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Report No: PAD730

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 172.6 MILLION
(US$250 MILLION EQUIVALENT)

PROPOSED STRATEGIC CLIMATE FUND-SCALING-UP RENEWABLE ENERGY PROGRAM GRANT IN THE AMOUNT OF US$7.5 MILLION

AND A

PROPOSED GUARANTEE

IN AN AMOUNT EQUIVALENT TO US$200 MILLION

TO THE

REPUBLIC OF KENYA

FOR AN

ELECTRICITY MODERNIZATION PROJECT

March 5, 2015

ENERGY AND EXTRACTIVE INDUSTRIES GLOBAL PRACTICE
AFRICA REGION

CURRENCY EQUIVALENTS

(Exchange Rate Effective December 31, 2014)

Currency Unit	=	Kenya Shilling (Ksh)
US$1	=	Ksh 90.75
US$1.44881	=	SDR 1

FISCAL YEAR
July 1 – June 30

ABBREVIATIONS AND ACRONYMS

AMI	Advanced Metering Infrastructure
CEO/MD	Chief Executive Officer/Managing Director
CPS	Country Partnership Strategy
EIRR	Economic Internal Rate of Return
EMP	Environmental Management Plan
ERC	Energy Regulatory Commission
ERR	Economic Rate of Return
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FIRR	Financial Internal Rate of Return
FM	Financial Management
FMR	Financial Management Report
FMS	Financial Management Specialist
GDC	Geothermal Development Company Limited
GoK	Government of Kenya
GRS	Grievance Redress Service
GWh	Gigawatt hour
IFR	Interim Financial Report
IPP	Independent Power Producer
ISDS	Integrated Safeguards Data Sheet
KEEP	Kenya Electricity Expansion Project
KEMP	Kenya Electricity Modernization Project
KenGen	Kenya Electricity Generating Company Limited
KETRACO	Kenya Electricity Transmission Company Limited
KPLC	The Kenya Power & Lighting Company Limited (“Kenya Power”)
KShs	Kenyan Shillings
kWh	Kilowatt Hours
LCPDP	Least Cost Power Development Plan
LLM	Live-Line Maintenance
LV	Low Voltage

M&E	Monitoring and Evaluation
MCC	Metering Control Centers
MDM	Meter Data Management
MIS	Management Information System
MoEP	Ministry of Energy and Petroleum
MV	Medium Voltage
MW	Megawatt
NCB	National Competitive Bidding
NPV	Net Present Value
O&M	Operations and Maintenance
PIM	Project Implementation Manual
PIU	Project Implementing Unit
PPA	Power Purchase Agreement
PPP	Public Private Partnerships
RAP	Resettlement Action Plan
REA	Rural Electrification Authority
RPF	Resettlement Policy Framework
RPP	Revenue Protection Program
RTU	Remote Terminal Unit
SAIDI	System Average Interruption Duration Index
SCADA	Supervisory Control and Data Acquisition
SCF-SREP	Strategic Climate Fund-Scaling-Up Renewable Energy Program
SoE	Statement of Expenditure
US$	United States Dollar
VMG	Vulnerable and Marginalized Groups
VMGF	Vulnerable and Marginalized Groups Framework
YoY	Year on Year

Regional Vice President:	Makhtar Diop
Country Director:	Diarietou Gaye
Senior Global Practice Director:	Anita M. George
Practice Manager:	Lucio Monari
Practice Manager, Guarantee:	Pankaj Gupta
Task Team Leader:	Kyran O'Sullivan
Task Team Leader:	Clara Alvarez

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KE Electricity Modernization Project (P120014)

PROJECT APPRAISAL DOCUMENT

AFRICA

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Basic Information		
Project ID P120014	EA Category B - Partial Assessment	Team Leader(s) Kyran O'Sullivan, Clara Alvarez Rodriguez
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints [ ] Financial Intermediaries [ ] Series of Projects [ ]	
Project Implementation Start Date 31-Mar-2015	Project Implementation End Date 31-Dec-2019	
Expected Effectiveness Date 30-Jun-2015 Joint IFC No	Expected Closing Date 30-Jun-2020	

Practice Manager/Manager	Senior Global Practice Director	Country Director	Regional Vice President
Lucio Monari	Anita Marangoly George	Diarietou Gaye	Makhtar Diop

Borrower: The National Treasury			
Responsible Agency: Rural Electrification Authority			
Contact:	Eng. Ng'ang'a Munyu	Title:	Acting Chief Executive Officer
Telephone No.:	254-20-4953000	Email:	nmunyu@rea.co.ke
Responsible Agency: Kenya Power and Lighting Company (KPLC)			
Contact:	Dr. Ben Chumo	Title:	Managing Director and Chief Executive Officer
Telephone No.:	254-20-320-1000	Email:	md@kplc.co.ke
Responsible Agency: Ministry of Energy and Petroleum			
Contact:	Eng. Joseph Njoroge	Title:	Principal Secretary
Telephone No.:	254-20-2250680	Email:	ps@energymin.go.ke

Project Financing Data(in USD Million)					
[ ]	Loan	[ ]	IDA Grant	[X]	Guarantee
[X]	Credit	[X]	Grant	[ ]	Other

Total Project Cost:	762.00	Total Bank Financing:	250.00
Financing Gap:	0.00		

Financing Source	Amount
BORROWER/RECIPIENT	4.50
International Development Association (IDA)	250.00
IDA Guarantee	200.00
Climate Investment Funds	7.50
Foreign Private Commercial Sources (unidentified)	300.00
Total	762.00

Expected Disbursements (in USD Million)

Fiscal Year	2015	2016	2017	2018	2019	2020				
Annual	0.00	50.00	100.00	50.00	50.00	7.50				
Cumulative	0.00	50.00	150.00	200.00	250.00	257.50				

Institutional Data

Practice Area (Lead)

Energy & Extractives

Contributing Practice Areas

Cross Cutting Areas

[ ] Climate Change

[ ] Fragile, Conflict & Violence

[ ] Gender

[ ] Jobs

[X] Public Private Partnership

Sectors / Climate Change

Sector (Maximum 5 and total % must equal 100)

Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Energy and mining	Transmission and Distribution of Electricity	90		

Energy and mining	Other Renewable Energy	10		
Total		100		

☑ I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.

Themes

Theme (Maximum 5 and total % must equal 100)

Major theme	Theme	%
Financial and private sector development	Infrastructure services for private sector development	25
Financial and private sector development	Regulation and competition policy	25
Urban development	Urban services and housing for the poor	25
Rural development	Rural services and infrastructure	25
Total		100

Proposed Development Objective(s)

The proposed project development objectives (PDOs) are: (a) to increase access to electricity; (b) to improve reliability of electricity service; and (c) to strengthen KPLC's financial situation.

Components

Component Name	**Cost (USD Millions)**
Component A: Improvement in Service Delivery and Reliability.	50.00
Component B: Revenue Protection Program (RPP)	40.00
Component C: Electrification Program	164.50
Component D: Technical Assistance and Capacity Building.	7.50
IDA Guarantee	200.00

Systematic Operations Risk- Rating Tool (SORT)

Risk Category	**Rating**
1. Political and Governance	Substantial
2. Macroeconomic	Moderate
3. Sector Strategies and Policies	Moderate
4. Technical Design of Project or Program	Moderate
5. Institutional Capacity for Implementation and Sustainability	Substantial
6. Fiduciary	Moderate
7. Environment and Social	Moderate
8. Stakeholders	Moderate
OVERALL	Substantial

Compliance

Policy

Does the project depart from the CPS in content or in other significant respects?	Yes [ ]	No [X]
Does the project require any waivers of Bank policies?	Yes [ ]	No [X]
Have these been approved by Bank management?	Yes [ ]	No [ ]
Is approval for any policy waiver sought from the Board?	Yes [ ]	No [X]
Does the project meet the Regional criteria for readiness for implementation?	Yes [X]	No [ ]

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	**X**	
Natural Habitats OP/BP 4.04	**X**	
Forests OP/BP 4.36		**X**
Pest Management OP 4.09		**X**
Physical Cultural Resources OP/BP 4.11	**X**	
Indigenous Peoples OP/BP 4.10	**X**	
Involuntary Resettlement OP/BP 4.12	**X**	
Safety of Dams OP/BP 4.37		**X**
Projects on International Waterways OP/BP 7.50		**X**
Projects in Disputed Areas OP/BP 7.60		**X**

Legal Covenants

Name	Recurrent	Due Date	Frequency
The Kenya Power and Lighting Company Limited's (KPLC) Financial Strategy		31-Dec-2015	

Description of Covenant

KPLC shall, no later than six months after the Effective Date, adopt, in form and substance acceptable to the Association, a financial strategy to strengthen its balance sheet and manage its capital investment program in a sustainable manner.

Name	Recurrent	Due Date	Frequency
KPLC Project Implementation Unit (PIU)		31-Aug-2015	

Description of Covenant

KPLC shall establish by no later than two months after the Effective Date and maintain thereafter until the completion of Components A, B, C1, and D1(d) of the Project, a PIU under terms of reference and with staff in numbers and with qualifications satisfactory to IDA.

Name	Recurrent	Due Date	Frequency
Rural Electrification Authority (REA) PIU		31-Aug-2015	

Description of Covenant
REA shall establish by no later than two months after the Effective Date, and maintain until the completion of the Project, a PIU under terms of reference and with staff in numbers and with qualifications satisfactory to IDA.

Conditions

Source Of Fund	Name	Type
IDA	KPLC Subsidiary Financing Agreement	Effectiveness

Description of Condition

The KPLC Subsidiary Financing Agreement, in form and substance satisfactory to the Association, has been executed on behalf of the Recipient and the KPLC.

Source Of Fund	Name	Type
IDA	KPLC Subsidiary Grant Agreement	Effectiveness

Description of Condition

The KPLC Subsidiary Grant Agreement, in form and substance satisfactory to the Association, has been executed on behalf of the Recipient and the KPLC.

Source Of Fund	Name	Type
IDA	REA Subsidiary Grant Agreement	Effectiveness

Description of Condition

The REA Subsidiary Grant Agreement, in form and substance satisfactory to the Association, has been executed on behalf of the Recipient and the REA.

Source Of Fund	Name	Type
IDA	KPLC and REA Project Implementation Manuals	Effectiveness

Description of Condition

KPLC and REA have adopted the KPLC and REA Project Implementation Manuals, in form and substance satisfactory to the Association.

Source Of Fund	Name	Type
IDA	REA Board Audit Committee	Disbursement

Description of Condition

No withdrawal shall be made for Component C2 unless REA has reconstituted its board audit committee, including appointment of all members thereof, in form and with terms of reference acceptable to the Association.

Source Of Fund	Name	Type
IDA	Transaction Adviser	Disbursement

Description of Condition

No withdrawal shall be made for Component C2 unless REA has appointed a Transaction Adviser for the Implementation of Component C2, under terms of reference acceptable to the Association.

Team Composition			
Bank Staff			
Name	**Role**	**Title**	**Unit**
Kyran O'Sullivan	Team Leader (ADM Responsible)	Senior Energy Specialist	GEEDR
Clara Alvarez Rodriguez	Team Leader	Senior Infrastructure Finance Specialist	GEEDR
Efrem Fitwi	Procurement Specialist	Senior Procurement Specialist	GGODR
Josphine Kabura Kamau	Financial Management Specialist	Senior Financial Management Specialist	GGODR
Aidan Coville	Team Member	Economist	DECIE
Christiaan Johannes Nieuwoudt	Team Member	Finance Officer	WFALA
Elvira Morella	Team Member	Senior Energy Specialist	GEEDR
Fabrice Karl Bertholet	Team Member	Senior Financial Analyst	GEEDR
Federico Querio	Team Member	Energy Specialist	GEEDR
George Ferreira Da Silva	Team Member	Finance Analyst	WFALA
Gibwa A. Kajubi	Safeguards Specialist	Senior Social Development Specialist	GSURR
Kishor Uprety	Counsel	Senior Counsel	LEGAM
Laurencia Karimi Njagi	Team Member	Senior Energy Specialist	GEEDR
Lien Thi Bich Nguyen	Team Member	Program Assistant	GEEDR
Lucy Kang'arua	Team Member	Program Assistant	AFCE2
Mitsunori Motohashi	Team Member	Senior Energy Specialist	GEEDR
Neil Pravin Ashar	Counsel	Senior Counsel	LEGSO
Noreen Beg	Safeguards Specialist	Senior Environmental Specialist	GENDR
Pedro Antmann	Team Member	Lead Energy Specialist	GEEDR
Prajakta Ajit Chitre	Team Member	E T Consultant	GEEDR
Wendy Schreiber Ayres	Team Member	Consultant	GSURR
Zayra Luz Gabriela Romo Mercado	Team Member	Senior Energy Specialist	GEEDR
Extended Team			
Name	**Title**	**Office Phone**	**Location**

Locations					
Country	**First Administrative Division**	**Location**	**Planned**	**Actual**	**Comments**
Components A and B: Improvement in Service Quality and Revenue Protection Program					
Republic of Kenya		Country Wide			
Component C-1 Peri-Urban Electrification					
Republic of Kenya	Nairobi Region	Ruai, Kamulu, Kitengela, Machakos, Kiserian, Ngong, Juja, Ruiru	**X**		
Republic of Kenya	Coast Region	Kisauni, Kiembeni, Shanzu, Mtwapa, Likoni, Jomvu, Mikindani, Voi	**X**		
Republic of Kenya	Western Region	Kondele, Nyamsaria, Busia, Siaya, Homabay, Kakamega Kericho, Kisii, Nyamira, Migori	**X**		
Republic of Kenya	Central Rift	Subukia, Bahati, Lanet, Naivasha, Nyahururu, Narok	**X**		
Republic of Kenya	Northern Rift	Eldoret Town, Kitale, Kapsabet, Kabarnet, Iten	**X**		
Republic of Kenya	Mt. Kenya	Nyeri Town, Embu, Meru, Nanyuki, Isiolo, Muranga, Kirinyaga	**X**		
Republic of Kenya	North Eastern	Garissa Town, Thika, Kitui	**X**		
Component C-2. Off-grid Electrification					
Republic of Kenya	Siaya Homa Bay Homa Bay Kwale Tana River Kilifi	Mageta Island Ngodhe Island Takawiri Island Shimoni Island Chardende Kadaina Island	**X**		

Consultants (Will be disclosed in the Monthly Operational Summary)
Consultants will be required

I. STRATEGIC CONTEXT

A. Country Context

1. **As Africa's newest lower-middle income country, Kenya faces both development opportunities and challenges.** At a time of major social and economic transitions, the conditions for attaining better living standards are increasingly within reach for a majority of Kenyans. In the past 20 years, the economy has gone from one that was shrinking to one that is growing at over five percent per year. Kenya crossed the lower middle-income threshold in 2012 and Gross National Income (GNI) per capita is currently US$1,160. But economic growth, while solid on average, has been volatile and has yet to take-off at the high, sustained rates needed to reduce poverty as the economy has experienced various shocks (e.g., political instability, terrorism, and drought). The rate of poverty reduction has not kept pace with economic growth: the poverty rate is estimated to have decreased from 46 percent in 2005/6 to 38 percent in 2012. Inactivity rates among the youth stand at 9.6 percent, compared to a national average of 8.5 percent. Kenya's latent potential to develop rapidly can be sparked by its dynamic private sector, expanding skilled youthful population, and leveraged through its pivotal role within East Africa. Sound macroeconomic policy, the peaceful electoral transition in 2013 and the Constitution of 2010 provide a strong foundation for economic development. The successful and oversubscribed US$2 billion Eurobond issue in 2014 demonstrated Kenya's potential to raise resources to finance development and signaled confidence in the economy by international investors. However, this US$2 billion will be mainly used for road and water infrastructure and falls far short of the investment amounts needed to improve electricity supply and electricity access.

2. **Vision 2030, Kenya's long-term development strategy, targets expanded infrastructure access as a key element in achieving higher levels of economic growth.** Vision 2030 targets an annual economic growth rate of 10 percent on average through 2030. This high expected economic growth, if it is to be achieved, will be underpinned by modern, efficient infrastructure facilities in order to expand the productive sectors of the economy and improve access to markets. The upgrade of the infrastructure platform calls for rehabilitating the road network, upgrading the railways, improving urban public transport and expanding access to electricity and safe water. The development strategy gives a special emphasis to expanding the access of the rural and urban poor to basic services such as electricity, water and sanitation.

3. **Kenya's dynamic private sector faces serious infrastructure constraints.** Electricity supply and transport need to be improved if Kenya is to realize its potential for private sector-led growth. Kenya's vibrant private sector, which is a major source of economic growth, is driven by expanding services in telecommunications and trade. Kenya benefits from its geographical location that is favorable to trade, with the port of Mombasa serving as the most important gateway for imports to the East African Community (EAC) countries, South Sudan and eastern Democratic Republic of Congo. Considering that affordable and reliable electricity supply is an essential underpinning of Kenya's competitiveness, investment in the transmission and distribution infrastructure, along with efficiency in operations and maintenance (O&M), remain critical for the country.

4. **Higher levels of electricity service reliability and quality are necessary for stronger economic growth and increased competitiveness.** Currently, poor quality and unreliable

electricity service raise the cost of doing business (including the capital cost of self-generation and loss of production). Enterprises experience frequent electricity service interruption and many have self-power generation on their premises in order to meet their electricity needs.

5. **Approximately 35 percent of the population has access to electricity.** This is above the average of 32 percent in 2012 for Sub-Saharan Africa, but inconsistent with the socio-economic condition of the country, the largest economy in East Africa and one of the most developed in Sub-Saharan Africa. In the absence of electricity services, about 65 percent of the population depends on expensive and polluting energy alternatives to meet their household needs. Lack of access to electricity represents one dimension of poverty and poses a significant challenge for socioeconomic development to support the young and growing population. Accelerating the pace of electrification in line with the government's target of 70 percent electrification by 2018 can contribute to eliminating extreme poverty and achieving shared prosperity.

II. SECTORAL AND INSTITUTIONAL CONTEXT

6. **Since 1997, the Kenya power sector has undergone two generations of reforms and achieved considerable progress.** The sector operates on commercial principles supported by transparent financial relationships between the sector utilities. Electricity retail tariffs are cost reflective and the public sector power utilities Kenya Electricity Generating Company (KenGen), the majority government-owned electricity generating company, and the Kenya Power and Lighting Company Limited (KPLC), the majority government-owned electricity distribution company, are both listed on the stock market, do not receive government subsidies (except for rural electrification), and are required to make profits and pay dividends. A major electrification drive in the past four years has more than doubled the number of households with electricity connections; 435,000 households were connected to grid electricity in 2014 and the target for 2015 is 700,000. The grid has been extended to the majority of market centers and the connection of all secondary schools to the electricity grid is due to be completed by 2016.

7. **The policy and instutional framework of the sector is anchored by the Energy Policy, 2004 and Energy Act, 2006.** The sector, once vertically integrated, is unbundled with separate generation, transmission and distribution companies. A semi-autonomous regulatory agency, the Energy Regulatory Commission (ERC), formulates, enforces and reviews regulations, codes and standards and reviews and adjusts electric power tariffs and tariff structures. A special-purpose public company, Geothermal Development Company Limited (GDC), carries out geothermal resource development. The Kenya Electricity Transmission Company Limited (KETRACO) constructs transmission lines. The Rural Electrification Authority (REA) constructs electricity infrastructure to connect rural centers, schools and other public facilities. Electricity service to these facilities is provided by KPLC, which also connects households that make application in proximity to the infrastructure constructed by REA. The draft Energy Bill 2014 harmonizes sector policies with the provisions of the 2010 Constitution.

8. **There is strong private sector presence in the sector.** Independent power producers (IPPs) have invested over US$1 billion of private funds in seven power generation plants that total 563 MW of capacity and produce about 23 percent of the national electricity supply, while four other IPPs representing over US$1 billion of investment have reached financial closure for power generation plants with a total capacity of 461MW that are under construction.

9. **The Ministry of Energy and Petroleum (MoEP) is responsible for energy policy and administers a system of performance contracts with the public sector entities**. The government has a target of 70 percent electrification by 2018 and universal access by 2020. Government policies for electricity access and other policies such as those for expansion of generation, transmission and distribution infrastructure are translated into targets in the annual performance contracts between MoEP and the public operating entities KETRACO, KenGen, KPLC, GDC and REA.

10. **The Energy Regulatory Commission (ERC) is responsible for the review of electricity tariffs, the approval of power purchase agreements (PPAs) and the issuance of licenses.** A transparent and stable regulation is critical to sustain the sector's commercial viability. The tariff mechanism, including its provisions for pass-through to customers of currency fluctuation, inflation and fuel costs, is based on cost recovery principles and ensures that both public and private sector financed investments in the sector remain viable. Generally, ERC has been diligent in carrying out its mandate of approving PPAs and issuing licenses for regulated activities. The periodical tariff review however has been a challenging process which has faced delays. The tariff review scheduled for 2011 was not performed on time and was instead completed in November 2013. The review set a revised retail tariff schedule for the three year period 2014-16.

11. **KPLC, as the sole purchaser of all electricity produced, is the cornerstone of the electricity sector in Kenya.** KPLC is the single buyer and the sole distribution company for all power produced and imported in the country. As such, it is the source of all the revenues of KenGen and all the existing and future IPPs. The private sector presence in electricity generation is fully supported by take-or-pay PPAs signed with KPLC. Maintaining cost recovery retail tariffs is critical for the short and long-term financial sustainability of KPLC and the power producers (KenGen and all IPPs).

