



Project Information Document/ Integrated Safeguards Data Sheet (PID/ISDS)

Concept Stage | Date Prepared/Updated: 14-Feb-2018 | Report No: PIDISDSC24017

**BASIC INFORMATION****A. Basic Project Data**

Country Kenya	Project ID P166646	Parent Project ID (if any)	Project Name Kenya Electricity System Improvement Project (P166646)
Region AFRICA	Estimated Appraisal Date Apr 18, 2018	Estimated Board Date Jul 26, 2018	Practice Area (Lead) Energy & Extractives
Financing Instrument Investment Project Financing	Borrower(s) National Treasury	Implementing Agency The Kenya Power and Lighting Company Limited (KPLC), Kenya Electricity Transmission Company Limited (KETRACO), Ministry of Energy and Petroleum	

Proposed Development Objective(s)

To increase the access, capacity and reliability of the transmission and distribution system in Kenya.

Financing (in USD Million)**SUMMARY**

Total Project Cost	450.00
Total Financing	450.00
Financing Gap	0.00

DETAILS

Total World Bank Group Financing	370.00
World Bank Lending	370.00
Total Government Contribution	80.00

Environmental Assessment Category
A-Full Assessment

Concept Review Decision
Track II-The review did authorize the preparation to



continue

Other Decision (as needed)

B. Introduction and Context

Country Context

1. **With a population of 46 million people and a GDP of US\$63 billion, Kenya is one of the largest economies in Sub-Saharan Africa (SSA), achieving, in 2012, middle income country status.** The GDP growth averaged 5.6 percent over the last decade outperforming the average for Sub-Saharan Africa. After a solid 5.8 percent GDP growth in 2016, the growth however slowed down to 4.8 percent in the first half of 2017, mostly on account of prolonged drought that resulted in a contraction in agricultural output and in low-cost hydropower generation, which led to inflationary pressures and lowering of domestic consumption. Slow growth in 2017 however is expected to rebound over the medium term with predictions of a better rainfall pattern and pent-up demand coming onstream in post-election period boosting economic activities. Kenya's coastal location has propelled its emergence as a hub for trade in East African Community countries. Kenya continues to improve its business environment as the country jumped from 129 in 2015 to 108 in 2016 and 80 in 2017 in the World Bank's Doing Business Index. Kenya combines vibrant economic activity in some of the largest cities together with a continued dependence on agriculture in rural areas and widely heterogeneous access to education, services, productive jobs, and infrastructure services.

2. **The Government of Kenya (GoK), in Vision 2030, aims at transforming "Kenya into a newly industrializing, middle-income country providing a high quality of life to all its citizens."** Over the past five years, public investment has been an important driver of Kenya's GDP growth, contributing an average of some 0.7 percentage points between 2011 to 2016. Addressing Kenya's infrastructural deficit lies at the core of the government's development strategy. Consequently, the government continues to invest heavily in improving roads, rails, ports network, and energy infrastructure. Energy is identified as one of the key sectors that form the foundation for socio-political and economic growth. Access to competitively-priced, reliable, quality, safe, and sustainable energy is essential for achievement of the vision. The GoK set two very ambitious targets for the power sector: 9,521 MW (7,795MW reference growth scenario) of new generation capacity by 2035, and universal access to electricity services by 2020. Total financing requirement for meeting these objectives is estimated at US\$42-51 billion in generation, transmission, and distribution through 2015-2035 (Long Term Power Generation, Transmission and Distribution Plan 2015- 2035).

Sectoral and Institutional Context

3. **Kenya's energy sector is among the most vibrant in Africa following two generations of reforms implemented since 1995.** KenGen and KPLC are among the best performing electricity companies in Africa, both being listed on the Nairobi Securities Exchange and are able to successfully raise funds for investment from commercial banks and the capital market. Electricity retail tariffs reflect current costs of service delivery. Eleven Independent Power Producers (IPPs) have



invested in power plants that currently account for 30 percent the installed generation capacity. The IPPs sell electricity to KPLC through long-term PPAs.

4. Kenya can finally claim to be self-sufficient in installed capacity in the short-term and to have a successful electrification track record. The current Installed generation capacity is 2,370 MW (June 2017) with a peak demand of 1,656 MW, resulting in a peak reserve margin of about 30 percent. Kenya has reported a double of electrification rate in a span of 5 years. KPLC has connected about 1.1 million new consumers annually in the last three years on an average, and presently has about 6.2 million consumers, that translate to 70% access rate.

5. However, considerable challenges remain. A large part of Kenyan population do not yet have access to electricity. The transmission network, which comprise few very long lines is weak, faces several limitations. These include high system losses, overload of major lines, and serious low voltages particularly in western Kenya that has been the cause of load shedding in that part of the country for years. The recent expansion of geothermal capacity at Olkaria requires a robust transmission network to evacuate this least cost electricity to load centers throughout the country. In addition, Kenya implemented a new decentralized system of government in 2013, that devolved economic and political power to 47 county (local) governments. The devolution has created new load centers in counties that now need adequate, secure, and reliable electricity supply to support economic activities. Some of the counties are not covered by the existing transmission and distribution grid.

