Category & Description	Public	Shared	Private					
	Scale of 1 to 9, where 1 is entirely with the public sector and 9 is entirely with the private sector.							
	123	456	789					

e. Environmental and Social Risks

Risks	Allocation			Details	Proposed Mitigation from PP PDR	Proposed mitigation from CA perspective	Residual Risks for Government	Notes
Category & Description	Public	Shared	Private					
	Scale of 1 to 9, where 1 is entirely with the public sector and 9 is entirely with the private sector.							
	123	456	789					

f. Political, Legal, and Regulatory Risks

Risks	Allocation				Details	Proposed Mitigation from PP PDR	Proposed mitigation from CA perspective	Residual Risks for Government	Notes
Category Description	Public	Shared	Private	&					
	Scale of 1 to 9, where 1 is entirely with the public sector and 9 is entirely with the private sector.								
	123	456	789						

g. Operational Performance Risks

Risks	Allocation				Details	Proposed Mitigation from PP PDR	Proposed mitigation from CA perspective	Residual Risks for Government	Notes
Category Description	Public	Shared	Private	&					
	Scale of 1 to 9, where 1 is entirely with the public sector and 9 is entirely with the private sector.								
	123	456	789						

h. Force Majeure Risks

Risks	Allocation				Details	Proposed Mitigation from PP PDR	Proposed mitigation from CA perspective	Residual Risks for Government	Notes
Category Description	Public	Shared	Private	&					
	Scale of 1 to 9, where 1 is entirely with the public sector and 9 is entirely with the private sector.								
	123	456	789						

i. Other Risks

Risks	Allocation						
Category & Description	Public	Shared	Private	Details	Proposed Mitigation from PP PDR	Proposed mitigation from CA perspective	Residual Risks for Government Notes
	Scale of 1 to 9, where 1 is entirely with the public sector and 9 is entirely with the private sector.						
	123	456	789				

ANNEXES

Include any significant additional information and documentation to support the matrix, as necessary. Clearly label each annex.

KETRACO FINANCIAL AND ECONOMIC VIABILITY & PPP SUITABILITY ASSESSMENT TEMPLATE

Project Title: [Insert name of the Transmission Project]

Date: [Insert date submitted to KETRACO]

EXECUTIVE SUMMARY

In this summary section of the template, in as concise a manner as possible, the consultant should:

- Highlight on the cost components, results on financial and economic viability assessments, summarize the results for:
 - cost–benefit analysis.
 - Financial rate of return (pre and post tax)
 - Economic rate of return (pre and post tax)
 - Revenue projections,
 - Funding options sources
- Assessment on suitability as a public–private partnership (PPP) project and results on comparative analysis.
- Summarize the structuring an optimized PPP framework.
- Report on Value for money performance
- Summarize risks and risk mitigation strategies.
- Issue a statement on affordability, contingent liabilities that the project may attract.

INTRODUCTION

OBJECTIVE

- Explain the purpose and importance of the financial and economic analysis in Project development.

PROJECT DESCRIPTION

- Indicate the projects as described in the technical feasibility, highlighting the benefits (direct and indirect) to the project area (micro) and grid (macro) the purpose and importance of the financial and economic analysis in Project development.

FINANCIAL AND ECONOMIC VIABILITY THE PROJECT

The consultant shall conduct a comprehensive cost–benefit analysis, preparing detailed revenue projections, and identifying potential funding sources. Each submission should be supported by rigorous financial and market analyses, including sensitivity analyses and documentation of assumptions.

The section should provide the following

- Explanation for purpose and importance of the financial and economic analysis in Project development.
- Details of cost elements and the approaches adopted.
- Financial Viability Assessment: Assumptions, Modelling and Analysis including revenue projections
- Economic Viability Assessment: Assumptions, Modeling and Analysis
- Discussion funding options

PPP SUITABILITY ASSESSMENTS & ANALYSIS

For this section, and for projects that meet the viability tests in the previous sections, the consultant is expected to provide a thorough and detailed response to each section.

The consultant should also assess suitability as a public–private partnership (PPP) project, providing a comparative analysis and structuring an optimized PPP framework. Detailed descriptions of the organization’s capacity, risk mitigation strategies, and collaboration opportunities should be included to demonstrate PPP capability and approach to project delivery. Additionally, the submission should encompass financial modeling, cost–benefit assessments, and an economic viability analysis to ensure the project’s long-term sustainability and alignment with broader grid modernization goals. All information that consultant provides using the table shells that follow must be accurate, comprehensive, and supported by appropriate documentation to validate the feasibility and financial stability of the proposed project.

SECTION	ITEM DESCRIPTION	EXPLANATION
Project Overview	Project name	
	Project location	
	Project description	
SECTION	ITEM DESCRIPTION	EXPLANATION
Cost Estimates	Capital costs	Detailed breakdown (equipment, construction, land acquisition, etc.)
	Total estimated capital cost	
	Operating costs	Annual operating expenses (staff, utilities, etc.)
	Total annual operating costs	
	Maintenance costs	Regular maintenance expenses
	Total annual maintenance cost	
	Method for validating cost assumptions	Cross-reference with similar precedent projects, market rate analysis, independent third-party verification reports

	Handover costs	
	Projected expenses related to the transfer of assets and operations at the end of the concession period.	This should include any anticipated costs for the transition of operations, refurbishment, or decommissioning required to hand over the project in good condition.