12. **Increasing access to electricity in both urban and rural areas in the most cost-effective manner is a national priority**. The government is revisiting the current approach to electrification with the preparation of a National Electrification Strategy (NES). The extension of the grid from currently underutilized infrastructures (medium and low voltage transformers) in rural and peri-urban areas to connect households in the nearby areas is the most cost-effective option for connecting the most households at the least cost. In order to provide a balance in the provision of electricity in all regions of Kenya, new approaches are being tested, such as off-grid electrification (mini grids and individual home systems) with private sector participation.

13. **Kenya has embarked on a third generation of reform**. The 2014 draft Energy Policy and Energy Bill seek to align the policy and regulatory framework of the sector with the 2010 Constitution (which became fully operational in May 2013) and its provision for greater accountability. Some of the key provisions include: (i) the establishment of an obligation on the part of the national government and county governments to provide affordable energy services to all areas; (ii) sharing of roles of electricity planning, development, services and regulation between the national government and county governments in line with the devolved system of government under the 2010 Constitution; (iii) the creation of a committee to advise the national government on licensing of renewable energy natural resources, including a requirement that the licensing has

to follow an open competitive process; (iv) open access over transmission and distribution networks; and (v) periodic review of electricity market design with a view to enhancing competition.

14. **Strengthening KPLC's capacity to ensure reliable electricity service is an integral part of the reform program**. KPLC began implementing a business and organizational restructuring in 2014 aimed at aligning its corporate strategy to the government's policies and improving its performance. The exercise that is continuing in 2015 includes, in particular, the review of the current corporate strategy, and the implementation of a more efficient organization structure with a lower number of General Managers reporting directly to the Chief Executive Officer (CEO). Appointment of senior management positions in 2014 was through a competitive process (incumbents reapplied for their positions and in some cases were not retained) facilitated by an external management consultant. The restructuring has strengthened KPLC's capacity to implement new projects and to maintain the distribution system.

Sector Challenges

15. **The three overarching objectives of the government in the sector are to secure adequate electricity supply at least cost, to increase electricity access and to provide efficient and reliable electricity services.** The capacity of the sector entities is generally strong (for example in policy making, operational and regulatory aspects) but may be improved. The mandates of the sector entities need to be better delineated. Capital investment planning needs to be robust and funding/financing sources need to be defined and treated as a critical component of planning. The policy making role of MoEP and the operational role of the sector entities in planning and execution of infrastructure investment projects may be better demarcated, including clear delineation between MoEP and the public utilities regarding the responsibility for identifying and/or providing funding. The capacity of MoEP may be strengthened to better coordinate the many technical assistance activities (mostly donor funded) aimed at improving planning and implementation of the sector investments in generation, transmission, distribution and electrification.

16. **KPLC has had challenges in balancing the sometimes conflicting policies of government with the company's financial integrity and long-term sustainability.** KPLC undertook investments in support of the government's electrification program which were detrimental to its financial sustainability. Furthermore, improvements in key operational areas like reduction in system losses between 2007 and 2011 were not sustained in subsequent years. Sound corporate governance, therefore, will have a crucial role in improving KPLC's operational and financial performance (as discussed in paragraph 26 below).

Ensuring Security of Electricity Supply at Least Cost

17. **The policy and institutional arrangements for planning and procurement of new supply need to strengthened**. The current planning approach may be improved to ensure that bankable private sector generation projects are identified that are optimum from a country perspective. The planning process can be enhanced through the adoption of realistic assumptions on the future evolution and profile of demand, and robust pre-feasibility assessment of prospective

projects on the supply and the demand side. Private sector participation in prospective projects can be secured at lower cost through better procurement processes, including through competitive bidding.

18. **Kenya is endowed with large renewable energy resources of wind, geothermal and hydropower but developing these poses a number of challenges.** Geothermal sites take many years to develop from their initial exploration to steam potential confirmation. Some of the best wind resources are located at considerable distance from the load centers requiring long and costly transmission lines. There are not large hydropower resources remaining to be exploited in Kenya. Agreeing on compensation for land acquisition for power infrastructure is frequently a lengthy process that has led to considerable delays in the construction of new generation projects and transmission lines. The government is addressing this challenge through consultations with political leaders at the county level and with the involvement of the National Lands Commission which is supporting the implementing entities KPLC and KETRACO.

19. **Very large private sector investment will need to be mobilized to ensure adequate supply after 2018.** Despite the difficulties cited above, the available capacity until 2017 is expected to be sufficient to meet demand with adequate reserve capacity. Approximately 1,400 MW committed capacity expansion will increase installed capacity to 3,253 MW by 2017 (Table 1). The variable hydrological conditions affecting the hydropower generation stations on the Tana River will remain a risk to the adequacy of supply in the short term. This risk is expected to be mitigated with a re-balanced fuel mix that will include increased geothermal power generation. According to the government's Least Cost Power Development Plan investment of almost US$8 billion for generation alone will be required through 2018.

Table 1: Electricity Demand and Installed Capacity, 2013-2017

	2012/13 (actual)	2013/2014 (actual)	2016/17 (forecast)
KPLC Energy Purchase GWh	8,087	8,839	10,685
KPLC Energy Sales GWh	6,581	7,244	9,008
Peak Demand MW	1,354	1,468	1,743
Installed Capacity MW	1,765	1,885	3,253
Hydropower Installed Capacity MW	816	817	817

Source: KPLC and World Bank

A. Ensuring reliable electricity service

20. **The distribution network is weak and electricity supply to the 2.7 million electricity customers of KPLC is unreliable.** The distribution system is overstretched and overloaded due to past underinvestments, load growth and the recent extension of the network to connect new households without corresponding investment to strengthen the backbone transmission and distribution network. The frequent breakdowns and long duration of interruptions are also the result of inadequate preventive maintenance and managerial oversight. Customers on average experience outages totaling 12 hours per month and the combined commercial and technical losses of KPLC were 18.1 percent in 2014.

B. Ensuring Electricity Access to all Kenyan Households

21. **The electrification strategy until now has not incorporated key design and implementation features of successful electrification programs resulting in high costs and inefficiencies.** The one-time fee charged by KPLC to individual households to be connected to the grid is set at KShs 35,000 (US$410 equivalent) which cannot be afforded by most households, especially those in rural areas. The fees paid are insufficient to cover the cost of the investments incurred by KPLC to extend low-voltage networks from existing transformers and connect new users (approximately US$1,000 per connection). The result is that in rural areas the network constructed by either KPLC or REA is underutilized as most households forgo making application for connection even when the network is in proximity to where they live. As households make individual applications, KPLC connects households one by one in a given area over an extended time period. International good practices point to the economies of scale and network optimization that can be achieved when all households in a given area are connected at once. These good practices also suggest that network construction costs can be reduced significantly when appropriate technologies and design are applied. In most successful electrification programs, new electricity customers do not pay for the investment to extend the network into new areas. Instead an affordable contribution for electrification (i.e., an electrification charge) is levied on all electricity consumers and included in their monthly electricity bills. Currently, all electricity consumers in Kenya pay a rural electrification program levy of five percent of their electricity consumption every month, which is remitted by KPLC into the Rural Electrification Programme Fund that is administered by REA. The Rural Electrification Programme Fund also receives proceeds from monies appropriated by the government and from other financial resources. The funding mechanism for electrification will need to be reviewed and strengthened as necessary in order to support the country's electrification objectives.

22. **The investment needs for electrification should be met by the government and not by KPLC in line with the international practice of successful electrification programs.** KPLC has shouldered the financial burden of implementing the aggressive electrification targets set by government in the past three years and this has eroded its financial position. Since 2011, KPLC has implemented a fast paced and high capital consuming investment program (over US$300 million per year) intended to increase connectivity in the country and improve coverage, capacity and quality of the distribution network. This investment was financed almost entirely with KPLC's own resources – cash from operations and debt, and although highly beneficial for the country, the result has been a material deterioration of KPLC's financial position as reflected in a substantial debt increase, lack of liquidity, difficulties to honor its payment obligations and restrictions to continue investing. The situation was exacerbated by a delay in carrying out the scheduled tariff review in 2011. The review was eventually completed in November 2013 and took effect from December 1, 2013.

23. **Substantial investments will be required in the distribution and transmission network in order to achieve good standards of service quality.** Between 2014 - 2018 an estimated US$2.1 billion is required for expansion and reinforcement of 66kV, 33kV, bulk supply points, 11kV and low voltage systems, including reactive power compensators in order to meet forecasted demand and improve the quality of electricity service. Financing the investments in system reinforcement and upgrade to ensure adequate service to existing customers will require

long term financial planning by KPLC and optimization of funding sources including access to commercial financing at a lower cost. Additional investment exceeding US$3 billion would be required to meet the government's electricity access targets. The expansion of the network to meet electrification targets will need to be funded with a combination of a tariff levy on all customers, county government contribution, concessional funding of development partners and national government contribution.

24. **Electrification through mini-grids is suitable in areas where the connection to the national system is not envisaged in the medium term.** The off-grid program to electrify remote centers has been running since early 1980s. Currently, there are 14 isolated mini-grids supplied by diesel power stations operated and maintained by KPLC and KenGen. Presently, mini-grids are developed by REA and their operations are handed over to KPLC.

Strategies to Address Sectoral Issues

25. **The Government plans to implement comprehensive policy and legislative reforms in the management and governance of state corporations (including KPLC), with a view to improving their performance and contribution to national development.** The reforms are articulated in the draft Policy on Management of Government Owned Entities, 2014 and the draft Government Owned Entities Bill, 2014. Some of the key provisions include: the requirement for state corporations to be self-sustaining and profitable, the transparent and competitive appointment of directors and CEOs, the enshrinement of directors' duties and liabilities into law and the integration of constitutional provisions on national values. The eligibility criteria for the appointment of directors of state corporations will include both professional qualifications and experience as set out in the law and also ethical and integrity requirements. Once enacted into law, the Government Owned Enterprises Bill will apply to all state corporations and provide a sound legal framework for their governance and management.

26. **Improving corporate governance at KPLC.** A sound corporate governance is crucial for the improvement of KPLC's operational and financial performance. By virtue of being partially privately owned and listed at the Nairobi Securities Exchange, KPLC complies with capital markets laws on public reporting, disclosures and accountability to shareholders, which, coupled with an active media, underpins accountability. KPLC also has sound corporate governance structures and instruments (it has adopted the Capital Markets Authority Guidelines on Corporate Governance, a Board Manual, Board Charter and Code of Conduct for Directors) that outline important arrangements including: director's duties, code of conduct, and liability; separation of Board and management roles; rights of shareholders; and balance in board composition. Until December 2014, all directors in the Board were nominated by the government. The government strengthened the governance capacity and effectiveness of KPLC's Board in December 2014 by ensuring that the Board includes two experienced, independent directors that were nominated by the leading private shareholders in the Company (the government ceded its prerogative to nominate these positions at the annual general meeting of KPLC). The government is committed to ensuring that at least two independent directors will be on KPLC's Board in future years. The independent directors will bring objectivity to the Board in balancing KPLC's commercial interests and the policy interests of the government as the majority shareholder. The capacity of KPLC's Board in

providing strategic leadership and oversight to the Company, including driving a performance culture and holding management to account for results will be thus strengthened.

27. **In order to ensure adequate supply after 2020, there is an urgent need to carry out systematic planning and to put in place a robust framework for competitive procurement of new capacity.** A least cost power development planning process is in place, but it needs to be enhanced to ensure that reliable plans are procured based on sound technical parameters. Projects that can demonstrate their viability under credible assumptions are more likely to move forward. A competitive procurement of new capacity is likely to be the most efficient means of securing supply although unsolicited generation projects may also be considered if subjected to proper due diligence.

28. **The Government has recognized the scale of the financing challenge in developing new generation capacity and has solicited private sector participation.** The government envisages a multipronged sector financing strategy that includes tapping local capital markets, bond investors as well as global investors from a variety of public private and concessional sources including pension funds and the Kenyan diaspora. In its 5,000MW expansion program, about 70 percent of the investment in power generation capacity is expected from the private sector through IPPs. All large electricity generation projects (i.e., all those not coming under feed-in-tariff policy) will continue to require long-term PPAs with KPLC in order to raise the necessary debt financing to reach financial close. These PPAs in turn will continue to require credit support from the government and guarantee instruments. Risk perceptions will need to be monitored carefully and the factors that lead to higher risk assessments managed. These include, for example, issues around land acquisition, including compensation of project affected persons.

29. **The government has initiated the preparation of a National Electrification Strategy (NES) based on global best practices.** The government recognizes that the electrification strategy in place since 2004 is not sustainable. It has initiated the preparation of a NES with the objective to achieve universal access meeting applicable standards on quality in a sustainable manner in the shortest possible time. The government sponsored and hosted a national workshop in September 2014 to discuss the principles of electrification program design, and consensus was reached on the main areas that the Strategy will define: (i) determination by the government of priorities in terms of electrification and a clear definition of the institutional arrangements (roles of the national and local governments, electrification agencies, service utilities and other stakeholders); (ii) planning and effective execution of all investments needed to actually connect new users (in particular individual drops), including the definition of the most cost-effective technical design and construction; (iii) levels of service quality; and (iv) financing schemes to ensure sustainability of the electrification programs (contributions from donors, multilateral agencies, national budget and electricity consumers through specific charges, including strengthening of the existing "special purpose" electrification fund to "ring-fence" contributions from all sources, etc.). A working group has been established to prepare the strategy under the leadership of MoEP that also comprises REA, KPLC and ERC.

30. **The National Electrification Strategy will incorporate appropriate design and implementation arrangements for off-grid areas.** Alternative models are being tested. They include the following:

- Mini-grids developed using a Public-Private Partnership (PPP) model where REA invests in land, distribution network and basic support infrastructure, and the private sector invests in and operates the hybrid generation facilities, and sells power to KPLC under a PPA. KPLC would be responsible for retail distribution of electricity and may enter into a service agreement with a private operator for maintenance of the facilities.

- For remote communities where there is little productive load, (anchor loads) stand-alone pico-solar, solar home systems (SHS) and solar micro-grids electricity services are likely to be the least-cost option.

31. **KPLC is developing a financial strategy to guide future investment decisions.** KPLC has engaged a Financial Adviser to perform an assessment of its current and projected financial situation; identify financial needs on the basis of various scenarios of investment, revenues and expenses, including contractual obligations under signed and planned PPAs; and develop a financial strategy for the Company, including identifying financing options available to support investments. The Financial Adviser will also assess the capacity of KPLC's finance department and recommend resources required to implement the financial strategy and support the company's business objectives. The financial forecast findings of the Financial Adviser have been incorporated in the PAD (Annex 7). Endorsement by KPLC of a financial strategy that ensures financial sustainability of the Company is a dated covenant in the Financing Agreement (not later than six months after Project effectiveness).

32. **Strengthening the financial situation of KPLC.** The Company's investment targets ought to be coupled with sound financial planning and associated financial indicators. KPLC's management is committed to adopting a formal corporate investment and financing plan which will enable the Company to ascertain the amount of new investment that can be prudently afforded on an annual basis and the required funding sources. Due observance to the corporate plan and the associated investment decisions will be measured through performance and financial indicators/covenants intended to maintain KPLC's indebtedness, debt repayment capabilities, liquidity and profitability at prudent levels so as to ensure the long-term financial sustainability of the Company and of the sector.

Ongoing Actions to Implement these Strategies for the Power Sector

33. **MoEP, with the assistance of donors, is strengthening the generation and transmission expansion planning process.** A number of important studies are underway that will inform system planning. These include a Generation Least Cost Analysis; a Renewable Integration Study; a System Operation Gap Analysis; a Grid Code Review; and a Power Generation and Transmission Master Plan.

34. **Tendering of new generation is ongoing.** In addition to generation and transmission infrastructure investments under construction, tendering of additional generation projects to be implemented under PPP arrangements is underway. KenGen and GDC also intend to source concessional financing for a number of public financed generation projects (wind and geothermal).

Resource development is being carried out for wind, geothermal and fossil fuel resources (coal and natural gas) that are potential resources for power generation.

35. **KPLC has invested over US$2 billion since 2005 to expand, reinforce and upgrade the distribution system and to improve the quality of supply.** These investments include new connections, the construction / upgrade of substations and power lines, the automation of part of the system including installation of a Supervisory Control and Data Acquisition (SCADA) system, and supply and installation of prepaid meters. Most of the projects have been completed. The investments implemented between 2005 and 2011 were financed with a combination of cash from operations, loans from donors and equity injected by KPLC shareholders in 2010 through a rights issue. The investments implemented from 2011 to 2014, which amounted to approximately US$1 billion, were funded with commercial debt and cash from operations. However, there are still several critical investments to be implemented in order to improve the reliability of the system, such as protection systems and automation of medium voltage lines. The total investment program of KPLC for the period 2014-2018 is approximately US$2.1 billion. The IDA share of this is US$90 million through the proposed Project. The total investment required for the government's electrification program is US$3 billion, of which IDA's contribution is US$157.5 million through the proposed Project.

36. **The Scaling-Up Renewable Energy Program (SREP) Investment Plan for Kenya (SCF-SREP) was endorsed by the SCF-SREP Sub-committee in August 2011.** It supports implementation of hybrid mini-grid systems, with renewable sources, for electrification in rural areas where grid extension is unlikely to be viable in short and medium term. The SCF-SREP Trust Fund sub-committee approved an allocation of US$7.5 million to support such an approach on January 30, 2015.

Rationale for Bank Involvement

37. **The Bank has been in the forefront in supporting power sector reforms including promoting efficient commercial operations; thus, it is uniquely positioned to provide technical assistance on policy, institutional, organizational and regulatory aspects.** The Bank's energy portfolio in Kenya, including recently closed and ongoing operations, spans all energy sub-sectors, from generation, to transmission and distribution, to regional power trade. Risk mitigation by the World Bank Group (WBG) has been instrumental in attracting some of the major IPPs and mobilizing private investment in the power sector. The proposed Project is well aligned with this diversified portfolio and complements well some of the ongoing operations, notably the Kenya Electricity Expansion Project (KEEP) approved in 2010 and the Kenya Private Sector Power Generation Support Project approved in 2012, jointly supported by IDA, IFC and MIGA.

38. **Bank knowledge of global good practice in the design of electrification programs has been influential in effecting policy changes that are aimed at sustainability of the electrification program in Kenya while at the same time ensuring that the poor are also connected.** The design of the Project has benefited from extensive knowledge sharing with KPLC, REA and ERC management and MoEP policy makers on a new approach to electrification that will be the basis of the NES that is under preparation. The new approach (reflected in the design of the electrification component of the Project) will ensure that all households located in the areas

to be electrified will be connected, by including in the scope of projects all investments needed for that purpose (in particular the households connection drops). Furthermore, the new approach will not require that KPLC takes the financial burden of the capital investments as was the case until now, which led to the erosion of KPLC's financial situation. Instead, the Project will apply new funding options such as government budget, loans/grants provided by development partners, and other non-commercial sources. The procurement strategy based on separate equipment and works contracts (rather than turnkey EPC contracting) will ensure cost savings to underpin sustainability of the electrification program.

39. **The National Electrification Strategy that will be prepared with Bank support will include reforms in the regime of charges for new connections.** Until now these charges were set at unaffordable levels for poor and medium-income households. The government intends to adopt a policy for connection charges that combines regulatory consistency with affordability of new users. A proposal prepared by the World Bank has in principle been endorsed by the Task Force created by the Government to prepare the NES. It is based on setting a connection charge for each new user to recover the investment cost of the individual connection drop. This refers to the assets connecting the distribution network owned by KPLC with the user's premises, which will be owned by the users. Preliminary calculations show that the cost of a connection drop for a single-phase user with contracted demand up to 3 kW is in the range US$80 to US$100. If the "connection charge" is set at that value and financed in four years at preferential rates (below five percent), new users will pay less than US$2.50 per month in addition to their regular electricity bills. More favorable financing conditions may be applied to new users living in very poor areas. The amounts collected by KPLC from new users through "connection charges" would be fully allocated to the electrification fund, and will contribute to accelerating the electrification program.

40. **Bank involvement will help advance utility reform and operational efficiency**. Bank knowledge's sharing has influenced the design of the Service Delivery and Revenue Protection components of the Project. Furthermore, during preparation of the Project the policy dialogue influenced measures to improve corporate governance in KPLC as well as the 2013 retail tariff review.

41. **The Project, including through an IDA Guarantee, will address the financing and investments needs of KPLC and strengthen KPLC's financial position.** Due to the nature of KPLC's investments, which provide low return and require long amortization periods, and KPLC's constrained financial situation, it is critical for KPLC to restructure its commercial debt in order to reduce its financing costs, which tripled between 2012 and 2014. As of June 2014, KPLC had over US$800 million of financial debt, of which nearly US$500 million are commercial loans. These commercial loans cost over US$100 million per year in debt service (interest and principal) and more than half of them (approximately US$370 million) will mature within the next five years. The terms of these loans are reflective of KPLC's eroded financial condition and credit quality, and while reflective of standard market conditions for this type and quality of borrower, they are not affordable in the short and medium term, nor suitable for KPLC's growth needs.

42. **With the proposed IDA Guarantee, KPLC would be able to obtain better terms on new commercial loans.** The Project supports KPLC's debt restructuring by providing a US$200 million IDA Guarantee to debt payments by KPLC thereby enhancing KPLC's credit quality and

enabling it to raise approximately US$500 million of new commercial debt with lower interest rates and longer tenors than those currently available to it. The immediate result of KPLC's debt restructuring will be a significant reduction of the Company's overall financing costs with the respective liquidity benefits and the rescheduling and extension of the amortization periods. Restructuring will thus enable the continued implementation of much needed investments by KPLC, and importantly, a reduction of the cost recovery requirements from KPLC customers through the tariffs.