6. Going forward, peak demand is expected to increase by 75 percent from the current 1,656MW to 6,700MW by 2035 (moderate growth scenario) requiring significant investments in transmission and distribution network to cater to the future demand growth in addition to investments to meet the shortfall in meeting existing demand. The Long Term Generation and Transmission Master Plan (LTGTMP) (2016) outlines the installed capacity to be more than tripled during 2015-35 with about 6,500 MW new firm capacity being required by 2035. An estimated US\$50 billion investment will be needed between 2015 and 2035 in the expansion, reinforcement, and upgrade of the generation, transmission, and distribution infrastructure.

7. The proposed Project therefore aims to support expansion of transmission and distribution capacity to support achievement of GoK's electrification goals and contribute to improvement in efficiency and quality of electricity service delivery. The proposed IDA operation will support the much needed investment in medium and high-voltage network in order to introduce high voltage network to areas that have been serviced by long medium voltage lines to reduce technical losses. The proposed support will contribute to network expansion in new areas to support increased access to electricity to achieve the vision of universal access to electricity. It will pave the way for commercial financing to be sourced for transmission business for the first time at affordable terms by supporting the basic building blocks at KETRACO. With the help of a decent balance sheet, a cost-reflective wheeling charge, improved capacity in environment and social safeguards, it is expected that over time, KETRACO will be able to attract commercial financing and PPP like KPLC or KenGen without straining government budget.

Relationship to CPF

8. The proposed Project is aligned with the Kenya Country Partnership Strategy (CPS) FY2014-2018,¹ whose overarching goal is sustainable reduction in poverty and increased shared prosperity. Aligned both with Kenya's Vision 2030 and its Medium-Term Plan, the CPS highlights three priority areas of engagement:

- Competitiveness and sustainability – growth to eradicate poverty;
- Protection and potential – human resource development for shared prosperity;

¹ Report No. 87024-KE.



- Building consistency and equity – delivering a devolution dividend.

9. The proposed Project will directly contribute to create an enabling environment for competitiveness and sustainability through development of power infrastructure needed for expansion of electricity access for households, and supply of reliable and efficient power supply, all of which are vital for promoting and sustaining economic growth and reducing poverty. By expanding the capacity of the transmission and distribution network to several counties in the eastern, north eastern, western, and central rift parts of Kenya, the proposed Project will contribute to building consistency and equity, which is part of Kenya's devolution agenda.

C. Proposed Development Objective(s)

To increase the access, capacity and reliability of the transmission and distribution system in Kenya.

Key Results (From PCN)

- (i) Increase in nominal transmission capacity (MVA)
- (ii) Reduction in technical losses (%)
- (iii) Improved system availability (SAIFI)
- (iv) Increase in new consumers connected in slum areas

D. Concept Description

10. The proposed Project aims to support creation of transmission and distribution infrastructure to enhance electricity service provision in Kenya. There are three components to the proposed Project – (i) expanding and strengthening the distribution network; (ii) expanding and strengthening the transmission network; (iii) technical assistance and capacity building primarily aimed at creating the basic building blocks for KETRACO to run as a commercially viable entity able to attract commercial financing. A summary of the Project components is provided below. The allocations are tentative and may change during project appraisal.

Project Components:

11. **Component 1 Distribution network expansion and strengthening** (US\$237 million equivalent): The proposed component will expand the distribution network to new areas to support increased access to electricity, and reinforce the existing network to accommodate demand growth and to improve power quality, reliability and flexibility. KPLC has identified a tentative list of sub-projects for implementation in two phases. Phase 1 which is expected to be implemented in the second year of the project will comprise distribution lines and refurbishment/extensions of existing distribution substations for which land (for substations) and right-of-way (for lines) are already available. Phase 2 include investment needs that involve substation lands to be purchased and right-of-way to be obtained (for 66kV lines, as applicable). Selection of the actual projects to be financed has not been made. The list is dynamic as KPLC may use other funding to develop some of the sub-projects earlier depending on the urgency of the investments and the availability of such other funding sources. Selection of the actual subprojects for support under the proposed Project will therefore be made during project implementation stage based on priority, and the environmental and social screening criteria to be defined in the Environmental and Social Management Framework (ESMF). This component will include costs of owner's engineers, environment and social assessment etc. This component is proposed to have three sub-components:

- (a) *Network strengthening and extension* (US\$197 million equivalent): This sub-component is expected to include:
 - (i) new primary substations and associated lines; (ii) new and reinforced 66 kV, 33kV and 11 kV feeders; (iii)



primary substations upgrade; (iv) reinforcement of existing lines; (v) new switching stations in four distinct regions; Nairobi, Coast, Western and Mt. Kenya.