SECTION	ITEM DESCRIPTION	EXPLANATION
Funding Sources	Equity	Investor(s) and amount committed, letters of intent or commitment
	Debt	Lenders and loan terms, letters of intent or commitment
	Government grants/subsidies	Details of government support measures, approval letters
	Other sources	Description and amounts
	Risk assessment of funding sources	Creditworthiness of investors and lenders, conditionalities attached to funding, contingency plans for funding shortfalls

SECTION	ITEM DESCRIPTION	EXPLANATION
Return on Investment	Payback period	Calculation method and period
	Net present value (NPV)	Discount rate used, detailed NPV calculation
	Internal rate of return (IRR)	IRR calculation and assumptions
	Equity IRR	Return on equity
	Coverage ratios and Reserve Accounts	DSCR, LLCR, DRSA, MMRA if any
	Sensitivity analysis	Scenario analysis (best case, base case, worst case), impact of changes in key assumptions (e.g., cost overruns, revenue shortfalls)

SECTION	ITEM DESCRIPTION	EXPLANATION
Economic Benefits	Project Objectives	Clearly define the primary objective of the project. This could include evacuation of power, system reinforcement, reduction in transmission losses, or connection to new load centers. Provide a detailed description of the project's purpose and how it aligns with overall system improvements and economic benefits. Highlight the specific needs the project aims to address and the expected outcomes.
	Job creation	Number of jobs during construction, number of permanent jobs during operation
	Local economic development	Impact on local businesses, multiplier effects on the local economy
	Long-term community benefits	Improvements in infrastructure, environmental and social benefits
	Metrics for measuring impacts	Employment rates before and after project, economic growth indicators in the local area, environmental impact assessments

SECTION	ITEM DESCRIPTION	EXPLANATION
Compliance and Risk Assessment	Legal compliance	Adherence to public financial management laws, compliance with environmental regulations and climate change laws
	Financial risk assessment	Detailed risk matrix (financial, operational, environmental), risk management and mitigation plan
	Forex Risk	Assess risks related to foreign exchange fluctuations and their potential impact on project costs and revenues. Describe the strategies for mitigating forex risks, including hedging, currency diversification, and contractual protections against currency volatility.

Operational risk assessment	Evaluation of operational risks and mitigation strategies
Environmental risk assessment	Climate and disaster resilience profile, mitigation actions for environmental risks

SECTION	ITEM DESCRIPTION	EXPLANATION
Documentation Requirements		
	Company profile	Notarized audited financial accounts for the past three years, evidence of financial capacity
	Property rights and confidential information	Statements and documentation
	Government policies compliance	Proof of compliance with relevant laws and policies
	Consortium agreement	Notarized binding agreement (if applicable)
	Previous projects	Evidence of similar successfully undertaken projects

SECTION	ITEM DESCRIPTION	EXPLANATION
Review and Approval Process		
	Preliminary assessment	Contracting authority's assessment report, directorate's evaluation and recommendations
	Feasibility study	Affordability assessment, value-for-money assessment, environmental and social impact assessment
	Approval	Committee's final approval and recommendations, notification of approval status, and required modifications

SECTION	ITEM DESCRIPTION	EXPLANATION
Public–Private Partnership Suitability Criterion		
	PPP assessment and comparative analysis	Conduct a detailed analysis to assess the suitability of the project for a PPP arrangement. Consider factors such as risk allocation, value for money, and potential efficiency gains.

SECTION	ITEM DESCRIPTION	EXPLANATION
Financial Sustainability		
	Financial analysis	Provide a comprehensive financial analysis to assess the project's affordability and financial sustainability over its life cycle. Include assessments of revenue-generation potential, cost management strategies, and cash-flow projections.
	Financial model	Provide a financial model to simulate various scenarios and assess the impact of key variables on project economics. Include sensitivity analyses to identify potential risks and develop contingency plans to mitigate adverse effects.

SECTION	ITEM DESCRIPTION	EXPLANATION
Cost Implications		
	Cost–benefit assessment	Conduct a cost–benefit assessment to evaluate the affordability of the project for end-users, taxpayers, and other stakeholders. Consider both direct and indirect costs to ensure comprehensive analysis.
	Equity considerations	Assess the distributional impacts of project costs and benefits across different segments of society, ensuring fairness and equity in project outcomes. Develop tailored interventions and social welfare programs to address disparities and enhance inclusivity.

SECTION	ITEM DESCRIPTION	EXPLANATION
Economic Viability	Economic analysis	Provide a comprehensive economic analysis to assess the project's ability to generate returns on investment for both public and private stakeholders. Evaluate potential economic impacts such as job creation, income generation, and regional development.
	Value for money	Determine the project's value for money by comparing the expected benefits against the costs incurred, considering alternative investment options and opportunity costs. Ensure alignment with broader economic development objectives and sustainability principles. Include qualitative benefits such as improvements in service reliability, environmental sustainability, and social impacts. Assess and describe the broader qualitative benefits of the project, such as enhanced reliability of electricity supply, reduction in greenhouse gas emissions, and positive social impacts on the local community.

As part of the submission, the consultant shall provide as part of the assignment all the finance models, comparative and economic analysis models. The model shall be open and devoid of any restrictions accompanied by well-structured step-by-step manuals.