43. **The proposed IDA Guarantee would enable KPLC to significantly leverage IDA resources.** The application of a US$200 million IDA Guarantee to mobilize approximately US$500 million of commercial debt results in a leverage ratio of 2.5 times which is not only substantial but also fully reflective of IDA's and the WBG strategies for optimization of resources and mobilization of private capital.

44. **The design of the Project takes advantage of the strengths of the WBG and complements the engagements of IFC and MIGA in the sector.** The IDA and IFC teams closely collaborate in ongoing energy sector dialogue and in particular on issues pertaining to KPLC financial situation and strategies to improve its financial sustainability. IDA takes a lead role in the overall sector dialogue and due diligence with regard to the power sector's financial situation. IDA is providing critical credit enhancement and risk mitigation through guarantees to IPPs. IFC is playing a leading role in ensuring the bankability of projects from a lender perspective: for example, in the case of the Kipeto wind project. IFC approved a US$50 million senior loan to KPLC in 2012 with the objective of increasing coverage of electricity in the fast growing peri-urban as well as rural areas; reduction in commercial and technical losses; and improving quality of service. The IFC investment is complementary to the US$95 million investment in the distribution network through the IDA loan for KEEP. MIGA has provided risk mitigation in the form of termination guarantees to three private generation projects. In designing the present Project, expertise from across the WBG has been mobilized in the areas of financial restructuring of KPLC's financial liabilities with commercial lenders and in the design of electrification programs. The proposed IDA Project would pave the way for a financially stronger KPLC, which would be expected to reduce its reliance on IDA support over time, and instead be progressively in a position to apply more commercially driven instruments in the future. One of those instruments would be MIGA's product for foreign financiers Non-Honoring of Sovereign Financial Obligations (NHSFO), which is not at this time sought due to KPLC's perceived low credit quality and implied credit rating below BB-.

45. **IFC intends to propose a new US$50 million IFC A loan to KPLC as part of a wider syndicated facility that it would arrange**. Subject to credit and board approvals, the IFC syndicated facility may be used to provide financing to fund KPLC capital expenditure and could conceivably be partially used also to refinance existing debt.

46. **Other development partners are actively involved in the power sector and in supporting the electrification program of the government.** The African Development Bank (AfDB) approved a loan of US$135 million equivalent for electricity access in rural areas that is part of the electrification program on November 19, 2014. Other development partners including

the French Development Agency (AFD) are also considering support for the electrification program.

C. Higher Level Objectives to which the Project Contributes

47. The Project will support the Country Partnership Strategy (CPS) FY14 - 18 (Report No. 88940) objective of removing infrastructure bottlenecks as a key area for unleashing the country's growth potential (Outcome 1.2). The CPS notes that adequate and reliable supply of affordable electricity is key to economic growth, security and delivery of social services. The technical assistance activities proposed are aligned with the CPS theme of transmitting global knowledge. The training and transfer of power planning models will enhance system-planning capability within MoEP, ERC and the KPLC. The assistance will also provide a solid foundation for decisions on the future economic development of the power system.

48. The Project will expand access to electricity for low-income households. Access is still relatively limited - and is therefore concentrated among the better off - while more than 65 percent of the population remain unconnected to electricity supply. As access is widened, it will increasingly reach poor households. In addition, the Project includes specific measures to enable poor households to connect to electricity. Its design incorporates a policy change that will reduce the up-front free (i.e., the connection charge) and thus make connectivity affordable for poorer households. In addition, by strengthening KPLC's financial position, the Project contributes to moderating future increases of end-user tariffs.

49. Furthermore, the Project is in line with the higher-level objectives of the WBG Energy Sector Directions Paper,[1] which emphasizes focus on sector planning (the Project supports a new approach to electrification planning) and improvement in the institutional environment. The Project supports the SCF-SREP in Low Income Countries, and it aims to develop renewable energies to effectively contribute to poverty reduction and sustainable development.

50. The IDA Guarantee included in the proposed Project is designed to strengthen KPLC's financial position and set the Company on the path to financial sustainability so that KPLC is able to implement necessary infrastructure and service investments, such as those supported by Components A, B and C of the Project, and offer strong and reliable off-take commitments to private investors in new power generation capacity. As the cornerstone of the energy sector in Kenya, KPLC's long-term financial sustainability is essential for the stability and continued growth of the sector, which in turn affects the economy as a whole. A financially strong KPLC will have a positive impact on the energy sector and will contribute to the creation of an appropriate environment for economic growth and increased private investments.

[1] *Toward a Sustainable Energy Future for All: Directions for the World Bank Group's Energy Sector,* July 9, 2013.

III. PROJECT DEVELOPMENT OBJECTIVE(S)/GLOBAL ENVIRONMENT OBJECTIVE(S)

A. PDO

51. The proposed project development objectives (PDOs) are: (a) to increase access to electricity; (b) to improve reliability of electricity service; and (c) to strengthen KPLC's financial situation.

B. Project Beneficiaries

52. Beneficiaries include households that will be connected to the electricity network for the first time and whose use of electricity will replace consumption of kerosene and other fuels for lighting and will enable productive activities.

53. A second group of beneficiaries will be existing electricity consumers, including business customers of KPLC for whom the quality and reliability of electricity service will improve. Businesses suffer loss of sales, damage to equipment and additional cost of electricity supply from standby generators when grid electricity supply is unstable.

54. KPLC will be a beneficiary through the restructuring of its commercial debt that will restore its liquidity, strengthen its financial situation and set it on the path to financial sustainability. As a consequence, the Project is expected to benefit the entire energy sector as KPLC is the cornerstone of it, and its financial strength and sustainability is essential to support the operations of KenGen and all IPPs.

C. PDO Level Results Indicators

55. The achievement of development objectives will be assessed using the following key outcome indicators.

Access:

- People provided with access to electricity by household connections (core)
- Total number of new non-residential connections

Reliability of supply:

- Average outage duration for customers served (System Average Interruption Duration Index – SAIDI)

KPLC financial strength:

- KPLC commercial losses
- Current ratio
- Return on Assets to Equity

IV. PROJECT DESCRIPTION

56. The Project is composed of three financing instruments: an IDA credit of US$250 million equivalent; a SCF-SREP grant in the amount of US$7.5 million (fully blended with IDA); and an IDA Guarantee of US$200 million that will support KPLC in raising about US$500 million of long-term financing.

57. The IDA credit and SCF-SREP grant together support four components that are each aimed at: (i) improving service delivery and reliability; (ii) implementing a revenue protection program for sustainable loss reduction of KPLC commercial losses; (iii) connecting households based on a sustainable approach to electrification that incorporates proven international practices; and (iv) institutional development, capacity building and Project implementation support.

Component A: Improvement in Service Delivery and Reliability (estimated cost US$50 million IDA Credit)

58. *Sub-component A1 (approximately US$10 million): Upgrade of the Supervisory Control and Data Acquisition/Energy Management System (SCADA/EMS).* The objective of this sub-component is to enhance flexibility in operation and efficiency in management of the distribution network. This component will finance upgrades of the KPLC SCADA/EMS by incorporating key existing substations into the system.

59. *Sub-component A2 (approximately US$20 million): Distribution system enhanced flexibility.* The objective of this sub-component is to reduce the duration of system interruptions. KPLC is implementing various actions to automate and enhance the operational flexibility of the distribution network (in particular at the medium voltage level). The sub-component aims at achieving 90 percent automation of the networks in Nairobi by installing a total of 1,000 load break switches in assets operating at 11, 33 and 66 kV, with associated Remote Terminal Units (RTUs) and communications features enabling remote control and operations.

60. *Sub-component A3 (approximately US$20 million): Enhance maintenance practices to improve the reliability of electricity supply.* In order to further reduce interruptions in electricity service, KPLC will implement live-line maintenance (LLM). The sub-component will finance equipment, tools and intensive training of KPLC operations staff.

Component B: Revenue Protection Program (RPP) (estimated cost US$40 million IDA Credit)

61. The main objective of the RPP is to permanently protect the revenues that KPLC receives from sales to large and medium customers, ensuring that all users in that high value segment are systematically billed according to accurately metered consumption and thus reduce non-technical losses. This component will finance implementation by KPLC of a RPP, based on the application of advanced metering infrastructure (AMI), and the adoption of organizational arrangements aimed at optimizing the systematic use of the information provided by the metering system and undertaking consistent corrective field action as needed. The component will include: (i) creation of one or more Metering Control Centers (MCCs) and investments in IT infrastructure needed to

operate them; (ii) incorporation of state-of-the-art Meter Data Management software and training of staff in the MCCs in its proper use; and (iii) supply and installation of AMI for the 4,300 high and medium voltage users and 40,000 large low voltage customers, and incorporation of those customers to the respective MCCs.

62. This component will be complemented by technical assistance, under Component D, to address the commercial practices and systems of KPLC and to enable the monitoring and enforcement of service norms by ERC.

Component C: Electrification Program (estimated cost US$164.5 million: IDA Credit US$152.5 million, KPLC US$3.5 million, REA $1 million and SCF-SREP grant US$7.5 million)

63. This component will support the government's objective of 70 percent household connectivity by 2018 by providing grant financing for the connection of new households thus introducing a more cost-effective and suitable source of funding for electrification investments. Most of Kenya's population cannot afford the fee charged by KPLC for connection to the electricity grid. The design of the Project considered that payment of an up-front connection fee will not be a pre-requisite for households to be connected. However, households will be required to pay a connection charge. The amount of this charge (which may be in the form of monthly payments) will be based on household affordability so that no household remains unconnected due to inability to pay the charge.

64. *Sub-component C1: Peri-urban electrification (approximately US$153.5 million: IDA Credit US$150.0 million, KPLC S$3.5 million).* This sub-component that will be implemented by KPLC will finance the design, materials and construction works required to electrify all households and businesses in high population density peri-urban areas located close to existing electricity networks. KPLC and the government have identified approximately 50 locations in seven geographical regions where the sub-component which is expected to connect 125,000 households will be implemented. The final selection of peri-urban settlements within these locations will be made during design of the low voltage networks based on population density and proximity to existing electricity networks, in order to maximize the number of connections in a given area. This sub-component introduces new implementation arrangements (e.g., clearer responsibilities for each implementing agency and enhanced supervision arrangements) and new procurement arrangements (e.g., procurement of main equipment in bulk and independent contracts for construction and installation) to maximize the resources available and efficiently implement the Project with the expectation to reduce cost and reach more customers.

65. *Sub-component C2: Off-grid electrification (approximately US$11 million: IDA Credit US$2.5 million, REA US$1 million and SCF-SREP grant US$7.5 million).* This sub-component will be implemented by REA and will support the implementation of off-grid electrification solutions in areas whose connection to the national grid is not viable in the short and medium term. Electrification of those areas will be implemented through mini-grids supplied preferably by hybrid generation systems, combining renewable resources (solar or wind) and thermal units running on diesel. This sub-component will test a PPP approach. The sub-component will be implemented in approximately six locations. Typically, the schemes will be implemented in areas

of 150-400 prospective users and approximate demand of 250-500kVA. Six potential locations based on the number of potential users and their demand have been identified by the government and REA. These locations will need to be confirmed as well as the specific sites of the hybrid generation facilities within these locations. This sub-component will be supported by IFC data collection and regulatory analysis and is complementary to the Stand Alone Solar PV and Micro Grids IFC program with SCF-SREP funding. This program would address the barriers for commercial dissemination of stand-alone PV and micro-grid products and services for customers in remote areas.

Component D: Technical Assistance and Capacity Building (estimated cost US$7.5 million IDA Credit)

66. This component will finance consultancy services, feasibility studies for new investments, training actions and other activities to support, among others:

(i) *Preparation of the National Electrification Strategy (NES)* (approximately US$0.5 million). The objective of the NES is to achieve universal access to electricity services meeting applicable standards on quality in a sustainable manner in the shortest possible time. The strategy should also optimize allocation of resources from a country perspective. This activity will be implemented by MoEP.

(ii) *Detailed national technical specifications and standardization* (approximately US$1 million). This assistance will support the technical and economic optimization of the design and construction of electricity networks needed to supply new users located in areas that are currently not electrified, meeting applicable standards on service quality. This will result in the addition of new standardized construction units to those currently applied by KPLC and REA. This activity will be implemented by MoEP.

(iii) *Regulations for enforcing quality on electricity service delivery* (approximately US$0.5 million). Assistance to ERC to implement a regime on service quality, based on systematic monitoring of key parameters through direct access of the records of the information systems used by KPLC. This will also be combined with assessment of KPLC's customers' complaints and commercial systems. This activity will be implemented by MoEP through ERC.

(iv) *Project preparation support for feasibility studies for new investment as required and project monitoring and evaluation* (approximately US$3.5 million). This will finance consultancy services to support the implementation and monitoring and evaluation of the Project as well as feasibility studies and other activities to support sector development. This activity will be implemented by KPLC.

(v) *Training and capacity building (*approximate cost US$2 million). This will finance training and capacity building and communications for the sector entities, including MoEP, KPLC, REA, KETRACO, KenGen and ERC.

IDA Guarantee: Mobilization of commercial financing for KPLC to restructure its commercial debt obligations (US$200 million IDA Guarantee)

67. The Project will provide a US$200 million IDA Guarantee to enhance KPLC's credit quality and enable the Company to raise approximately US$500 million of new commercial debt with lower interest rates and longer tenors than those currently available to it. This new debt will be used to restructure/replace a substantial portion of KPLC's existing commercial loans. KPLC's existing commercial debt has interest rates ranging between four and six percent for tenors of three to five years on average. IDA guaranteed new commercial debt is expected to reduce interest rates below six percent for extended tenors of eight years or more. The result of this operation would be a significant reduction of KPLC's financing costs with savings of over US$10 million annually, and KPLC's ability to continue investing to improve the quality and coverage of its services and the development of the country's power system. The operation will set KPLC on the path to long-term financial sustainability. Achieving the objective is subject to other factors such as: consistent financial discipline on the part of the Company; future investments in amounts that are prudent and affordable; and timely adjustments of tariffs by ERC as provided by existing regulation.

68. The appraisal of the IDA Guarantee required a comprehensive assessment of the financial situation and prospects of KPLC, including detailed financial projections under various scenarios of demand, commitments under PPAs, retail tariff and financing costs. It also required an assessment of the financing options available to KPLC in the commercial market. The assessment confirmed the urgent need and the benfits of a refinancing of a substantial portion of KPLC's commercial debt. It also provided a clear indication of the annual investment that KPLC can afford in the medium term and of the negative financial impact that excess investment, lower than expected demand growth and any delay in tariff adjustments by the ERC would have for the Company and for the sector. A summary of the conclusions is included in the Appraisal Summary below and in Annex 7.

69. The Request for Proposals for the refinancing was issued on February 5, 2015 and the proposals were received on February 26, 2015. Financial close of the IDA guaranteed commercial financing is expected within two to four months after Board approval of the IDA Guarantee.

A. Project Financing

Financing Instruments

70. The Project is an Investment Project Financing. Its financing structure will include four financing instruments: (i) an IDA Credit of US$250 million equivalent; (ii) SCF-SREP grant financing of US$7.5 million; (iii) counterpart funding from KPLC US$3.5 million and from REA US$1 million; and (iv) an IDA Guarantee of US$200 million.

71. Proposed IDA Credit and SCF-SREP grant: the proposed US$250 million IDA Credit and US$7.5 million SCF-SREP grant will be used to finance infrastructure investments implemented by KPLC and REA, and technical assistance and training activities implemented by KPLC, REA, ERC, and MoEP.

72. KPLC will provide funding of approximately US$3.5 million for acquisition of wayleaves (land purchase is not required in the KPLC-implemented components). REA will provide funding of approximately US$1.0 million for acquisition of wayleaves and land purchase for the off-grid electrification component (Component C2).

73. Proposed IDA Guarantee: the proposed US$200 million IDA Guarantee will be used to enhance the credit quality of KPLC and enable the Company to raise commercial financing in an amount of approximately US$500 million in terms and conditions (interest rate and tenor) that are significantly better than those currently available to it. This financing will be contractually limited to replace/restructure existing commercial debt.

Project Cost and Financing

74. The total Project cost is estimated at US$762 million. Costs in the table include price contingency for each of the components.

Table 2: Breakdown of Project Cost and Financing by Component (US$ million)

Project Financing	Project Cost	IBRD or IDA Financing	Other Financing (SCF-SREP)	Counterpart Financing (KPLC & REA)
IDA CREDIT				
A. Improvements in Service Delivery and Reliability	50	50		
B. Revenue Protection Program (RPP)	40	40		
C. Electrification Program	164.5	152.5	7.5	4.5
D. Technical Assistance and Capacity Building	7.5	7.5		
Commercial Refinancing supported by IDA Guarantee*	500*	200		
Total Financing	762.0	450	7.5	4.5

* US$500 million of commercial debt is expected to be raised with the support of a US$200 million IDA Guarantee.

Note: Additional in-kind costs will be incurred by KPLC and REA in staffing and operation of the PIUs as well as costs incurred in design of peri-urban and off-grid electrification schemes in Components C1 and C2 and in supervision of works contracts.

Proposed IDA Guarantee Structure

75. The proposed IDA Guarantee may take the form of direct debt service support, first loss guarantee and/or principal repayment guarantee at the end of the extended tenor. The details of the structure will be developed after receipt of the refinancing proposals from the commercial bank(s) and will reflect the outcome of negotiations between KPLC and the selected commercial bank(s).

76. Regardless of the final structure, the IDA Guarantee will be applied to guarantee payments of debt service (principal and interest) by KPLC to the commercial lenders. In the event that KPLC

fails to make a payment under the commercial loans, subject to the cure periods provided under the loan agreement(s), the lender(s) will have recourse to the IDA Guarantee. IDA will be obliged to pay to the claimant the amounts due and not paid by KPLC within the period stipulated in the Guarantee Agreement.

77. As per the terms of the Indemnity Agreement to be signed between IDA and the Government of Kenya (GoK), a payment by IDA to a lender under the IDA Guarantee will trigger the obligation of the GoK to repay IDA. Repayment shall be made upon demand by IDA or as IDA may otherwise direct.

Other Terms and Conditions of the IDA Guarantee

78. The IDA Guarantee would be issued for a maximum term equal to the tenor of the guaranteed loans, which is not expected to exceed 15 years. In accordance with the pricing policy for IDA Guarantees, there is a Guarantee Fee of 75 basis points per annum calculated over the amount of the Guarantee for the given year and payable from the date and as a condition to effectiveness of the IDA Guarantee. Annex 8 includes the Term Sheet and summary description of the Terms and Conditions of the IDA Guarantee.

Financing Terms for IDA Credit

79. The Bank will provide the IDA Credit to the Recipient at standard IDA terms, with a maturity of 38 years, including six years of grace. Out of the US$250 million Credit, the Recipient will on-lend US$90 million (related to components A and B) to KPLC under a Subsidiary Loan Agreement.

80. US$150 million of the IDA Credit for the peri-urban electrification (Component C1) and US$3.5 million of the IDA Credit for feasibility studies for new investment projects and Project monitoring and evaluation (Component D iv) will be on-granted to KPLC under a Subsidiary Grant Agreement. US$2.5 million of the IDA Credit for the off-grid electrification (Component C2) will be on-granted to REA under a Subsidiary Grant Agreement[2] along with the US$7.5 million SCF-SREP Grant.

81. The proposed terms take into consideration the following:

(i) As a commercial company, KPLC should not be required to absorb the financial burden associated with investments of a purely development nature, such as household electricity connections, which are not financially viable.

(ii) KPLC's long-term financial sustainability is a priority for the continued development of the energy sector in Kenya.

(iii) Any credit, interest payments, service charge or repayment arrangement will affect the objective of the Project of strengthening KPLC's financial position.

[2] The financing of US$135 million that was approved by AfDB for the electrification program on November 19, 2014 has also been on-granted to KPLC.

B. Lessons Learned Reflected in the Project Design

82. **The combined use of IDA Credits and IDA Guarantees is a most efficient way to apply IDA resources.** IDA Credits are an ideal instrument to finance investments that are not attractive or suitable for the private sector and thus ideally suited to support the GoK and KPLC in the implementation of the national electrification program. IDA Guarantees provide strong credit support to state owned enterprises while requiring minimal IDA allocation. In this case, the IDA Guarantee will provide KPLC credit support to attract commercial lenders and avoid the use of any direct support from the GoK with the associated fiscal benefits and optimization of limited government resources.

83. **International best practice has been incorporated in the design of the electrification component.** International experience, in countries such as Vietnam and Peru that have reached near universal rates of electrification, has demonstrated the importance of (i) optimizing procurement arrangements and carrying out all construction works including users' connections; (ii) not requiring households to pay any connection fee (if there is a policy that new users should make a contribution to the electrification program on connection, the connection charge should be set at a level that is affordable for all households); (iii) collecting the electrification charge from all users; and (iv) optimizing the design and implementation arrangements for electrification of rural areas and defining optimum construction units for electrification of rural areas. By incorporating these international experiences, the proposed Project - through the investment component and through the support for a new national electrification strategy - will contribute to sustainability of the electrification program.

84. Electrification programs such as those in Vietnam and Peru led to a transformational impact due to their innovative and customized solutions. Kenya will continue to benefit from international experience during the design and implementation of its National Electrification Strategy (NES). Development of the NES will be supported under the Project (Component D).