(b) *Electrification of high-density settlements (slums)* (US\$20 million equivalent): This is a scale-up of the successful component financed under the Global Partnership on Output Based Aid (GPOBA) providing connections to low-income households in various settlement schemes in urban and peri-urban areas. This sub-component will reimburse the costs of KPLC for last-mile connections that will include costs of low voltage network extension, installation of secondary distribution transformers, installation of service lines and prepaid meters to improve access to electricity to the residents of high-density settlements.

(c) *Loss Reduction Initiative* (US\$20 million equivalent): The overall losses in the network increased from 16% in 2011 to 18.9% in 2017 because of the expansion in the low voltage network without corresponding investments in the medium voltage network or in efficiency improvements in the network in general. The support will include; i) installation of reactive power compensation equipment at the medium voltage network and encouraging customers to install the same at their premises; ii) reconductoring of heavily loaded feeders; iii) refurbishment and rehabilitation of existing networks to improve connections; and iv) implementation of distribution and reinforcement projects to shorten long medium voltage distribution lines at 33KV, 11KV and low voltage; v) Splitting / construction of new feeders to de-load existing heavily loaded distribution feeders. The proposed sub-component will cover some of these investments.

12. **Component 2 Transmission Network Expansion and Strengthening** (US\$125 million equivalent): The component is expected to introduce high voltage network to areas that have been serviced by long medium voltage lines to reduce technical losses and reinforce the existing medium voltage networks. The component will also increase transmission adequacy for interconnecting different regions of the country and improve reliability of power transmission and ensure compliance with N-1 contingency criteria. KETRACO has identified 7 sub-projects involving mainly 132 kV and possibly one 220 kV transmission lines and associated substations. The exact lines and substations that can be supported under the proposed Project will be determined later during project implementation based on priority, readiness, and environmental and social screening and assessment. Before lines are selected for support under the proposed Project, several activities will need to be undertaken including aerial mapping, route mapping, cadastral survey, Environment and Social Impact Assessment (ESIA), and preparation of Resettlement Action Plan (RAP).

13. **Component 3: Technical Assistance and Capacity Building** (US\$8 million equivalent): The component will support sector studies, capacity building and training activities to help sustain the policy, institutional and regulatory reforms that the Government has implemented. These include the technical assistance and capacity building support for KPLC (US\$3 million eq.) and for KETRACO (US\$5 million eq.). Support to KETRACO will include feasibility studies for a PPP transaction as well as helping KETRACO develop the basic building blocks for a state-of-the art transmission company able to attract commercial financing. These building blocks will include among others, support for determining the transmission tariff including the associated financial models, demarcation of the transmission assets between KETRACO and KPLC, and capacity building for PPP.

SAFEGUARDS

A. Project location and salient physical characteristics relevant to the safeguard analysis (if known)

The proposed project will support construction of 220kV and below transmission and distribution overhead lines and



associated substations. Potential adverse impacts related to subprojects under transmission and distribution will include construction related impacts, and occupational, health and safety risks associated with lines and substations. The Project impacts are anticipated to be site-specific and reversible, and mitigation measures can be readily be designed. Nonetheless, based on the available information about the project, nature and scope of potential environmental and social impacts, and capacity of the implementing agencies to manage environment and social risks and impacts, the Environmental Assessment Category assigned this project is Cat A (Full Assessment) in accordance with the World Bank Safeguards Policy OP/BP 4.01 (Environment Assessment). Given that the list of subprojects to be funded by the Project has not been finalized at this stage of the project preparation, the project will adopt the framework approach, and KETRACO and KPLC will each prepare an Environmental and Social Management Framework (ESMF), a Resettlement Policy Framework (RPF), and a Vulnerable and Marginalized Group Framework (VMGF) for their respective Components. These documents will be consulted upon and publicly disclosed in country and on the World Bank's external website before project appraisal. The scope of transmission lines will be carefully screened during project implementation to avoid lines with significant environmental and social risks.

B. Borrower's Institutional Capacity for Safeguard Policies

The proposed Project will be implemented by KPLC and KETRACO. Both entities are implementing similar projects funded by the World Bank, including KEEP, KEMP and the Eastern Electricity Highway project, and thus have prior experience in preparing, implementing and monitoring of safeguard instruments. However, KETRACO has limited experience in managing transmission projects applying Bank's safeguards guidelines and policies. It has faced difficulties in acquiring the transmission line right of way which have caused project delays and eventually cost overruns. The challenges are caused by several factors including inadequate budgetary allocation by the National Treasury for compensation for right-of-way; unreasonable compensation demands by some project affected people/ communities, including sharing of project benefits; unresolved historical land ownership issues affecting some land; delays in Resettlement Action Plan (RAP) implementation affecting land valuation and inadequate community engagement and consultations.