85. The design of the off-grid component of the Project also takes into account experience from WBG supported mini-grid off-grid projects.

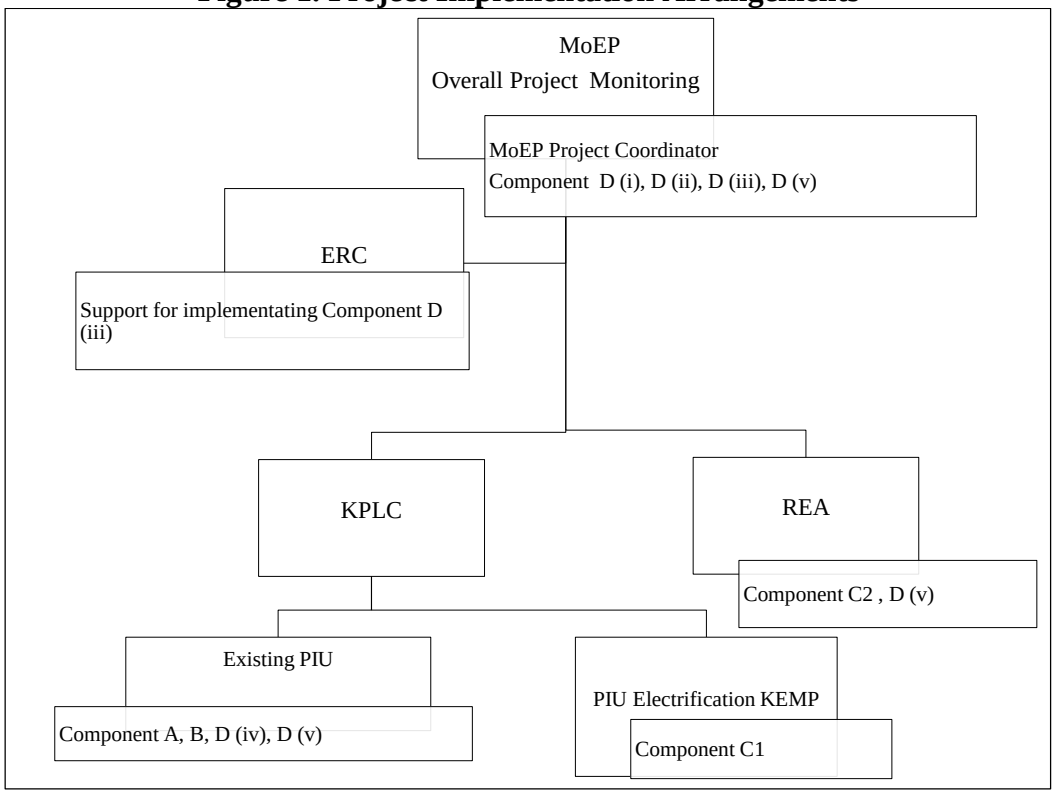
86. **Advance procurement and packaging for the investment component will avoid delay in implementation.** KPLC has identified approximately 50 proposed peri-urban locations and begun the preparation of bidding documents for the investment component in Parts A, B and C1 of the project. Settlements to be electrified within these locations will need to be confirmed. KPLC and ERC have begun preparation of Requests for Proposals for the consultancies in the technical assistance component. The electrification program (Component C1) will be implemented through separate design, goods and works contracts rather than through a turnkey (EPC) approach. The EPC approach where one contractor is responsible for design, supply and installation has resulted in inefficiencies in previous distribution projects implemented by KPLC. The proposed approach is expected to promote strong competition for supply of the main materials of poles, conductor and transformers resulting in lower prices. Since KPLC will utilize its own resources to design of the network to connect households in settlements in the peri-urban locations to be electrified, the time for implementation will be shortened.

87. **New arrangements in place following KPLC's organizational reform in 2014 will underpin the efficient implementation of the Project.** The newly created post of General Manager, Infrastructure Development, who is responsible for project implementation units (PIUs), will report to KPLC's CEO/Managing Director. Given the importance of the national electrification program, separate PIUs for the different donor electrification Projects will be maintained in KPLC. A Manager Electrification reporting to the General Manager Infrastructure will coordinate the different PIUs. The dedicated PIU (PIU Electrification KEMP) in KPLC for the implementation of the peri-urban electrification component (C1) of the Project will be headed by a Chief Engineer (Figure 1).

V. IMPLEMENTATION

88. MoEP will be responsible for the overall monitoring of Project progress and for consolidating the progress reports from each implementing agency. MoEP will convene quarterly meetings of the implementing agencies to review Project progress and to address issues that may hinder timely implementation of the Project. The Bank task team and the National Treasury will participate in these meetings. KPLC will be responsible for the implementation of Components A, B, C1, D (iv), training for KPLC staff under D (v) and the implementation of the IDA Guarantee. REA will be responsible for the implementation of Component C2 and training of REA staff under D (v). MoEP will also be responsible for Components D (i), D (ii), D (iii) and training for MoEP and ERC staff under D (v). Figure 1 represents the arrangements for implementation and Annex 3 provides further details.

Figure 1. Project Implementation Arrangements



89. The existing project implementation unit (existing PIU that is responsible for the KEEP project) at KPLC that is implementing investments under the ongoing IDA-financed KEEP will be responsible for implementation of Components A, B and D (iv). The existing PIU is headed by a Chief Engineer who reports to the Manager Infrastructure Development. KPLC will appoint a Manager Electrification for the electrification program financed by various donors. There will be separate PIUs for each donor financed project. The PIU for Component C1 (KEMP Electrification) will be headed by a Chief Engineer who will report to the Manager Electrification. Both the Manager Electrification and the Manager Infrastructure Development will report to the General Manager Infrastructure who reports to the CEO/Managing Director. The existing PIU has personnel responsible for design, engineering; procurement; accounting; installation (substations and lines); way leaves acquisition and SCADA and telecommunications. To be able to effectively implement Components A, B and D (iv), the existing PIU will be strengthened through deployment/ recruitment of a meter specialist. A consultant (firm) will also be procured to support KPLC in the detailed design and implementation of the Revenue Protection Program (preparation of bidding documents, bid evaluation and works supervision). KPLC will deploy or recruit dedicated personnel for the Electrification Program PIU for KEMP responsible for procurement, accounting, stores management, engineering, design, works supervision, environmental management and social management (c.f. Annex 3). A short term procurement specialist (individual consultant) will support the procurement function in the Electrification Program PIU for KEMP and existing PIU with bid documents preparation and bids evaluation. The IDA Guarantee will be implemented by KPLC's Finance Department, which has already implemented three IDA Partial Risk Guarantees to support IPPs in the past three years. KPLC will recruit a dedicated M&E Officer for the Infrastructure Development Division who will be responsible for monitoring, evaluating and preparing monthly progress reports for Components A, B, C1 and D (iv).

90. REA's existing PIU that is implementing the rural electricity component in the IDA financed KEEP will be strengthened. REA's PIU is headed by a Project Coordinator who reports to the CEO. The existing PIU has personnel responsible for: design and engineering works; project supervision; procurement; accounting; and environmental safeguards. REA will strengthen the PIU through assignment/ recruitment of additional staff and specialists including a renewable energy specialist, a generation engineer, a lawyer, a social safeguards specialist, wayleaves officer, property officer, a monitoring and evaluation specialist, an additional accountant and a short term procurement specialist (individual consultant). The unit will be supported by a Transaction Adviser that will provide all the specialized expertise in the areas of structured finance, design of competitive processes for selection of private entities in public private partnership arrangements, contract negotiations with private parties, Project supervision, etc.

A. Results Monitoring and Evaluation

91. Overall Project monitoring and evaluation will be carried out at MoEP. The KEMP Project Coordinator in MoEP will consolidate the quarterly progress reports of KPLC, ERC and REA and coordinate the implementing entities training programs and carry out other coordination tasks.

92. Within KPLC, a dedicated M&E Officer in the Infrastructure Development Division of KPLC will be responsible for monitoring, evaluating and preparing monthly progress reports for discussion by KPLC's senior management and, on a periodic basis, by KPLC's Board. KPLC's

General Manager, Infrastructure Development, to whom the Electrification Coordinator and Manager Infrastructure reports, is ultimately accountable for the implementation and ensuring that progress reports are prepared for components A, B, C1 and D (iv).

93. REA will be responsible for reporting on sub-component C2. REA will employ a dedicated M&E Specialist, who will be responsible for monitoring, evaluating the implementation of this sub-component and preparing monthly progress reports.

94. The Project will support the strengthening of ERC's existing monitoring and evaluation system for assessment of electricity users' satisfaction with the service provided by KPLC. In addition to its core task of systematic monitoring of service quality and enforcement of applicable standards and penalties, the regulator of a monopolistic service has the obligation to periodically evaluate the satisfaction of the users with that service. This is carried out through specific surveys aimed at getting answers on the main dimensions of customers' satisfaction. The Project will support ERC to improve existing approaches, making proper use of comprehensive experience in other emerging countries in the design of surveys, together with local expertise in their effective execution.

95. Annex 1 presents the Project's results framework, which defines specific outcomes and results to be monitored. In addition to regular monitoring and reporting on the agreed Project indicators, activities to be monitored include the timely, efficient, and transparent supervision of procurement and contract management; monitoring of construction and commissioning of the works; effective implementation of any Environmental Management Plans and Resettlement Management Plans; and studies and training activities.

B. Sustainability

96. **The government and all political groups in Kenya are committed to rapid electrification**. The goal of universal access to electricity is articulated in all major national policy documents. The Manifesto of the Jubilee Government, Kenya's Vision 2030, the Second Medium Term Development Plan and other government policy statements articulate clearly and unequivocally the goal of universal electrification and improving electricity service delivery. These goals are shared across the political spectrum making it likely that these national goals would be unaffected by any political developments. The goals are fully supported by a broad base of civil society and this underpins the political will to implement and sustain the Project's activities.

97. **Industry and households are vocal in demanding improved delivery of service and are likely to fully support the Project objectives of improving service reliability.** Businesses and households experience frequent power outages that are often of many hours duration. As a result, the great majority of middle-income households as well as businesses maintain back-up systems, generators or uninterruptible power supply, and poor households resort to flashlights or kerosene based lamps. There is growing pressure from consumers, including their representative bodies like Consumers Federation of Kenya and Kenya Association of Manufacturers, supported by a new law on consumer protection to improve the quality of power supply. This pressure will help sustain the Project activities, including planned investments by KPLC in automation and

improved customer care, as well as the regulatory measures supported by the Project to monitor and enforce service delivery.

98. **Project beneficiaries will be spread across the country helping to sustain broad-based support for Project activities.** The investments to improve delivery of reliable electricity service will benefit businesses in all regions. Component C1, for peri-urban electrification, will be implemented in approximately 50 peri-urban locations in seven geographical regions (c.f. Data Sheet). The selection of locations has been based on technical criteria (including population density and proximity to the existing network to capture economies of scale) as well as on diversity criteria (to ensure wide geographical spread). The selection of areas is also based on proxies of income (including house size) to ensure that areas of low income households were included. The final selection of peri-urban settlements within these locations will be made during design of the low voltage networks based on population density and proximity to existing electricity networks, in order to maximize the number of connections in a given location. Component C2 (off-grid electrification) will be implemented in approximately six locations in a number of regions.

99. **The robustness of the regulatory regime and in particular the predictability of the tariff setting regime to set electricity prices at cost recovery levels is essential to the sustainability of Project activities.** The three-year tariff review regime has been in place since 2008. The principles of full cost recovery (i.e., fuel, price inflation and foreign exchange costs are passed through to customers) have been sustained even during eras of high fuel prices and changes in government. The retail tariff setting regime whereby KPLC makes application to the regulator to fix tariffs based on KPLC's committed PPAs and capital expenditure is essential to KPLC's financial viability. The sustainability and the future development of the energy sector are anchored in the stability, transparency and objectivity of the regulation, the regulator and the tariff regime. The reliability and objectivity of the tariff review process encountered some political interference in 2012/13 during a general election period (the 2011 tariff adjustment was postponed and only effected in November 2013). However, the necessity to maintain the tariff review process as defined in the regulatory regime has never been challenged to the extent that the process would be dispensed with and this gives confidence that the commitment to cost recovery tariffs will be sustained.

VI. KEY RISKS AND MITIGATION MEASURES

A. Overall Risk Rating Explanation

100. This Project has been assessed to have an overall implementation risk of ***Substantial*** mainly due to governance risks in KPLC and challenges in KPLC's and REA's implementation capacity which could impair their ability to implement, deliver and monitor the Project effectively and ensure sustainability of the Project's initiatives.

101. The key risks that might affect the Project and mitigation measures are discussed below.

102. **Corporate Governance:** Corporate governance and senior management capacity in KPLC may be strengthened to avoid risks of delay in project implementation and of not achieving the project objectives. **Mitigation:** A number of considerations mitigate these risks as outlined below. KPLC has sound corporate governance instruments and structures that include an internal audit

function and Board audit committee. Its listing at the Nairobi Securities Exchange obliges it to comply with regulations on higher accountability to shareholders and public reporting and disclosures. The government is committed to strengthening the governance capacity and effectiveness of KPLC's Board by ensuring that the Board will continue to include at least two experienced independent directors nominated by the leading private institutional shareholders in the Company following election of two such independent directors in December 2014. Furthermore, the organizational and business restructuring being implemented by KPLC is expected to strengthen management capacity and improve efficiency. KPLC has structures and programs to manage corruption and fraud risks. These include an internal audit function that carries out regular audits to assess the adequacy of internal systems and controls. It is complemented by the Company's security function that investigates cases of fraud, corruption and theft. KPLC also has an Ethics and Risks function that investigates corruption and other unethical conduct. The Company carries out annual surveys to determine the corruption index including identification of processes most prone to corruption. Both the internal audit function and the Risks and Ethics function report to the Board through the Audit Committee.

103. **Institutional Capacity for Implementation and Sustainability:** KPLC is implementing large capital investment in distribution system expansion and upgrade, which is financed by a number of donors and commercial banks and by own resources. Similarly REA is implementing rural electrification projects financed by the Government and a number of donors. As a result, the capacity of KPLC's existing PIU and REA's existing PIU which is handling these projects is stretched. The capacity of KPLC and REA may be strengthened to avoid the risks that inadequate capacity would pose to timely project implementation and achievement of project objectives. **Mitigation:** The existing PIU in KPLC will be strengthened to undertake activities under Components A, B and D (iv) while separate Electrification Program PIUs will be established with dedicated teams for each donor electrification financed electrification project. For component C1 of the KEMP, the dedicated PIU will be the PIU Electrification KEMP. The capacity of REA will be strengthened by contracting a Transaction Adviser, who will provide the REA PIU with the expertise for implementation of Component C2 as well as training and capacity building (c.f. Annex 3 for REA and KPLC organization charts).

104. **Anti-Corruption Guidelines**: The Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants, dated October 15, 2006 and Revised in January 2011, will apply to this Project.

VII. APPRAISAL SUMMARY

105. *Project development impact.* The primary beneficiaries of the Project will be current and new electricity customers in the areas covered by the Project who will gain access to electricity and enjoy more reliable electricity services. Lack of electricity access at household level exacerbates poverty conditions and is a major cause of exclusion and inequality. Without electricity, children cannot study at night; home-based businesses cannot grow; and households are forced to rely on polluting and expensive fuel alternatives to meet their lighting needs. The uneven coverage of electricity services also exacerbates disparities in terms of socio-economic status and growth opportunities among the country's regions and between urban and rural areas. Investments under Component C will raise household access to electricity in high population

density peri-urban areas close to the existing electricity networks operated by KPLC and in six rural locations that are not served by the grid. The Project will directly increase country-wide electrification by about 1.2 percent. Investments under Component A promise to significantly improve service reliability levels and reduce un-served demand to the benefit of existing customers. In addition, the revenue protection program under Component B will increase KPLC revenues by reducing commercial losses.

106. *Public versus private investment.* The electrification program is best financed through public investment. Expanding electricity access is recognized as a key social goal and a main element in attaining the Vision 2030. As the electrification program has progressed, the barrier of a high connection fee that prevents prospective customers from connecting to electricity services has become more evident. The connection fee is prohibitive to most of the unconnected population. Nonetheless, the current fee is insufficient to cover the connection costs borne by KPLC, which have risen exponentially in the past years imposing an unsustainable burden on the Company's finances. Under the electrification component of the Project, funds will be on-granted to KPLC and REA and the connection charge will be set at affordable level.

107. *Bank Value-Added.* As described above, the Bank's value is through supporting the mainstreaming of a sustainable national electrification strategy; support for utility efficiency improvement, and in addressing the financing and investments needs of KPLC. This will support the delivery of reliable energy services for economic development that it is essential to reducing poverty.

A. Economic and Financial Analysis

Economic Analysis

108. A traditional cost-benefit analysis has been carried out to assess the economic viability of the Project. The detailed economic analysis is presented in Annex 6.

109. **The NPV and the economic rate of return (ERR) for the Project as a whole are satisfactory at US$218.2 million and 20.9 percent, respectively.** Disaggregation by Project components shows that returns are very high for Components A and B. In particular, the revenue protection program envisaged under Component B, with an ERR above 30 percent, is the most beneficial. Sensitivity analysis (c.f. Annex 6) shows that the Project remains robust in the face of unfavorable conditions that may affect Project implementation as well as changes in the main assumptions used by the analysis.

Financial Analysis

110. **The Financial Internal Rate of Return (FIRR) and Financial NPV of Project investments in the base case scenario are satisfactory at 51.9 percent and US$408 million, respectively.** High financial return of the Project is explained by the very high NPV of revenue protection activities (under Component B), combined with the financing of access expansion (Component C), which will be on-granted to KPLC and REA, and is expected to have a small positive NPV for KPLC (incremental revenue from new customers slightly in excess of incremental operating costs).

111. The overall FIRR and NPV of the Project activities would remain robust under all sensitivity scenarios considered. The least favorable is the scenario under which revenue protection activities manage to reduce distribution losses by only one percent instead of the three percent assumed in the base case scenario. In this case, the overall Project FIRR would be 22.2 percent and the NPV US$95 million.

Financial Analysis of KPLC

112. This financial analysis was performed on the basis of KPLC's audited financial statements for the fiscal years ended on June 30 of 2011, 2012, 2013 and 2014.

113. KPLC is majority owned and controlled by the GoK through a 50.1 percent direct equity interest. The balance of the Company's shares is owned by private parties, either directly or through nominees. KPLC's shares are listed at the Nairobi Securities Exchange.

114. The main business activity of the Company is the distribution and retail sale of electricity to consumers in Kenya. KPLC operates as a commercial company aiming for full cost recovery through a regulated tariff structure. The Company does not receive any subsidies and their revenues are fully dependent on the regulated tariff and electricity sales/market demand. Costs associated with fuel and foreign exchange are passed through and recovered from customers.

115. The following table summarizes KPLC's financial highlights for the period from July 1, 2010 to June 30, 2014.

Table 3: Financial and Operational Highlights

Kshs million-unless otherwise indicated	**2010/11**	**2011/12**	**YoY % var**	**2012/13**	**YoY % var**	**2013/14**	**YoY % var**
Number of Customers ('000)	1,753	2,039	16%	2,331	14%	2,728	17%
Electricity Sales	42,486	45,008	6%	47,916	6%	62,597	31%
Units Purchased (GWh)	6,895	7,197	4%	7,562	5%	8,254	9%
Power Purchase Cost (ex-fuel)	20,214	21,080	4%	24,761	17%	30,659	24%
Fuel Costs	26,151	42,789	64%	32,297	-25%	38,973	21%
F/x cost	3,425	6,094	78%	5,120	-16%	3,008	-41%
EBITDA	10,517	14,286	36%	14,655	3%	20,892	43%
Finance Cost	415	1,216	193%	2,495	105%	4,009	61%
Profit	4,220	4,617	9%	3,446	-25%	6,456	87%
Total Assets	121,171	134,132	11%	184,213	37%	220,109	19%
Total Debt (incl. overdrafts)	39,514	29,452		57,837		73,676	
Total Liabilities	89,085	78,257	-12%	120,974	55%	147,222	22%
CAPEX	24,714	25,950	5%	42,631	64%	26,651	-37%

Source: KPLC

116. KPLC's customer base increased by over 55 percent during the period 2010-2014 as a result of the substantial investments in new household connections. Notably, electricity sales and GWh purchased only increased by 47 and 20 percent, respectively, during the same period. The co-relationship of these figures reflects the high share of domestic and small commercial customers in KPLC's total customer base (greater than 90 percent), and the fact that they contribute less than 60 percent of revenues. Fuel costs display significant year on year variation, which is mostly attributable to annual changes in fuel mix resulting from variable hydrology. In years with poor

hydrology such as FY12 and FY4 power generation relied heavily on thermal plants, consequently the fuel cost escalated substantially. The significant increase in Electricity Sales and EBITDA between FY2 and FY14 is the result of the combined effect of the retail tariff adjustment effective from December 2013 and the increase in volumes sold during the year.

117. Finance costs (Interest on Loans) multiplied during the period, increasing from the equivalent of US$5 million in FY11 to US$45 million in FY14: a nearly nine-fold increase in four years. This change reflects the substantial increase in KPLC's debt during the same period: from the equivalent of US$288 million in FY11 to US$828 million in FY14. The incremental debt was applied to finance approximately 75 percent of a large Capital Investment program associated mostly with new connections and to a lesser extent with service improvement investments such as expansion and upgrading of the distribution network. These investments required expenditures equivalent to US$291 million in FY11, US$305 million in FY12, US$500 million in FY13 and US$300 million in FY14. The investments in new connections placed a particularly heavy burden on KPLC as connection fees paid by new customers were insufficient to pay for connection costs forcing KPLC into a situation where the Company subsidized approximately 70 percent of connection costs equivalent to US$700 per customer.

118. Due to the unplanned and accelerated pace of the investments related to new connections, KPLC was unable to secure long-term concessional funding and instead had to resort to medium and short term Commercial Loans and Bank Overdrafts creating a situation of Asset-to-Liability mismatch. The Company's debt profile changed with increased interest rates and shorter tenors which reflect prevailing commercial market conditions as well as the progressively weaker financial condition of the Company. As of FY2014, KPLC's annual Debt Service stood at approximately US$130 million, which constituted more than 50 percent of the Company's Cash from Operations. Debt maturities for the next five years amounted to an aggregate of US$494 million, of which over US$400 million relate to short and medium-term commercial debt.

119. KPLC's FY2014 indebtedness level, although high, was still acceptable: Net Leverage of 50 percent and Debt to EBITDA of three times. However, KPLC's ability to generate cash to repay their debt as due while implementing service improvement investments is a matter of concern. Due to the development nature of the investments, these do not produce an immediate and proportional revenue increase, and instead demand prolonged amortization periods. Furthermore, KPLC's cash reserves were fully depleted in order to fund the accelerated investment program. As of June 2014 KPLC had returned to positive cash levels, however the Company was still facing difficulties to meet its ongoing payment obligations on a timely basis and continued supporting itself with bank overdrafts (US$40 million as of June 2014) to make up for the cash gaps. In addition, the Company continually requires funds to implement essential investments associated with improvement in the quality and the reliability of the service as well as critical system upgrades and expansions. In the past, these investments have required approximately US$200 million per year.

Financial Ratios

120. The increase in KPLC's total debt, the use of short-term debt to finance long-term investments, the size of the investment program vis-à-vis the Company's cash generation capacity and the subsidization of connections, resulted in a significant erosion of KPLC's liquidity position and a negative evolution of the Company's financial ratios during the past four fiscal years as illustrated in the table below.

Table 4: Financial Ratios

Ratios	2010/11	2011/12	2012/13	2013/14
Debt/EBITDA (x)	1.55	1.92	3.70	3.08
EBITDA/Interest (x)	25.34	11.75	5.87	5.21
CFO/Debt	60%	45%	28%	26%
FOCF/Debt	-41%	-43%	-46%	-10%
Net Debt/Net Debt+Equity	25%	38%	52%	50%

Source: KPLC

121. KPLC is currently in compliance with the Current Ratio and in breach of the Debt Service Coverage Ratio and the Self Financing Ratios under the Project Agreement for the Kenya Electricity Expansion Project (KEEP). The proposed Project will support KPLC in restoring its financial ratios to compliant levels.

Table 5: Financial Ratios

KEEP-IDA Ratios	Requirement	2013/14
DSCR	>1.2x	0.55
Current Ratio	>1.0x	1.03
Self-Financing Ratio	>25%	-25%

Source: KPLC

122. The historical financial analysis demonstrates that KPLC's financial structure changed significantly in the past four years. The Company's balance sheet grew as a result of substantial investments (approximately US$1.4 billion). However the fast investment pace does not reconcile with KPLC's moderate revenue growth. The funding structure whereby assets (such as network expansion) which require a long time to produce revenues were financed with short and medium-term loans and development investments (such as new connections) were financed with commercial funds resulted in the erosion of KPLC's financial position and placed its financial integrity in jeopardy. This investment and financing strategy is not suitable for the Company and is not sustainable.

123. KPLC is in urgent need of a comprehensive overhaul of its financing structure and strategy. A refinancing/restructuring of KPLC's commercial debt is essential in order to extend and reschedule maturities and to reduce interest rates to match the Company's debt servicing capacity. Going forward, KPLC's incremental investments should be subject to strict planning and decision making focused on service needs and affordability independent of government policies, and without threatening the Company's financial sustainability. Furthermore, investments associated with access to electricity (i.e., new connections), which placed a heavy burden on KPLC in the past and created the current liquidity constraints, should no longer be financed with KPLC's

resources but instead with separate funds raised by the government, while KPLC should only be in charge of technical implementation.

Financial Projections

124. Financial projections were prepared by KPLC's financial adviser. The team reviewed this work. Table 6 below summarizes KPLC's Base Case financial projections for the period from July1, 2015 through June 30, 2020 (see also Annex 7).

Table 6: Base Case Projected Financial and Operational Highlights

KSh million - unless otherwise indicated

	2014/15	2015/16	%var	2016/17	%var	2017/18	%var	2018/19	%var	2019/20	%var
Electricity Sales	82,251	93,273	13%	106,615	14%	128,494	21%	155,943	21%	189,858	22%
Power Purchase Cost (ex-fuel)	40,881	49,393	21%	55,599	13%	67,703	22%	85,572	26%	112,886	32%
EBITDA	22,704	22,034	-3%	25,171	14%	30,911	23%	34,115	10%	35,784	5%
Finance Cost	5,514	4,856	-12%	4,949	2%	4,654	-6%	4,201	-10%	3,765	-10%
Profit	**6551**	**5,908**		**7,652**		**12,458**		**15,244**		**16,325**	
Total Assets	**248,791**	**257,836**	**4%**	**261,608**	**1%**	**265,168**	**1%**	**277,810**	**5%**	**294,707**	**6%**
Total Debt	96,022	95,292	**-1%**	89,187	**-6%**	80,733	**-9%**	71,468	**-11%**	63,400	**-11%**
CAPEX	**20,870**	**21,933**	**5%**	**14,165**	**-35%**	**7,294**	**-49%**	**17,866**	**145%**	**16,034**	**-10%**

125. The highlights of KPLC's Base Case financial projections are: (i) a reduction in annual Capex from a US$335 million annual average between FY2010-2014 to a US$170 million annual average between FY2015-2020. This reduction reflects the change in financing strategy for new connections whereby these investments will be implemented by the Company, but will no longer be financed with its own financing resources; (ii) a significant reduction (12 percent) in Financing Costs (interest on loans) between FY2015 and 2016, which reflects the benefits of the IDA Guaranteed refinancing; and (iii) a steady and moderate decrease in Total Debt which reflects the Company's ability to repay existing debt and fund future Capex with limited reliance on additional debt. The positive result of KPLC's projected financial performance is reflected in the Company's projected financial ratios summarized below.

Table 7: Base Case Projected Financial Ratios

Financial Year	2015	2016	2017	2018	2019	2020
Debt /EBITDA (x)	4.2%	4.3%	3.5%	2.6%	2.1%	1.8%
EBITDA/Interest (x)	3.5%	3.8%	4.3%	5.7%	6.8%	8.2%
CFO/Debt (%)	14%	13%	17%	23%	30%	37%
Debt Equity Ratio	158%	143%	120%	93%	70%	54%
NetDebt/Net Debt+Equity	52%	53%	50%	44%	38%	31%
Operating Profit Margin	20%	18%	18%	18%	17%	14%
Return on Equity	11%	9%	10%	14%	15%	14%
Self Financing Ratio	24%	34%	41%	59%	72%	69%
Total Debt/Capital (%)	61%	59%	55%	48%	41%	35%

126. On the basis of the financial projections and the inputs of the financial advisor, KPLC is developing an action plan which includes the immediate implementation of the IDA guaranteed refinancing of US$500 million of existing commercial debt, strengthening the Company's financial planning activities, and development of a detailed financing plan to identify the lowest cost and asset matching funding sources for future Capex, as needed.

B. Technical Analysis

127. The proposed Project includes works and equipment related to: (a) Improvement in Service Delivery and Reliability, (b) Revenue Protection Program, (c) Electrification Program, and (d) Technical Assistance. The Project presents no unusual construction and operational challenges as these are well known and proven in Kenya. However, the Project introduces new implementation and procurement arrangements to maximize the resources available and efficiently implement the Project. The proposed arrangements are based on the lessons learned from Bank financed projects implemented by KPLC.

128. Component A: will finance investments for equipment and works related to (i) updating existing substations, incorporating automation system in the distribution network to integrate to the SCADA, (ii) the installation of line isolators /disconnections to be able to operate protection systems remotely, and (iii) purchase of equipment and training for live-line maintenance. KPLC has comprehensive experience in the use of the equipment and application of the technologies involved in construction and operation of automation system for distribution networks, as well as in the use of SCADA systems for supervision and control. The preliminary design of the projects to be included in this component was carried out by KPLC.

129. Component B: will finance the advanced metering technologies. KPLC is familiar with the installation and operation of such technology since KPLC has similar equipment already installed in the premises of some customers. For Component A and B, KPLC will be further supported by international consultants to assist with preparation of technical design and implementation.

130. Component C: will finance goods and works related to the extension of medium and low voltage lines, including the connection of new customers. KPLC has extensive experience in the technical and operational aspects related to the construction and operation of electricity distribution infrastructure. Under this component, KPLC will also be supported by a specialized engineering firm responsible for preparing technical specifications, bill of quantities, construction drawings and bid documentation. REA will be supported through technical assistance and by a Transaction Adviser to implement Component C2.

C. Financial Management

131. The IDA Guarantee does not involve any financial management due diligence on the part of IDA.

132. The Bank's financial management (FM) team conducted a financial management assessment of MoEP, REA and KPLC, the entities implementing the investment components of the Project. MoEP, KPLC and REA are currently implementing components of the ongoing KEEP and MoEP and KPLC have also implemented components of the Energy Sector Recovery Project (ESRP) that closed on September 30, 2013. MoEP is also implementing the Kenya Petroleum Technical Assistance Project (KEPTAP). There are no overdue audit reports. However, MoEP's ESRP and KEEP audit reports for fiscal year ending June 30, 2014 received qualified audit opinion. MoEP has since addressed the issues to the satisfaction of the Auditor General. The financial management residual risk rating for all the entities is assessed as Moderate.

133. **FM Arrangements**: The FM arrangements for this Project are included in Annex 3. The FM action plan outlines the mitigating measures which, if implemented, would strengthen the financial management arrangements. These include: training of accountants and internal auditors and reconstitution of the REA Audit Committee. The proposed FM arrangements, as discussed in Annex 3, will meet the minimum requirements for financial management under OP/BP 10.00.

D. Procurement

134. The IDA Guarantee does not involve IDA procurement due diligence.

135. Procurement for the proposed Project will be carried out in accordance with the World Bank's "Guidelines: Procurement of Goods, Works and Non-consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" published by the Bank in January 2011 (revised July 2014) and the World Bank's "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers," published by the Bank in January 2011 (revised July 2014). Further, the "Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants", dated October 15, 2006, and revised in January 2011 shall apply to the Project. The proposed Project will be coordinated by MoEP and implemented by the PIUs in KPLC and REA who have experience in Bank financed procurement (see above). The head of Supply Chain Management in KPLC will oversee the procurement activities of KEMP using his organization and staff. KPLC will establish a dedicated PIU for the Peri-urban Electrification Component C1 while its existing PIU will implement Components A, B and D (iv). KPLC will hire one procurement specialist to assist with bid documents preparation and bid evaluation, including preparation of bids evaluation reports. REA will use the current PIU which is implementing KEEP but will need strengthen its capacity and will hire a short term procurement specialist to facilitate the procurement activities of KEMP. REA will also engage a transaction adviser to assist in the implementation of the off-grid electrification component.

136. The procurement risk associated with the Project is Substantial. Risk mitigation measures include: (i) hiring/assigning one procurement each for KPLC and REA who are proficient in Bank funded procurement activities; (ii) appointment by REA of a Transaction Adviser for the implementation of the off-grid electrification; (iii) training new and current staff in Bank procurement procedures; (iv) ensuring a clear linkage between Project objectives and the procurement plan through appropriate support to staff, training and tools in preparing and monitoring of the procurement plan; (v) the procurement planning process taking into account the steps and associated timeframe for GoK's own process of approval; and (vi) establishment of a contract monitoring system.

E. Social (including Safeguards)

137. The Project will have positive social benefits. By connecting people to electricity in peri-urban and rural areas the Project will promote economic growth and equity through electrification of low low-income households. Improved reliability of electricity service will lower costs for businesses across the country. With increased access to electricity and improved reliability, the Project will improve security through lighting; provide opportunities for the development of small businesses and thereby improving overall quality of life.

138. All infrastructure investments in Component A (Improvement in Service Delivery and Reliability) and Component B (Revenue Protection) will be at existing electricity network infrastructure (i.e., at existing KPLC substations and lines). There will be no land acquisition and no involuntary resettlement for these components.

139. The sub-projects described under Component C1 (peri-urban electrification program) will be carried out in approximately 50 peri-urban areas where the existing electricity network will be extended. The medium voltage (MV) and low voltage (LV) lines that will be constructed will be on existing rights of way. The MV and LV lines do not require land acquisition and/or involuntary resettlement of households but do require wayleave acquisition which requires compensation. The anticipated social impacts will be minimal and might involve compensation for crops and or/trees which could be damaged during way leave acquisition. The Project will therefore trigger OP 4.12 (Involuntary Resettlement) in the case of sub-component C1.

140. The Project will trigger OP 4.12 (Involuntary Resettlement) in the case of sub-component C2 as this component will require land acquisition for mini-grid generation facilities. However the facilities (turbines, solar panels) will have a relatively small footprint and siting of such facilities can be located in places that avoid the need for resettlement. Since the sub-project sites in Component C1 and C2 are not yet definitively selected, a Resettlement Policy Framework (RPF) has been prepared covering both these components that was disclosed prior to Project appraisal. Based on the RPF guidance, each subproject will be screened, and if Resettlement Action Plans (RAPs) are found to be necessary, these will be prepared, cleared, disclosed and implemented prior to the commencement of civil works, in accordance with World Bank OP 4.12.

141. The Project will trigger Operational Policy OP 4.10 (Indigenous Peoples) for sub-component C2. An initial screening indicates that there may be groups that meet the O.P. 4.10 criteria in Western Kenya (Sengwer, Ogiek) and the Coast (Boni, Watta). The ESMF and RPF for Component C2 includes: (i) screening to determine presence of Vulnerable and Marginalized Groups (VMG, Indigenous Peoples per OP 4.10 criteria) in the Project areas and, if present, (ii) measures to ensure they benefit from the Project activities. In such cases, and when the Bank's screening indicates that VMGs are likely to be present in, or have collective attachment to, the Project area, a Vulnerable and Marginalized Groups Framework (VMGF)[3] is prepared. A VMGF has been prepared for component C2.

142. The sub-projects in sub-component C1 will be located in peri-urban areas, and so groups meeting criteria of indigenous groups will not be affected.

F. Environment (including Safeguards)

143. The Project will have positive environmental impacts. The electrification program in the Project that will connect mainly low-income households will displace kerosene lighting that these households currently use. Greater reliability of electricity service will displace small diesel generators used by businesses.

[3] The VMGF is the equivalent of an Indigenous Peoples Framework.

144. **The Project is proposed as category B Partial Assessment.** There are no significant and/or irreversible adverse environmental issues anticipated from the investment sub-components to be financed under the Project. The majority of the works will be in existing right of ways. Civil works will lead to relatively minor air and water pollution during the construction phases and, once the works are completed, limited loss of non-critical animal and plant habitats. Sub-component C2 (off-grid electrification using renewable energy) will have low to moderate negative impacts on the environment, depending on their locations. These will be assessed through a screening process and appropriate mitigation measures will be proposed.

145. Safeguard OP 4.01, Environmental Assessment; OP 4.04, Natural Habitats; OP 4.11, Physical Cultural Resources; OP 4.10, Indigenous People, and OP 4.12, Involuntary Resettlement, are triggered.

146. The localized, social impacts of the various sub-projects that will make up these components will be determined by the screening process for environmental and social impacts, which are included in the draft ESMFs and RPFs that have been prepared for Components C1 and C2 have been disclosed. They will utilize the following evaluative tools:

- The Environmental and Social Screening Form, which will help identify potential adverse environmental and social impacts.
- The Environmental and Social Checklist, which will outline simple environmental mitigation measures (a simplified EMP) for sub-projects not requiring a full ESIA report.
- A summary of the Bank‘s safeguard policies to ensure they are taken into account during the sub-project planning stage.

147. If the detailed screening determines that land acquisition requires resettlement, KPLC or REA (as applicable) will prepare a RAP, defining the persons affected, the assets involved and the mitigation measures necessary to comply with OP 4.12.

148. Given the peri-urban and rural locations of the majority of the sub-projects, impact on natural habitats is expected to be minimal. Although there will be a need for replacement of trees that will be removed along the right of way, no natural forest will be affected. OP 4.11 is triggered as a precaution, although the sub-projects are not expected to traverse areas of cultural or historical importance. Chance find procedures will be included in contracts and in the environmental documents.

149. Consultations with local stakeholders (including Kenya Association of Residents Associations) and agencies, including Kenya Wildlife Service, Kenya Urban Roads Authority, Kenya Rural Roads Authority and, if necessary, Kenya Forestry Service, Water Services Boards and the Water Resources Management Authority, local stakeholders, community associations, representatives of Vulnerable and Marginalized Groups was undertaken during the preparation of the environmental documents. Minutes of stakeholder meetings, including measures proposed to address grievances, are included in the safeguard instruments that have been disclosed.

150. The performance of the environmental department in KPLC (Safety Health and Environment department) and of REA in preparing environmental documentation and RAPs, and

monitoring EMPs and RAPs for World Bank funded projects has been reviewed. The staffing of the PIUs in KPLC and REA will include both social and environmental specialists.

151. EIAs/EMPs submitted by REA will require site-specific information. Scheduling of compensation payments will be closely monitored to ensure that, in the majority of cases, compensation is paid prior to the start of civil works.

Table 6: Safeguards Documents Disclosure

Project Component	Policy Instrument	Date Disclosed in Infoshop
A1. Upgrade of the Supervisory Control and Data Acquisition/Energy Management System (SCADA/EMS). A2. Distribution system enhanced flexibility.	Environmental and Social Management Plan (ESMP)	January 9, 2015
C1. Peri-urban electrification	Environmental and Social Management Framework (ESMF) Resettlement Policy Framework (RPF)	February 3, 2015 February 3, 2015
C2. Off-grid electrification	Environmental and Social Management Framework (ESMF) Resettlement Policy Framework (RPF) Vulnerable and Marginalized Framework (VMGF)	February 3, 2015 February 3, 2015 February 3, 2015

152. The ESMP for Components A1 (Upgrade of the SCADA/EMS) and A2 (Distribution system enhanced flexibility) which KPLC will manage, was disclosed to the public in Kenya on January 9, 2015. Consultations were held on January 6 and 11, 2015. The ESMP is available at the offices of Kenya Power in Nairobi, and it has been posted on KPLC's website and was disclosed through the Bank's InfoShop on January 9, 2015.

153. The ESMF for the peri-urban electrification works, which KPLC will manage, was disclosed to the public in Kenya on February 2, 2015. Consultations were held on January 6 and 11, 2015. The ESMF is available at the offices of Kenya Power in Nairobi, and it has been posted on KPLC's website and was disclosed through the Bank's InfoShop on February 3, 2015.

154. The ESMF for the off-grid electrification works, which REA will manage, was disclosed to the public in Kenya on February 2, 2015. Consultations were held on January 6 and 11, 2015. The ESMF is available at the offices of REA in Nairobi, and it has been posted on the REA website and was disclosed through the Bank's InfoShop on February 3, 2015.

155. The VMGF for the off-grid electrification works, which REA will manage, was disclosed to the public in Kenya on February 2, 2015. Consultations were held on January 6 and 11, 2015. The VMGF is available at the offices of REA in Nairobi, and it has been posted on the REA website and was disclosed through the Bank's InfoShop on February 3, 2015.

156. The RPF for the peri-urban electrification works and the off-grid electrification works and was disclosed to the public in Kenya on February 2, 2014. Consultations were held on January 6 and11, 2015. The RPF is available at the offices of KPLC and REA in Nairobi, and it has been posted on the KPLC and REA websites and was disclosed through the Bank's InfoShop on February 3, 2015.

G. Other Safeguards Policies Triggered *(if required)*

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment (OP/BP 4.01)	[X]	[ ]
Natural Habitats (OP/BP 4.04)	[X]	[ ]
Pest Management (OP 4.09)	[ ]	[X]
Indigenous Peoples (OP/BP 4.10)	[X]	[ ]
Physical Cultural Resources (OP/BP 4.11)	[X]	[ ]
Involuntary Resettlement (OP/BP 4.12)	[X]	[ ]
Forests (OP/BP 4.36)	[ ]	[X]
Safety of Dams (OP/BP 4.37)	[ ]	[X]
Projects on International Waterways (OP/BP 7.50)	[ ]	[X]
Projects in Disputed Areas (OP/BP 7.60)	[ ]	[X]

H. World Bank Grievance Redress

157. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit http://www.worldbank.org/GRS. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

Annex 1: Results Framework and Monitoring

Country: Kenya

Project Name: Kenya Electricity Modernization Project (P120014)

Results Framework

Project Development Objectives

PDO Statement

The proposed project development objectives (PDOs) are: (a) to increase access to electricity; (b) to improve reliability of electricity service; and (c) to strengthen KPLC's financial situation.