The Bank has initiated capacity assessment of KETRACO's environmental and social staff to identify and manage environmental and social risks and impacts of Bank financed projects, and to prepare effective capacity enhancement measures before project appraisal. This assessment will focus on the Safeguards staff numbers, competency and KETRACO's portfolio and knowledge of the Bank's Safeguards Operational Policies. Findings from this assessment will be the basis for mounting a capacity building activity (ies) which may include provision of additional safeguards staff under the project, if needed, as well as targeted training on the environmental and social safeguards policies and procedures.

A workshop facilitated by the Bank was organized recently with KETRACO, KPLC, KenGen and REA to identify lessons learned on safeguards implementation for the KEEP that closed in December 2017. The lessons learnt will be applied to strengthen the safeguards policies, practices and institutional capacities of the agencies. The environment and social management frameworks (ESMFs) that are being prepared will incorporate some of these lessons and detail out the procedures and processes for KETRACO and KPLC to follow for the preparation and implementation of ESIA's and RAPs as part of project implementation. No physical works would will commence before the RAPs are fully implemented and the PAPs are compensated.

C. Environmental and Social Safeguards Specialists on the Team

Yves Andre Prevost, Environmental Safeguards Specialist
Margaret Auma Ombai, Social Safeguards Specialist



Kimberly Vilar, Social Safeguards Specialist
Ben Okindo Ayako Miranga, Environmental Safeguards Specialist

D. Policies that might apply

Safeguard Policies	Triggered?	Explanation (Optional)
Environmental Assessment OP/BP 4.01	Yes	Triggered because the project includes works on transmission and distribution lines, as well as substations, that may cause community and occupational health and safety risks and impacts, impacts on natural habitats and physical cultural resources, as well as labor influx during construction.
Natural Habitats OP/BP 4.04	Yes	Triggered because the project might affect natural habitats, such as wetlands or forests. KPLC and Ketraco will screen subprojects to determine if they might have an impact on natural habitats, and if natural habitats cannot be avoided, will liaise with the relevant agencies to include appropriate mitigation measures in the subproject to minimize impacts on natural habitats.
Forests OP/BP 4.36	Yes	Triggered because some of the transmission lines may pass through forests. KPLC and Ketraco will screen subprojects to determine if they might have an impact on forests, and if these impacts cannot be avoided, will liaise with relevant authorities, such as the Kenya Forest Service (KFS) or county government, to include appropriate mitigation measures in the subproject to minimize impacts on forests.
Pest Management OP 4.09	No	Is not applicable as neither KPLC or Ketraco use herbicides to control vegetation under transmission or distribution lines
Physical Cultural Resources OP/BP 4.11	Yes	Triggered because project funded works might encounter physical cultural resources. The ESMF will include a chance find procedure to handle such situations, including liaising with the National Museums of Kenya (NMK).
Indigenous Peoples OP/BP 4.10	Yes	Triggered on the assumption that some lines may traverse counties where groups that could meet the Bank criteria of OP 4.10 are known to occur. Because the exact project sites and locations are not yet known, KPLC and Ketraco are each in the process of preparing a VMGF that will guide the treatment of VMGs, should they be confirmed to be in the project area, as well as the preparation of site specific Social Assessments and the related VMGPs



Involuntary Resettlement OP/BP 4.12	Yes	Triggered because it is anticipated that the project will involve land acquisition for Wayleaves. Potential adverse impacts are likely to include both physical and economic displacement of project affected persons, disruption of their livelihood strategies, restriction on use of affected land parcels and clearance of vegetation along the wayleave. Because the line routes and substation locations are not identified yet, KPLC and KETRACO will each prepare a Resettlement Policy Framework (RPF) to ensure compliance with the policy. The RFP will guide the preparation of Resettlement Action Plan (RAP) or Abbreviated Resettlement Action Plans (ARAP) and related livelihood restoration plans, once the specific line routes are determined during the implementation phase.
Safety of Dams OP/BP 4.37	No	Not applicable because the project does not include a dam
Projects on International Waterways OP/BP 7.50	No	Not applicable, because the project will not affect any international waterway
Projects in Disputed Areas OP/BP 7.60	No	Not applicable, because the project will not intervene in any disputed areas

E. Safeguard Preparation Plan

Tentative target date for preparing the Appraisal Stage PID/ISDS

Mar 15, 2018

Time frame for launching and completing the safeguard-related studies that may be needed. The specific studies and their timing should be specified in the Appraisal Stage PID/ISDS

KPLC and KETRACO are preparing their respective ESMFs, RPFs and VMGFs, which are likely to be completed in February, 2018.

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APPROVAL

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The World Bank

Kenya Electricity System Improvement Project (P166646)