These results are at Project Level

Project Development Objective Indicators

PDO Level Results Indicators	Core	Unit of Measure	Baseline (FY2013/14)	Cumulative Target Values						Frequency	Data Source/ Methodology	Responsibility for Data Collection	Description (indicator definition etc.)
				YR 1 (FY2014/ 15)	YR 2 (FY2015/ 16)	YR 3 (FY2016/ 17)	YR 4 (FY2017/ 18)	YR 5 (FY2018/ 19)	YR 6 (FY2019/ 20)				
Indicator One: People provided with access to electricity by household connection (Number) Core [50]% is female	☒	Number	0	0	0	123,750	371,250	618,750	618,750	Annual	KPLC	KPLC Customer database	This indicator measures the number of people that have received an electricity connection under the project via new connections aimed at connecting households.

People provided with access to electricity under the project by household connections – Off-grid/mini-grid only (renewable sources) (Cumulative)		Number	0	0	0	0	0	9,000	13,500	Annual	KPLC	KPLC Customer database	People connected by KPLC through mini-grids constructed by REA and private sector
Indicator Two: Total number of new non-residential connections (Cumulative)	☐	Number	0	0	0	250	750	1,250	1,250	Annual	KPLC	KPLC Customer Database	Total number of new customers connected by KPLC.
Indicator Three: Average outage duration for customers served (hours)	☐	System Average Interruption Duration Index – SAIDI	12	12	8	8	7	6	6	Monthly	KPLC/ERC utility database (IMS)	KPLC	Average outage duration in hours for customers served by KPLC.
Indicator Four: KPLC Commercial losses		Percentage	6.7%	6.7%	6.7%	5.7%	4.7%	3.7%	3.7%	Annually	KPLC/ERC utility data base (IMS)	KPLC	Commercial losses reduced from 6.7% to 3.7%.
Indicator Five: KPLC's Current ratio	☐	Ratio	1	>1	>1	>1	>1	>1	>1	Annually	KPLC	KPLC	
Indicator Six: KPLC's Return on Assets to Equity		Percentage	11.9	10	8	8	10	10	10	Annually	KPLC	KPLC	

Intermediate Results Indicators													
PDO Level Results Indicators	**Core**	**Unit of Measure**	**Baseline (FY2013/14)**	**Cumulative Target Values**						**Frequency**	**Data Source/ Methodology**	**Responsibility for Data Collection**	**Description (indicator definition etc.)**
				YR 1 (FY2014/ 15)	**YR 2** (FY2015/ 16)	**YR 3** (FY2016/ 17)	**YR 4** (FY2017/ 18)	**YR 5** (FY2018/ 19)	**YR 6** (FY2019/ 20)				
Component A: Improvement in Service Delivery and Reliability													
Automatic load break switches installed in the Nairobi distribution network in the project areas		Number	0	0	0	500	500	1000	1000	Annually	KPLC utility database	KPLC	System installed and in operation
Substations added to the SCADA/EMS		Number	86	86	86	106	136	146	146	Annually	KPLC utility database	KPLC	System installed and in operation.
Component B: Revenue Protection Program													
Establishment of a modern meter control center with satellites.		Yes/No	No	No	No	Yes	Yes	Yes	Yes	Annually	KPLC utility database	KPLC	Center established and in operation
Installation of AMI meters. (Cumulative)		Number	4,300	4,300	4,300	24,300	34,300	44,300	44,300	Annually	KPLC utility database	KPLC	Meters installed.
Component C: Electrification Program													
Distribution lines constructed or rehabilitated under the project (Cumulative)	☒	km	0	0	0	1,000	1,500	2,000	3,500	Annually	KPLC utility database	KPLC	This indicator measures the length of the distribution lines constructed or rehabilitated/upgraded under the project.
Distribution transformers installed (Cumulative)		Number	0	0	0	250	500	700	1000	Annually	KPLC utility database	KPLC	Transformers installed by KPLC
Mini grids constructed with public-private participation (Cumulative)		Number	0	0	0	0	0	6	6	Annually	REA	REA	Mini-Grid constructed by REA and the Private Sector

Annual electricity output from mini-grids constructed with public-private participation		MWh/yr	0	0	0	0	0	2,780	2,780	Annually	REA	REA	Annual electricity generated from mini-grids
Component D: Technical Assistance and Capacity Building													
National Electrification Strategy adopted.		Yes/No	No	No	Yes	-	-	-	-		MoEP report	MoEP	
Implementation by ERC of a regime on service quality.		Yes/No	No	No	Yes	-	-	-	-		ERC annual report	ERC	
IDA Guarantee													
Private capital mobilized.		US$ million	0	0	450	-	-	-	-		KPLC reports	KPLC	At least US $450 million commercial debt will be raised by KPLC using the IDA Guarantee.
Reduction in interest rate of commercial loans		Percentage	>7.5%	<7.5%	<6%	<6%	<6%	<6%	<6%	Annually	Annual Financial Statement	KPLC	
Debt to EBITDA		Number	3.08	4.2	4.2	3.5	3.5	3.5	3.5	Annually	Annual Financial Statement	KPLC	Ratio
EBITDA to interest		Number	5.21	3.8	4.0	4.5	5.0	5.0	5.0	Annually	Annual Financial Statement	KPLC	Ratio
Cash from operation to debt		Percentage	26%	12%	12%	13%	15%	20%	20%	Annually	Annual Financial Statement	KPLC	
Free operational cash flow to debt		Percentage	-10%	-4%	-5%	0%	5%	6%	6%	Annually	Annual Financial Statement	KPLC	

Annex 2: Detailed Project Description

KENYA: Electricity Modernization Project

PROJECT DESCRIPTION

1. The Project will include three financing instruments: (i) an International Development Association (IDA) Credit in an amount of US$250 million equivalent, (ii) a Strategic Climate Fund-Scaling-Up Renewable Energy Program (SCF-SREP) grant of US$7.5 million fully blended with IDA, and (iii) an IDA Guarantee of US$200 million that will support Kenya Power and Lighting Company (KPLC) in raising about US$500 million of long-term financing. KPLC and the Rural Electrification Authority (REA) will provide funding of approximately US$3.5 million and US$1 million respectively for acquisition of wayleaves.

2. The IDA credit and SCF-SREP grant together support four components that are each aimed at: (i) improving service delivery and reliability; (ii) implementing a revenue protection program for sustainable loss reduction of KPLC commercial losses; (iii) connecting households based on a sustainable approach to electrification that incorporates proven international practices; and (iv) institutional development, capacity building and project implementation support.

IDA Credit

Component A: Improvements in service delivery and reliability (estimated cost US$50 million)

3. KPLC recognizes the service quality challenges in the existing system and a five-year investment plan has been prepared aiming at improving the network reliability. KPLC commissioned a number of planning studies and network diagnosis studies to identify the key actions and investments to address the service quality challenges. The design of this component is based on a Distribution Master Plan study commissioned by KPLC.

4. The objective of this component is to support the modernization and automation of the medium and low voltage distribution network to increase reliability and improve service delivery. Distribution automation is beneficial in day-to-day operation and maintenance of the distribution system. Benefits of remote and automated controls include proactive problem detection and faster response to system emergencies (higher reliability), meeting required service quality, achieving restoration time of faster electricity supply (customer satisfaction), and strategic real time decision making during operation with reductions in equipment damage (cost reductions and increased revenues). This component is complemented by technical assistance to ERC for monitoring and enforcing service quality.

5. This component comprises the following specific investments:

Sub-component A1. Upgrade of the Supervisory Control and Data Acquisition/Energy Management System (SCADA/EMS) (estimated cost US$10 million)

6. This sub-component will finance upgrade of the SCADA/EMS in KPLC by incorporating key existing substations to the system and installing additional switchgear in medium voltage distribution networks to enhance flexibility in operations and allow a more efficient management. KPLC operates a total of 161 transmission and distribution substations, with about 86 of them currently being monitored and managed with the SCADA system. The Project will provide funds for inclusion of 60 additional substations thus bringing the total coverage to about 90 percent of the network. The scope will include provision of remote terminal units (RTUs) and associated communication and modification works in substations.

Sub-component A2. Distribution System Enhanced Flexibility (estimated cost US$20 million)

7. KPLC is implementing various actions to automate and enhance the operational flexibility of the distribution network (in particular at the medium voltage level) to reduce duration of system interruptions. An initial phase is currently being implemented, focusing on the Mombasa network and only a small part of the Nairobi network (just 200 out of 1,200 line isolators/disconnectors being changed with load breaker switches with remote operation features). The component aims at achieving 90 percent automation of the networks in Nairobi by installing a total of 1,000 load break switches in assets operating at 11, 33 and 66 (kilovolts) kV, with associated RTUs and communication features enabling remote control and operations.

Sub-component A3. Enhanced maintenance practices to improve quality in electricity supply (estimated cost US$20 million)

8. In order to further reduce interruptions in electricity supply, KPLC will implement live-line maintenance (LLM). This requires specific equipment, tools and intensive training of staff in charge of reestablishing electricity service after system incidents that interrupt service. The component will finance implementation of live line maintenance based on best practices, comprising all supplies and services (in particular training) needed for its sustainable application in conditions of maximum safety.

Component B: Revenue Protection Program (RPP) (estimated cost US$40 million)

9. This component will finance implementation by KPLC of a revenue protection program (RPP), based on the application of advanced metering infrastructure (AMI), and the adoption of organizational arrangements (creation of one or more metering control centers (MCCs)) aimed to optimize the systematic use of the information provided by the metering system and undertake consistent corrective field action as needed. This component is combined with key regulation technical assistance financed under Component D to address the commercial aspects of KPLC and the monitoring and enforcement role of the regulator.

10. The main objective of the RPP is to protect the revenues that KPLC receives from sales to large and medium customers, ensuring that all users in that high value segment are systematically billed according to accurately metered consumption thus reducing non-technical losses.

11. Less than two percent of KPLC's customers (4,300 supplied in medium and high voltage and 40,000 in low voltage with current monthly consumption above 1,000 kWh) represent 72 percent (56 and 16 percent, respectively) of the total kWhs currently billed. Sustainable protection of the revenues generated by consumers in that high value segment is highly relevant for KPLC's operational and financial sustainability. This starts by ensuring that all the large customers are metered and billed according to their actual consumption.

12. Relevant experiences in several developing countries show that the sustainable recovery and protection of the revenues generated by large customers can be achieved by managing their consumption (metering, reading and billing) through advanced metering infrastructure. This refers to the installation at each customer's premises of consumption metering systems including communication devices that make possible to periodically transmit their records to remote points where they are systematically analyzed, processed and monitored by staff in Metering Control Centers (MCCs) created for that specific purpose. The MCCs will use Meter Data Management (MDM) software packages to monitor, detect and correct irregular conditions in electricity use.

13. At present KPLC has incorporated one-way communication (also known as automated meter reading or AMR) to remotely record consumption of most of its 4,300 large customers supplied at high and medium voltage. However, the Company has not implemented the MCCs as permanent organizational units responsible for revenue protection. Besides, the MDM currently used needs to be replaced by a new software package specifically designed to enable systematic effective monitoring of consumption for the purpose of revenue protection. Thus, the RPP to be developed by KPLC should include: (i) creation of the MCCs and investments in infrastructure needed to operate them; (ii) incorporation of a state-of-the-art MDM designed for the specific purpose of revenue protection and training of staff of the MMCs in its proper use; (iii) supply and installation of AMI for the 4,300 high and medium voltage users and at least 40,000 large low voltage customers (small and medium enterprises with monthly consumption in the 500-7,000 (kilowatt hours) kWh interval), and incorporation of those customers to the respective MCCs.

14. The proposed RPP includes tools for the systematic gathering, storing, processing, analyzing and monitoring of information on consumption and loads in key substations and targeted customers, as well as a two-way communication between the control centers and targeted customers. The adoption of this AMI technology will contribute to reducing commercial losses, increasing the accuracy of billing, avoiding loss of revenue and enabling the load profiling of electricity consumers to improve load forecasting.

15. Commercial losses in KPLC represent about 6.7 percent of its total energy purchases. Implementation of the RPP will permanently protect 72 percent of total current KPLC's sales and eliminate the commercial losses associated with the targeted large consumers, therefore this component is expected to have a significant impact by sustainably reducing the Company's commercial losses by approximately three percent.

Component C: Electrification Program (Estimated cost US$164.5 million): IDA Credit US$152.5 million, KPLC US$3.5 million, REA $1 million and SCF-SREP grant US$7.5 million)

16. This component will support the government's objective of 70 percent household connectivity by 2018 by providing financing for the connection of new households in a more cost-effective manner based on household affordability.

17. The government's electricity access program is implemented by KPLC and REA. KPLC operates the national electricity grid and isolated grids and supplies almost all (more than 99 percent) electricity consumers (households and businesses) in the country. REA carries out all the works required to connect public facilities in rural areas to electricity services. Access has increased rapidly from 23 percent in July 2009 to 35 percent in June 2014.

18. Despite these impressive achievements, access of 35 percent is inconsistent with the socio-economic condition of the country, the largest economy in East Africa and one of the most developed in Sub-Saharan Africa.

19. Several facts indicate that the electrification program as currently designed is not sustainable. On the one hand, efforts in recent years have been focused on extending the distribution networks to reach public facilities (mainly schools, health centers and police stations), without taking into consideration households located close to the new networks. This is an expensive and inefficient approach that results in underutilized infrastructure (several lines and power transformers in peri-urban and rural areas are operating at very low load), while households nearby them remain un-electrified. Additionally, households interested in being electrified pay a fee of Kshs. 35,000 (US$410) for the construction of low voltage networks and individual connections needed for that purpose without owning the connection. This has become a barrier to electrification, as the connection fee cannot be afforded by low income households.

20. Even in mature power systems (close to universal access) in developed and high middle income emerging countries, in which tariff revenues of distribution companies include investments costs (capex) in replacement of all assets owned by those utilities, those costs are socialized among all users (at least those supplied in the same voltage level). In all successful electrification programs worldwide, investments are financed through out-of-tariff resources, in general provided by a special-purpose and ring-fenced national electrification fund. New users are connected without any upfront payment if their individual connections (drops) are owned by the electric utility, or requested to pay for their individual connections (in monthly installments through two to three years) only if they own them. Some countries (e.g., Peru) have adopted hybrid approaches, with users in urban areas owning their connections and paying around US$100 in installments for them, while low-income users in rural areas do not pay any connection fee, and the individual connections are owned by the service utility. In most of those good practice programs, all electricity users contribute to the national electrification fund through tariff charges paid with their consumption bills.

21. Currently, the connection fee in Kenya does not cover the cost of the investment required to set up each connection and KPLC must absorb/subsidize the difference and finance it with

commercial loans. As a result KPLC's indebtedness level has increased substantially in the past four years. Economies of scale are lost in the piecemeal implementation arrangements approach that connects each individual household once individual applications are made.

22. The government acknowledges that the current approach is incompatible with its ambitious electrification targets, and has decided to design and implement a National Electrification Strategy (NES) whose objective is to achieve universal access to electricity services meeting applicable standards on quality in a sustainable manner in the shortest possible time and optimizing allocation of resources from a country perspective. Preparation of the NES will be supported under Component D of the Project.

Sub-component C1. Peri-urban electrification (estimated cost US$153.5 million - IDA US$150 million, KPLC US$3.5 million)

23. This component will finance the design, materials and construction works required to electrify all households and businesses in selected high density peri urban areas located close to existing electricity networks. The peri-urban settlements to be electrified will be in approximately 50 locations in seven geographical regions of the country. The locations were identified by KPLC and endorsed by the government. These will be formal settlements of low income households i.e., not informal settlements (slums). The actual settlement sites will be selected during design of the low voltage networks based on population density and their location close to existing electricity networks, in order to maximize the number of connections. In these geographic areas the Project would "sweep" the areas under the installed MV lines by adding transformers, Low Voltage (LV) network and some MV lines.

24. The investments will support (i) construction of about 3,000 km MV lines; (ii) installation of 1,000 distribution transformers; (iii) construction of about 3,300 km of LV lines, and service cable and material for connection of new customers to grid supply.

25. It is estimated that 125,000 new customers will be connected to grid supply based on average unit cost per customer connection of approximately US$1,200 (Kshs. 100,000). This component will optimize technical designs and procurement arrangements to carry out all construction works (including users' connections) to connect the highest possible number of users in the selected peri-urban areas in the most cost-effective manner. Additionally, this sub-component will introduce new implementation arrangements to connect at once a set of new customers in a specific area aiming at avoiding the piecemeal approach that connects each individual household only once individual applications are made.

26. By increasing the number of new customers, this component is expected to contribute to an increase in the financial contribution collected through the Rural Electrification Charge, which will become the main source of funds of the national electrification program. Once a critical mass of consumers (around 60-70 percent electrification rate) is achieved, the program will become self-sustaining. The use of soft financing from development partners is required to reach the critical mass expediently.

27. The network infrastructure constructed in this sub-component of the project will be owned by the Government. KPLC is the implementing entity for the sub-component and will receive funding from the IDA Credit as a grant for the network infrastructure that will be constructed. The National Electrification Strategy being prepared will address the issue of ownership and arrangements for use of infrastructure assets constructed under the national electrification program by distribution companies.

Sub-component C2. Off-grid electrification (estimated cost US$11 million: IDA Credit US$2.5 million, SCF-SREP Grant US$7.5 million and REA US$1 million)

28. This sub-component will support the implementation of off-grid electrification solutions in villages in rural areas where connection to the national grid is economically unviable in the short and medium term. Electrification of these villages will be through mini-grids, combining renewable resources (solar or wind) and thermal units. This sub-component will pilot Public-Private-Partnership (PPP) arrangements. The hybrid generation system will be implemented by an Independent Power Producer (IPP) which will have a Power Purchase Agreement (PPA) with KPLC. The private concessionaire (IPP) will be procured competitively pursuant to para 3.14(a) of the Bank's Procurement Guidelines. The IPP will invest in the fuel-based generation component and SCF-SREP and IDA funding will finance the supply and installation of the renewable generation facilities and the mini-grid distribution network. The construction of the distribution infrastructure will be implemented by REA and new households and others connected will become KPLC's customers. To ensure sustainability of provision of electricity services to users connected to the mini-grid, a contract between KPLC and a local company providing operation (mini- grid distribution network and commercial) and maintenance services will be signed. Fees charged by the services contractors will be passed through in KPLC's allowed tariff revenues set by the Energy Regulatory Commission (ERC). The sub component will be implemented in approximately six locations in a number of regions of the country which have been identified by the government and REA. The selection of the actual project areas in the specified locations will be based on the number of potential users and their demand. Typically, these will be communities with 150-400 prospective users and approximate demand of 250-500kVA.

29. The above sub-component is complementary to the Stand Alone Solar PV and Micro Grids IFC managed program with SCF-SREP funding. This program would address the barriers for commercial dissemination of stand-alone PV and micro-grid products and services for customers in remote areas.

Component D: Technical Assistance and Capacity Building (estimated cost US$7.5 million)

30. This component will finance consultancy services, training actions and other activities to support, among others:

(i) *Preparation of the National Electrification Strategy (NES)* (estimated cost US$0.5 million). The NES' objective is to achieve universal access to electricity services meeting applicable standards on quality on a sustainable manner in the shortest possible time while optimizing allocation of resources from a country's perspective. The NES will address the following issues: (i) determination by the government of priorities in

terms of electrification; clear definition of institutional arrangements (roles of the national and local governments, electrification agencies, service utilities and other stakeholders); (ii) planning and effective execution of all investments needed to actually connect new users (in particular individual connections (drops) to connect households), including the definition of the most cost-effective technical design and construction; (iii) definition of levels of service quality; and (iv) financing schemes to ensure sustainability of the electrification programs (contributions from donors, multilateral agencies, national budget and high income electricity consumers through specific tariff charges; review as necessary of a "special purpose" electrification fund to collect contributions from all sources, etc.).

(ii) *Detailed national technical specifications and standardization* (estimated cost US$1 million). This assistance will support the technical and economic optimization of the design and construction of electricity networks needed to supply new users located in currently not served areas, meeting applicable standards on service quality. This should result in the adoption of standardized construction units by KPLC and REA to achieve low cost electrification and improve quality and reliability of electricity supply. This will include low-cost technical solutions depending on the characteristics of the demand.

(iii) *Regulations for enforcing quality of electricity service delivery* (estimated cost US$0.5 million). Assistance to ERC in real time monitoring of quality of electricity supply and customer service and enforcement of standards and related penalties. Regulators should be able to actually monitor service quality by getting direct real time access to the records of the management information systems (MIS) used by the service utilities to support operations in the electricity supply and commercial areas. In the case of KPLC, the Company uses state-of-art MIS to carry out commercial functions (Commercial Management System; CMS) and attend customers' complains due to outages and other incidents in electricity supply (Incidents Management System; IMS). Those MIS enable efficient and accountable execution of operations, and, at the same time, make possible to effectively record and monitor the quality of technical and commercial services provided to each individual user.

KPLC is currently carrying out actions aimed at updating and improving the reliability of the information in the databases of the MIS (customers for the CMS and electricity networks assets and their links with points of electricity supply for the IMS). Those actions include the incorporation of a Geographic Information System (GIS) and the execution of field campaigns to get the coordinates in that system of customers' premises and electricity network assets. It is expected that performance of KPLC in commercial functions and attention of incidents in electricity supply will improve significantly, as the reliable databases will make possible to make full use of the functionalities of the MIS. By allowing the ERC to have real time access to key records of the MIS operated by KPLC related to parameters characterizing service quality, the Regulator will be able to effectively monitor those parameters and enforce the applicable regime.

Assistance to ERC under this sub-component will comprise organizational arrangements, implementation of direct real time access to records of the MIS operated by KPLC, training of staff in the use of the MIS to collect the data needed to measure and monitor service quality, design and application of surveys and other actions needed to verify accuracy of those data, procedures to attend users' complains and to enforce applicable regimes on service quality

(iv) *Project implementation support, preparation of feasibility studies for new investment projects as required and project monitoring and evaluation.* (estimated cost US$3.5 million). This will finance consultancy services, training actions, and other activities to support the implementation of the Project, including monitoring and evaluation, environmental and social safeguards management, as well as feasibility studies required. This component will be combined with an assessment on the processes currently carried out by KPLC for attention of customers' complaints due to quality in electricity supply and the commercial functions of KPLC.

(v) *Training and capacity building (*estimated cost US$2.0 million). This will finance training, communications and capacity building for the sector entities including MoEP, ERC, KPLC and REA.

IDA Guarantee - Mobilization of commercial financing for KPLC to restructure its existing commercial debt obligations

31. In the last three years KPLC implemented a fast paced and high capital consuming investment program (over US$300 million per year) intended to increase connectivity in the country and improve coverage, capacity and quality of the distribution network to adapt to the country's development needs. This investment activity was financed entirely with KPLC's resources (cash from operations and debt), and although highly beneficial for the country, the result of this effort is a material deterioration of KPLC's financial position represented in substantial increase in debt, lack of liquidity, difficulty to honor its payment obligations when and as due, and inability to continue investing.

32. Due to the nature of KPLC's investments which provide low return and require long amortization periods, and KPLC's constrained financial situation, it is critical for KPLC to restructure its commercial debt in order to reduce its financing costs, which tripled between 2012 and 2014. As of June 2014, KPLC had over US$800 million of financial debt of which nearly US$500 million are commercial loans. These commercial loans had a cost of over US$100 million/year in debt service (interest and principal) and more than half of them (approximately US$370 million) will mature within the next five years. The terms of those loans are reflective of KPLC's eroded financial condition and credit quality and standard market conditions for this type and quality of borrower, but are not affordable in the short and medium term, nor suitable for KPLC's growth needs. Without an IDA Guarantee, KPLC would not be able to obtain better terms.

33. The Project will provide a US$200 million IDA Guarantee to raise approximately US$500 million of new commercial debt with lower interest rates and extended maturity periods than those currently available to KPLC. This new debt will be used to restructure and replace existing

commercial loans in the same amount. The restructuring of KPLC's commercial debt is likely to be in the form of a syndicated commercial loan with local and foreign currency tranches. The result of this debt restructuring would be the significant reduction of the Company's overall financing costs with the respective liquidity benefits, the rescheduling and extension of the amortization periods, the restoration of KPLC's financial strength as the foundation for long term sustainability, the continued implementation of much needed investments by KPLC, and, more importantly, a reduction of the cost recovery requirements from KPLC customers through the tariffs.

Proposed IDA Guarantee Structure

34. The proposed IDA Guarantee may take the form of direct debt service support, first loss guarantee and/or principal repayment guarantee at the end of the extended tenor. The details of the structure will be developed after receipt of the refinancing proposals from the commercial banks and will reflect the outcome of negotiations between KPLC and the selected commercial bank(s).

35. Regardless of the final structure the IDA Guarantee will be applied to guarantee payments of debt service (principal and interest) by KPLC to the commercial lenders. In the event that KPLC fails to make a payment under the commercial loans, subject to the cure periods provided under the loan agreement(s), the lender(s) will have recourse to the IDA Guarantee. IDA will be obliged to pay to the claimant the amounts due and not paid by KPLC within the period stipulated in the Guarantee Agreement.

36. As per the terms of the Indemnity Agreement to be signed between IDA and the GoK, a payment by IDA to a lender under the IDA Guarantee will trigger the obligation of the GoK to repay IDA. Repayment shall be made upon demand by IDA or as IDA may otherwise direct.

Other Terms and Conditions of the IDA Guarantee

37. The IDA Guarantee would be issued for a maximum term equal to the tenor of the guaranteed loans, which is not expected to exceed 15 years. In accordance with the pricing policy for IDA Guarantees, there is a Guarantee Fee of 75 basis points per annum calculated over the amount of the Guarantee for the given year and payable from the date and as a condition to effectiveness of the IDA Guarantee. Please refer to Annex 8 (IDA Guarantee Term Sheet) for a summary description of the Terms and Conditions of the IDA Guarantee.

Value Added of the IDA Guarantee

38. KPLC is the cornerstone of the energy sector in Kenya. The Company's financial situation has eroded significantly in the last three years. It is essential for the sector that KPLC's financial strength is restored on a sustainable basis. For this purpose KPLC must restructure its existing commercial debt to achieve affordable terms and conditions.

39. The IDA Guarantee is essential to enhance KPLC's credit quality and enable it to secure a successful restructuring of its commercial loans. In turn, the financial strengthening of KPLC is critical to enable the Company to access new loans in the future and continue implementing its investment program.

Annex 3: Implementation Arrangements

KENYA: Electricity Modernization Project

Project Institutional and Implementation Arrangements

1. **The Ministry of Energy and Petroleum (MoEP)** will be responsible for overall coordination of the Project and consolidation of the information related to Project implementation. The Kenya Power and Lighting Company (KPLC) will be responsible for the implementation of Component A, B, C1, D (iv), training of KPLC staff under D (v) and implementation of the International Development Association (IDA) Guarantee. The Rural Electrification Authority (REA) will be responsible for the implementation of Components C2 and training of REA staff under D (v). MoEP will be responsible for Components D (i), D (ii) D (iii) and training of MoEP staff under D (v).

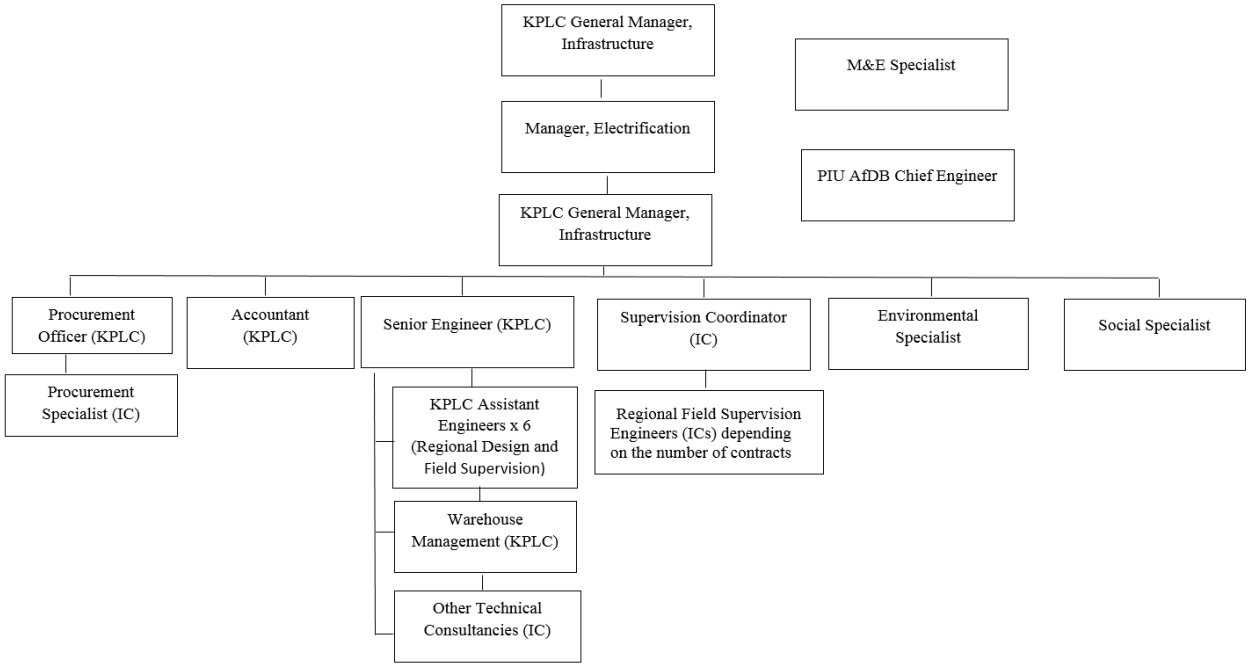
2. MoEP will be responsible for overall coordination and oversight of the Project, including, (i) definition of areas to be electrified based on technical and policy development priorities; (ii) consolidating information from implementing agencies; (iii) monitoring the implementation of the Project; and (iv) evaluating the Project. MoEP will hire, on a competitive basis, a Project Coordinator to consolidate the information prepared by the implementing agencies and will report to the Principal Secretary, MoEP.

3. REA an agency of government under the MoEP will implement Component C2 of the Project. Its mandate under the draft Energy Bill is proposed to be expanded to include promotion and development of renewable energy resources (excluding large scale). REA will be supported by a Technical Advisory Service (Consultant) for implementation of component C2 of the Project. US$2.5 million of the IDA Credit for the off-grid electrification (Component C2) will be on-granted to REA under a Subsidiary Grant Agreement along with the US$7.5 million SCF-SREP Grant.

4. **KPLC's Project Implementation Units (PIUs).** The existing project implementation unit (PIU), that is responsible for the Kenya Electricity Expansion Project (KEEP) at KPLC and is implementing investments under the ongoing IDA-financed KEEP will be responsible for implementation of Components A, B and D (iv). The existing PIU is headed by a Chief Engineer who reports to the Manager Infrastructure Development. KPLC will appoint a Manager Electrification for the electrification program financed by various donors. There will be separate PIUs for each donor financed project. The PIU for Component C1 (KEMP Electrification) will be headed by a Chief Engineer who will report to the Manager Electrification. Both the Manager Electrification and the Manager Infrastructure Development will report to the General Manager Infrastructure who reports to the CEO/Managing Director. The existing PIU has personnel responsible for design, engineering; procurement; accounting; installation (substations and lines); way leaves acquisition and SCADA and telecommunications. To be able to effectively implement Components A, B and D (iv), the existing PIU will be strengthened through deployment/ recruitment of a meter specialist. A consultant (firm) will also be procured to support KPLC in the detailed design and implementation of the Revenue Protection Program (preparation of bidding documents, bid evaluation and works supervision). KPLC will deploy or recruit dedicated personnel for the Electrification Program PIU for KEMP responsible for procurement, accounting,

stores management, engineering, design, works supervision, environmental management and social management. A short term procurement specialist (individual consultant) will support the procurement function in the Electrification Program PIU for KEMP and the existing PIU with bid documents preparation and bids evaluation. The IDA Guarantee will be implemented by KPLC's Finance Department which has already implemented three IDA Partial Risk Guarantees to support IPPs in the past three years. KPLC will recruit a dedicated Monitoring and Evaluation (M&E) Officer for the Infrastructure Development Division who will be responsible for monitoring, evaluating and preparing monthly progress reports for Components A, B, C1 and D (iv). The Communications Department of KPLC will develop a communications campaign to inform the public of project progress for the KPLC implemented components.

Figure 1: KPLC PIU Electrification KEMP (Component C1)



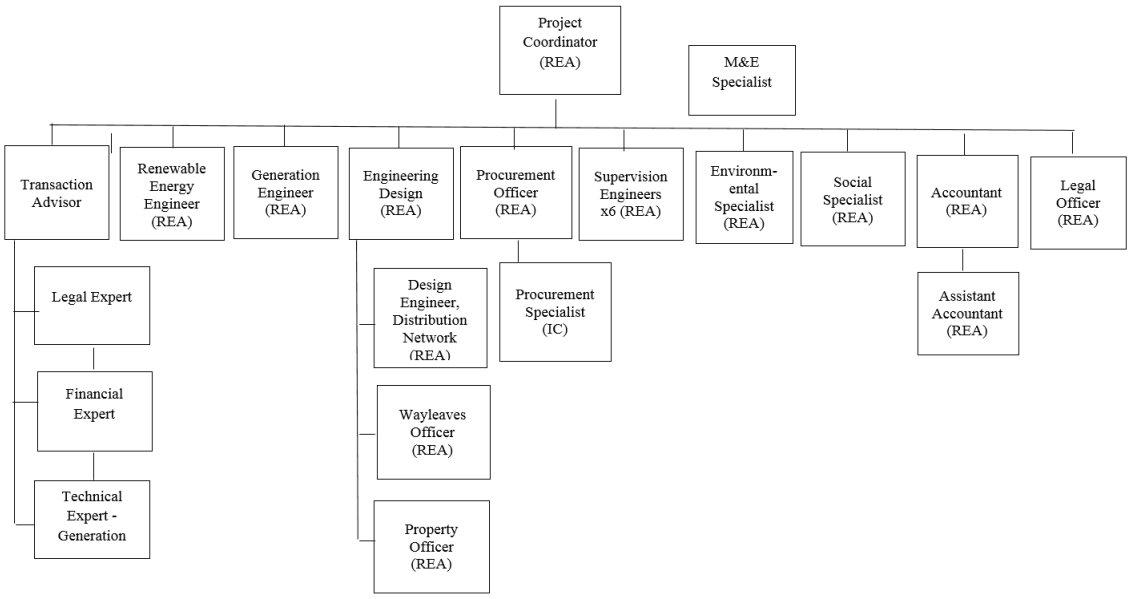
5. Based on the lessons learned under the implementation of World Bank projects, new procurement and supervision arrangements are included in the design of the Project, particularly for the implementation of Component C1 for electrification program. Regarding the procurement aspects, KPLC will conduct the procurement of design, goods, and installation works through separate contracts rather than through a turnkey (EPC) approach. This is a typical arrangement conducted by capable distribution companies for the connection of low voltage customers. The proposed approach can result in strong competition for supply of the main materials of poles, conductors and transformers resulting in lower prices. Since KPLC can immediately begin the design of the network in the areas to be electrified the time for implementation will be shortened. The capacity of the PIU to carry out the designs will be enhanced by external consultants if necessary.

6. REA's existing PIU that is implementing the rural electricity component in the IDA financed KEEP will be strengthened to implement Component C2. REA's PIU is headed by a Project Coordinator who reports to the CEO. The existing PIU has personnel responsible for design and

engineering works; project supervision; procurement; accounting; and environmental safeguards. REA will strengthen the PIU through assignment/ recruitment of additional staff and specialists including a renewable energy specialist, a generation engineer, a lawyer, a social safeguards specialist, wayleaves officer, property officer, a monitoring and evaluation specialist, an additional accountant and a short term procurement specialist (individual consultant). The PIU will be supported by a Transaction Adviser that will provide specialized expertise in the areas of structured finance, design of competitive processes for selection of private entities in public private partnership arrangements, contract negotiations with private parties, etc.

7. Figure 2 illustrates the implementation arrangements for this component.

Figure 2: REA PIU Off-Grid Electrification (Sub-Component C2)



8. The responsibilities of REA, KPLC, Energy Regulatory Commission (ERC) and the private sector in Sub-component C2 are as follows:

REA

- In coordination with MoEP, select communities to be served by the mini-grids
- In coordination with KPLC and ERC, prepare technical specifications of the mini-grid systems
- Ensure availability of land required for the generation module of the mini-grid system and facilitate the environmental permits
- Prepare the Mini-grid Power Purchase Agreements (PPA), together with KPLC
- Finance, design and build the distribution networks and ensure that the maximum number of consumers is connected. This will be financed with IDA and SCF-SREP funds.
- In coordination with KPLC and ERC, prepare operation and maintenance service contract and conduct the tendering process of the contract to be signed by KPLC
- Make payments to the selected Independent Power Producer (IPP) for the capital cost of the renewable energy component of the generation facility as set in the PPP

agreement. This will be financed by SCF-SREP and will be used to buy down the capital cost of renewable component.

- develop a communications campaign to inform the public of project progress.

ERC

- Approve Mini-grid Power Purchase Agreements.
- Recognize the PPA costs and the operation and maintenance contractor charges to be recovered in the retail tariff.
- Issue licenses for mini-grid private sector power suppliers and (if necessary) the operations and maintenance services contractors.

KPLC

- Sign the PPAs with the IPPs (mini-grid private sector power suppliers).
- Sign the operation and maintenance service contract at least for the initial period of operation e.g. 3-5 years, which may be extended as needed.
- Make payments under the PPA and the operation and maintenance services contract.

IPP

- Invest in the non-renewable component of the hybrid generation facilities and meet obligations set in PPA.

9. Regarding the procurement aspects, REA will tender the IPP contract for the generation component of the mini-grid. The private sector power supplier will be selected competitively (e.g., based on offering the lowest levelized cost of electricity, subject to meeting other performance requirements). The investor will receive performance based grants for the renewable generation capacity installed to make the projects financially viable.

10. The arrangements for the distribution network will be conducted by REA. This includes the design and procurement of goods, and installation works through separate contracts rather than through a turnkey (EPC) approach. The proposed approach for the distribution network has been already implemented by REA under KEEP.

Financial Management Arrangements

11. The Bank's financial management team conducted a financial management assessment of MoEP, REA and KPLC, the entities implementing the Project. MoEP, REA and KPLC are currently implementing components of the KEEP and MoEP and KPLC have also implemented the ESRP that closed on September 30, 2013. MoEP is also implementing the Kenya Petroleum Technical Assistance Project (KEPTAP).

12. The objective of the financial management assessment was to determine whether the financial management arrangements: (a) are capable of correctly and completely recording all transactions and balances relating to the project; (b) facilitate the preparation of regular, accurate, reliable and timely financial statements; (c) safeguard the project's entity assets; and (d) are subject to auditing arrangements acceptable to the Bank. The assessment complied with the Financial Management Manual for World Bank-Financed Investment Operations that became effective on March 1, 2010.

13. The following are the financial management arrangements for the Project.

Budgeting Arrangements

14. KPLC: There are qualified staff who undertake budgeting and monitoring. Projects' budgeting is spearheaded by the Chief Accountant, Projects. Financial management procedures in regard to budgeting are documented under the Budget and Budgetary Control Manual and are considered adequate. SAP system is used for budgeting and budgeting follows a bottom up approach. After KPLC's Board approval, the budget is forwarded to the MoEP and then to the National Treasury for approval and is consolidated under the MoEP Printed Estimates. Though KPLC forwards the entire company budget to the MoEP, it is only the donor funded budget that is included in the Government printed estimates.

15. Budget monitoring at KPLC is done primarily through the SAP system which has a budgetary control module. In addition, KPLC has a Planning and Performance monitoring unit that monitors the extent of implementation of key projects and the level of budget absorption for each manager. The budget monitoring system at KPLC is therefore satisfactory.

16. MoEP: The staff in both the planning and the finance departments of MoEP was assessed as adequate in terms of qualifications, numbers and experience. The budgeting process follows the GoK procedures titled; Government Financial Regulations and Procedures. These regulations are currently undergoing a review following the enactment of the PFM Act 2012. The budget preparation process is spearheaded by the Principal Secretary upon receiving a circular from National Treasury requiring all ministries to prepare their budgets within a set ceiling. Budgetary estimates are prepared by all the departments and projects, consolidated and submitted to National Treasury. The estimates are then included in the Ministry's printed estimates in line with the government budgeting system. The budget is prepared in Hyperion (budgetary module) or in excel and uploaded into the Hyperion of the Integrated Financial Management System (IFMIS). The budgeting process is deemed adequate.

17. Budget monitoring at MoEP is done through the Vote Book Report, which is printed from the IFMIS system and it assesses costs incurred against budget. This will be done on a monthly basis as well as quarterly when submitting the unaudited Interim Financial Reports to the Bank.

18. REA: The budget preparation process at REA begins when budgetary estimates are prepared by all departments and submitted to the Finance Department, where they are consolidated and submitted to the Budget Committee for review before submission to the Board for approval. By January 31, the approved budget is submitted to MoEP for consolidation with the Ministry's Budget. This budget is submitted to the National Treasury for inclusion in the printed estimates.

19. REA's budget monitoring is done as payment approvals are made. The SAP system used by REA also has a budgetary control mechanism which flags out any expenditure for which there is no budgetary allocation. Budgetary line items whose allocated amounts are about to be exhausted are also flagged out by the system.

Accounting Arrangements

Staffing

20. KPLC: The staff is qualified and experienced to manage the Project's financial activities. The team is led by the Chief Accountant, Projects, who is supported by two Project Accountants. Since a new PIU is being created for the electrification component, KPLC will second an accountant to this PIU.

21. MoEP: The Head of Accounting Unit is responsible for ensuring that, the processing of project's related payments, recording, accounting and reporting of these activities is properly done. The Head of Accounting Unit is in charge of the MoEP's External Resources Section. The accountants are all seconded from National Treasury and report to the Head of Accounting Unit.

22. REA's project's books of account are maintained by a Project Accountant who reports to the Chief Accountant. The present Project Accountant is currently handling the ongoing KEEP. The accountant is suitably qualified to oversee and undertake the Project's financial activities. REA's Management will also deploy an additional accountant to assist the current Project Accountant.

23. Most of the accountants have attended the ICT Based Financial Management and Disbursement courses jointly organized by the World Bank and the Kenya School of Government. In the MoEP, efforts are being put in place to revamp the external resources section (ERS) to ensure that all the accountants within the ERS can process projects transactions and do the financial reporting rather than designating one accountant to handle projects.

Accounting Records and Information Accounting System

24. KPLC: The Company uses the SAP system of accounting. The system is able to capture expenditures and generate reports and this is adequate for accounting and financial reporting purposes. The SAP has however been having challenges every time it is upgraded in form of interface differences especially between the financial module and the revenue collection module. However, management has overcome this challenge by ensuring that there are regular reconciliations between the two systems. The system is therefore considered adequate for purposes of recording and processing project activities.

25. MoEP will use IFMIS and MoEP will ensure that the budget is itemized in IFMIS to ensure that all transactions are done within IFMIS and that customized reports can be printed from IFMIS. Currently, for the ongoing project (KEEP) in MoEP, manual cash books and imprest registers are maintained due to underutilization of IFMIS-KEEP is reflected as one line item in IFMIS. Project payments will be made using the Government Payment System – G-pay which is linked to IFMIS. G-Pay will soon be replaced with T24 internet banking.

26. REA uses SAP to maintain the books of account. The system is highly integrated to include all of REA's key functions such as Finance, Human Resources, Procurement and Construction. The system also generates comprehensive financial statements and the project accountant is fully versant in using it. The system is considered adequate to manage the proposed Project.

Internal Control and Internal Auditing Arrangements

Internal Auditing

27. KPLC has a large internal audit department comprising of 40 qualified and experienced staff. The department is divided into three units which include Technical Audit, General Audit and Investigations and Systems Audit. The general audit is the largest unit as it includes the Finance Auditors, Fraud and Investigations as well as Procurement Auditors. The Risk Management unit of KPLC is a separate department which works closely with the internal auditors by providing them with key risks used in preparing the Audit Plan at the beginning of the fiscal year. The audit department activities are automated and the department uses Team Mate to undertake all its audit activities.

28. KPLC Audit Committee comprises five Board members. They include four non-executive members as well as the Senior Representative from the Principal Secretary's office at MoEP. The Committee meets every quarter and its mandate include: reviewing the Company's financial performance, examining corporate key risks and mitigation arrangements, and reviewing issues noted during the quarterly audits and tracking the implementation of the audit recommendations.

29. MoEP has an internal audit department with adequate qualifications and experience. The internal auditors are seconded to the ministry by the Internal Auditor General, National Treasury. They undertake field visits as well as reviews of critical account balances, key controls and key activities. These are scheduled in a risk-based annual work plan that is prepared prior to the beginning of every year.

30. REA's internal audit department comprises of technical and non-technical (or finance) staff. The technical unit of the department has two engineers whose role is to ensure that the Authority complies with the set quality standards. The non-technical unit has three auditors whose role is to review the financial activities of the departments and special projects of the Authority. The financial auditors are qualified and experienced. The internal audit reviews are guided by a risk based audit plan which is prepared at the beginning of every year. In addition to targeting high risk areas, the audit plan also takes into consideration areas not previously reviewed as well as any feedback or complaints received from other affiliate entities such as KPLC.

31. KPLC, REA and MoEP internal audit departments will incorporate the audit of KEMP in their annual work plan.

32. MoEP: Following the enactment of the Public Financial Management (PFM) Act 2012, the audit committees composition and functions in all Government Ministries should be as prescribed in the PFM regulations. One important proposal in the regulations is to have non-executive rather than executive members as was the case previously. This is to enhance the effectiveness of the audit committees. The regulations are currently awaiting parliamentary approval. Meanwhile, the MoEP Head of internal audit together with the MoEP Director of Administration are reconstituting the audit committee in MoEP using the Treasury Circular of 2005 to ensure that there is no oversight gap as they await parliamentary approval of the PFM regulations. The Audit Committee's role is to oversee the adequacy of the internal control mechanisms instituted by the

MoEP by reviewing the audit issues raised by the Internal and External Auditors and monitoring the implementation of these issues.

33. REA's Audit Committee has been dormant since June 2013. This has been waiting the reconstitution of the Board. Usually, the Committee has three members from the private sector, an alternate to the PS Treasury, the MoEP Chief Finance Officer and the REA CEO. However, the term of two of the three private sector committee ended in June 2013, thereby immobilizing the activities of the Audit Committee. The reconstitution of the REA Audit Committee is a disbursement condition in the REA implement Off-Grid Electrification component of the Project.

Internal Control Systems

34. KPLC has adequate financial management manual titled "Norms and Procedures manual" documenting the internal control systems to be used under the project. The manual is considered adequate as it has policies and procedures pertinent to the project such as cash management, work in progress, contracts management, payments processing and managing suppliers.

35. MoEP uses the government financial guidelines titled "Government Financial Regulations and Procedures". These guidelines cover several financial management policies and procedures including budgeting procedures, cash management, inventory management procedures as well as preparation of financial statements. Though the procedures are sufficient - as they include critical controls that were pertinent to the project's operations- they are currently undergoing a review following the enactment of the PFM Act 2012.

36. MoEP's management of staff imprests is assessed as satisfactory. Staff imprests are issued to cater for travel and accommodation needs of the staff while away from their duty stations. An Imprest Warrant is prepared once an authorized memo outlining the purpose and duration of travel is submitted to the Accounts Office. Once the imprest warrant is reviewed, it is submitted to the cashier for payment.

37. REA uses a finance manual to govern its financing activities. The manual is titled "Finance Procedures and Instructions Manual". A review of the manual indicated that it covered critical financial management policies and procedures including budgeting procedures, cash management, management of capital expenditure, payments and disbursements as well as authorization limits. The manual is assessed as adequate.

38. KPLC's bank reconciliations are prepared, reviewed and approved within KPLC's Treasury Section in the finance department. The reconciliations are done manually by the Treasury Accountant, reviewed by the Senior Treasury Accountant and approved by the Deputy Manager, Treasury or the Manager, Treasury. The reconciliations are prepared every month by the twelfth day after the close of the month. The review of the bank reconciliation indicated that there were no material or long outstanding reconciling items.

39. Other Internal control issues raised in KPLC recent management letters from the external auditors include: differences between the revenue billing in Integrated Customer System (ICS) and

the Integrated Finance System (IFS); high inventory balances that have been building up over the years either due to purchase of excess stock or obsolescence or slow movement of items.

Management of corruption and fraud risks in KPLC

40. KPLC has a policy of zero tolerance to corruption and has instituted a number of programs to combat and manage corruption and fraud risks, key of which are outlined below.

41. The annual performance contract between the Government and the board of directors of KPLC include a target on corruption prevention. This target, together with the necessary mitigation activities are cascaded down to the CEO and to relevant management team for implementation.

42. KPLC has an Integrity and Ethics department that is headed by the Chief Integrity and Ethics Officer. The mandate of the department is to manage the Company's ethics and integrity program, that seeks to assist the Company eliminate the vice of corruption and other unethical conduct in the organization. The Department's functions include: (i) assisting the divisions of the Company to conduct corruption risks assessments, formulate mitigation measures and monitor their implementation; (ii) preparation of policies and guidelines to strengthen ethical culture- (policies which have been prepared and approved by KPLC Board include a Corruption Prevention Policy, Gift Policy and Code of Ethics); (iii) preparation of key corporate ethics and integrity risks register; and (iv) receiving reports on integrity and corruption and ensuring that the complaints are investigated. The Integrity and Ethics Department is required to report status of implementation of the ethics and integrity program to the corruption prevention steering committee (discussed below) and to the Audit Committee of the Board quarterly.

43. At the corporate level, there is a corruption prevention steering committee which is chaired by the Managing Director, while each division and business region has corruption prevention committees, which discuss implementation of their respective corruption prevention initiatives. The Integrity and Ethics Department is supported by integrity champions based in all functions across the organization.

44. KPLC has an anonymous system of reporting corruption through emails or boxes located in its offices. The reported cases are forwarded to appropriate functions for investigations and action.

45. Through the Integrity and Ethics Department, KPLC conducts an annual integrity and corruption survey. The survey is carried out by external firms who in the past have included Transparency International (Kenya Chapter) and Ethics Institute of South Africa. The study shows among others, functions most vulnerable to corruption/fraud and makes appropriate recommendations to strengthen weaknesses. It also provides a corruption index which is used as the annual corporate score of the performance on the corruption prevention target.

46. The Internal Audit department of KPLC carries out regular audits to assess the adequacy of internal systems and controls and, investigates cases of fraud, corruption, theft and other unethical conduct. The Internal Audit function reports are submitted quarterly to the audit committee of the Board. Disciplinary action (which has included dismissals and prosecutions) is usually taken against staff found to have engaged in theft and fraudulent conduct.

47. The fight against corruption is significantly influenced by the governance environment and top leadership commitment. Overall, the effectiveness of KPLC's integrity and ethics program has been limited by a number of challenges that include: (i) lack of enough staff with experience to drive and implement the program; (ii) lack of strong leadership support (e.g., the corruption prevention committees rarely meets and adequate attention is not given to the anti- corruption agenda); and (iii) weakness of the Kenyan Ethics and Anti-Corruption Commission (EACC) in prosecuting cases of corruption.

48. For this reason, the commitment of Government to strengthening corporate governance in KPLC by maintaining at least two independent directors in the Board will enhance the capacity of the Board to strengthen the controls environment including implementation of the ethics and integrity programs.

Funds Flow and Disbursement Arrangements

Banking Arrangements

49. IDA funds will be disbursed through four (04) segregated Designated Accounts (DAs) managed by National Treasury on behalf of MoEP, KPLC and REA. KPLC will have two DAs, one DA that will exclusively finance eligible expenditure under component C1, and the other will finance eligible expenditures under Components A, B and D (iv) and training under D (v). REA will have one DA to finance eligible expenditure under Component C2 and training under D (v). MoEP will have one DA to finance eligible expenditure under Component D (i), D (ii) and D (iii) and training under D (v).

50. KPLC, REA and MoEP will also be required to each open Transaction (project) Accounts denominated in Kenya shillings (KSh) in Central Bank of Kenya or commercial banks.

51. Funds will flow from the World Bank to the Designated Accounts and to the Transaction/Project Accounts using the government exchequer requests system where payments of the eligible project activities can be made. The Bank recommends that the Designated and Project Accounts be opened within one month after effectiveness and details of the USD account communicated to the Bank with the signatories.

52. The government is putting measures in place to ensure that funds flow delays experienced in the past are addressed. The measures include the use of Treasury Single Account and revamping of the external resources departments in the line ministries.

Funds Flow Arrangements

53. Funds flow arrangements for the project (through the bank accounts above) are as follows:

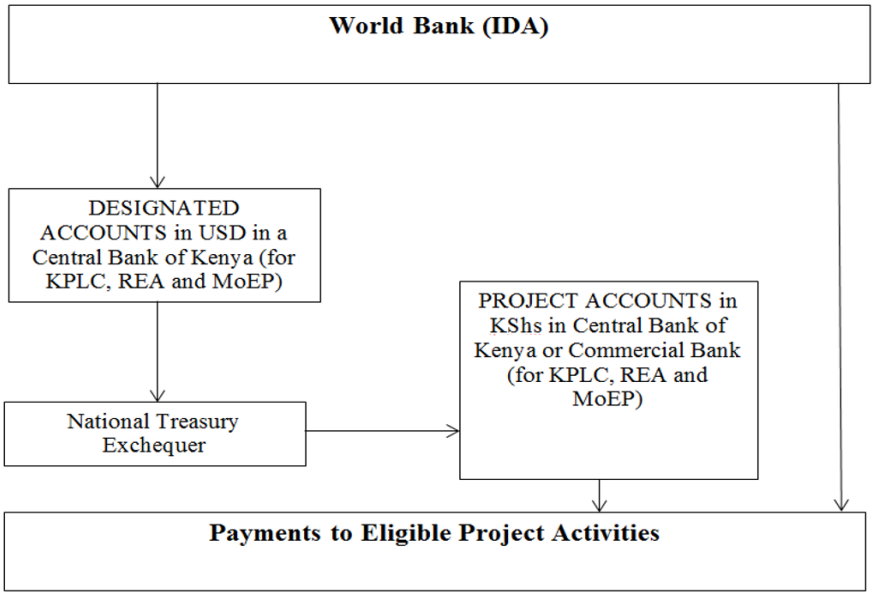
- KPLC and REA will prepare an initial six-month cash flow forecast based on agreed work plans and submit an electronic withdrawal application (WA) request to the Bank (IDA) through the National Treasury. MoEP will also prepare a six-month cash flow forecast, however since they will be using the transaction based method of disbursement through

the regular submission of Statements of Expenditures (SoE's), there will be a ceiling amount capped at US$500,000 to be paid into the DA at any point in time.

- IDA will process the withdrawal application and disburse funds to the Designated Accounts in US dollars. With regard to REA, funds will also flow into the DA from the SCF-SREP grant for funding of component C-2.
- National Treasury will transfer funds from the Designated Accounts into the Project Accounts in local currency.
- Project eligible expenditure can be paid from the Project Accounts.
- KPLC and REA will be submitting the quarterly unaudited Interim Financial Reports (IFR) for purposes of disbursement as supporting documentation to WA's submitted for replenishment to the DA's. MoEP will make use of SoE's as mentioned above.

Funds Flow Chart

54. The figure below shows the Funds Flow for each of the implementing entities.



IDA Disbursement Methods

55. The Project will adopt the report based method of documentation for KPLC and REA and transaction based on the SoEs for MoEP. IDA will make the initial disbursement to the project after receiving an electronic withdrawal application with a six months cash flow forecast. This withdrawal application should be prepared within one month after Project effectiveness. Thereafter, IDA will disburse into the respective Designated Account based on quarterly IFRs for KPLC and REA and SoEs for MoEP. For KPLC and REA, the IFR should provide actual expenditure for the preceding quarter (three months) and cash flow projections for the next two quarters (six months). KPLC and REA IFRs together with the Withdrawal Applications (WAs) will be reviewed by the Bank's Financial Management Specialist (FMS) and approved by the co-Task Team Leader (co-TTL) before the request for disbursement is processed by the Bank's Loan Department. For MoEP, the IFR should provide actual expenditure for the preceding quarter (three months) and this amount will be reflected in a SoE and a WA that will be processed by the Bank's

Loan department. The DA for MoEP will have a ceiling based on work plans or level of activity agreed with the client whereas the DAs for KPLC and REA will have no ceiling because it will be based on six months rolling cash flow forecasts. The Bank will process the electronic withdrawal application in Client Connection and deposit funds into the Designated Account. Funds will then be transferred from the Designated Accounts at National Treasury using the exchequer system into the project accounts and payments in relation to project eligible expenditures can be made from this account.

56. Other Methods: In addition, whenever needed the direct payment method of disbursement, involving direct payments to suppliers for works, goods and services upon the borrower's request, may also be used. Payments may also be made to a commercial bank for expenditures against pre-agreed special commitments. Reimbursements can also be made to the Designated Account where an implementing entity uses its own funds to finance eligible project activities. These payments will also be reported in quarterly IFRs. The IDA Disbursement Letter will stipulate the minimum application value for direct payment, reimbursements and special commitment procedures as well as detailed procedures to be complied with under these disbursement arrangements.

Financial Reporting Arrangements

57. KPLC, REA and MoEP will produce quarterly unaudited Interim Financial Reports (IFRs) for the designated account and the project account. KPLC has been producing satisfactory IFRs under the closed Energy Sector Recovery Project and KPLC and REA have been producing satisfactory IFRs under the ongoing Kenya Electricity Expansion Project (KEEP) and should have no difficulty developing the formats for this project. Since MoEP has been having challenges with report based IFRs due to turnover of accountants, they will use the SoE method of documentation. The IFRs are to be produced on a quarterly basis and submitted to the Bank within 45 days after the end of the calendar quarterly period. Two formats of IFRs were agreed at negotiations.

58. The KPLC and REA IFRs submitted to the Bank will have a section on Financial Reporting and Disbursement containing the following:

Reporting Section includes:

- Statement of Sources and Uses of Funds; and
- Statement of Uses of Funds by Project Activity/Component.

Disbursement Section includes:

- Designated Account (DA) Activity Statement;
- Bank Statements for both the Designated and Project Account;
- Summary Statement of DA Expenditures for Contracts subject to Prior Review; and
- Summary Statement of DA Expenditures not subject to Prior Review.

59. MoEP and REA will also prepare the Project's annual accounts/financial statements within three months after the end of the accounting year in accordance with accounting standards acceptable to the Bank. The audited financial statements and management letter should be

submitted to the Bank within six months after the end of the accounting year. In February 2014, the GoK established a Public Sector Accounting Standards Board, responsible for setting accounting standards to be observed in the public sector and has since promulgated International Public Sector Accounting Standards (IPSAS).

60. KPLC will prepare institutional financial statements with adequate disclosures on the projects in accordance with International Financial Reporting Standards.

External Auditing Arrangements

61. The Auditor General of the Kenya National Audit Office (KENAO) is primarily responsible for auditing all government projects. Usually, the audit for KPLC is subcontracted to a firm of private auditors, with the final report being issued by the Auditor General, based on the tests carried out by the subcontracted firm. In case the audit is subcontracted to a firm of private auditors, IDA funding may be used to pay the cost of the audit. The private external auditors have to be acceptable to the IDA. The audit will be done in accordance with the International Standards on Auditing or International Standards of Supreme Audit Institutions (ISSAI).

(i) For the Designated Account and related Project Account, an audit report must be submitted to IDA within six months after the end of each financial year. The audit reports for the project may be consolidated into the entity accounts provided there are adequate notes disclosing the sources and uses of IDA funds and reconciliation of the Designated Account.

(ii) KPLC and REA are currently implementing agencies of KEEP and do not have any overdue audit reports. Audit reports for FY2014 for KPLC and REA were submitted to the Bank within the submission deadline. The external auditor (KENAO) issued an unqualified (clean) audit opinion on both of them.

(iii) MoEP also has no overdue audit reports. The MoEP audit reports for ESRP Credit 3958 and KEEP Credit 4743 for fiscal year ended June 30, 2014 received qualified audit reports. The issue was resolved and KENAO has expressed their satisfaction. The audit report for MoEP ESRP Credit 4572 received an unqualified (clean) audit opinion.

(iv) The Bank has shared the audit terms of reference with KENAO and this should be adequate for the audit of all the implementing entities of this project. The Bank encourages the disclosure of the project audit reports to the public in the spirit of being transparent.

62. The audit reports and Management Letter will be required to be submitted within six months after the end of each fiscal/financial year.

Table 1: Audit Reports and Due Dates

Audit Report	Due Date
MoEP and REA Project Financial Statements i.e., KEMP Annual audited financial statements and Management Letter for the project (including reconciliation of the Designated Accounts with appropriate notes and disclosures) **KPLC** Institutional Financial Statements Annual audited financial statements and Management Letter for the project (including reconciliation of the Designated Accounts with appropriate notes and disclosures on World Bank Financing)	Within six months after the end of each fiscal/financial year.
Partial Credit Guarantee	Semi-annual interim unaudited financial statements and quarterly summary reports to be delivered within 30 days of the end of the period.

Governance and Accountability issues

63. MoEP, REA and KPLC: The Kenya constitution 2010 has devoted chapter 6 on 'Leadership and Integrity' and the public entities are guided by the clauses in this chapter. The PFM Act 2012 has also emphasized on this. In this regard, the ministries/agencies are reviewing their policies on Governance and Anti-corruption. Their integrity assessment officers that are not yet trained by the Ethics and Anti-corruption Commission of Kenya are supposed to undergo the training. KPLC also has anti-corruption policies.

Financial Management Action Plan

64. The following actions need to be taken in order to enhance the financial management arrangements for the Project:

Table 2: Action Items for Financial Management Arrangements

Action	Date due by	Responsible
Training of MEP accountants in the External Resources departments as well as the Internal Auditors	During Implementation	MoEP
Reconstitution of Board Audit Committee	Prior to disbursement under Component C2	REA

Conclusion of Financial Management Assessment

65. The conclusion of the assessment is that overall residual risk rating is moderate hence the Project will have on-field supervision once a year. The conditions outlined in the FM action plan have to be implemented for the financial management arrangements to meet the minimum Bank's requirements under OP/BP 10.00.

Procurement

66. **General:** Procurement for the proposed Project would be carried out in accordance with the World Bank's "Guidelines: Procurement under IBRD Loans and IDA Credits" dated January 2011 (revised July 2014); and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated January 2011 (revised July 2014), and the provisions stipulated in the Financing Agreement. The various items under different expenditure categories are described below. For each contract to be financed by the Credit, the different procurement methods or consultant selection methods, the need for pre-qualification, estimated costs, prior review requirements, and time-frame are agreed between the Borrower and the World Bank in the procurement plan. The procurement plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity. "Guidelines on Preventing and Combating Fraud and Corruption in project financed by IBRD Loans and IDA Grants" dated October 15, 2006 (the Anti-Corruption Guidelines).

67. **Use of National Procurement Procedures:** All contracts other than those to be procured on the basis of ICB and consulting services shall follow the procedures set out in the Public Procurement and Disposal Act of 2005 (PPDA). The PPDA governs purchase of works, goods and services using public resources by the central government entities, local authorities, state corporations, education institutions, and other GoK institutions. Under the PPDA, the Public Procurement Oversight Authority (PPOA) has been established, in addition to the Public Procurement Directorate in the National Treasury. The PPDA sets out the rules and procedures of public procurement and provides a mechanism for enforcement of the law. The new Constitution has devolved most of the key functions of the central government to forty seven (47) counties. In this respect, the government has issued the Public Procurement and Disposal (County Government) Regulations, 2013, but these counties have not established strong procurement capacity. The government is in the process of revising the law to include provisions on counties and minorities. Procurement function is decentralized to individual procuring entities. The Public Procurement Authority (PPOA) has oversight and regulatory function including undertaking procurement reviews and audits. There is a Public Procurement Complaints Review and Appeals Board (Appeal Board) under the secretariat of PPOA that deals with complaints received from bidders or consulting firms.

68. However, some provisions of PPDA are not fully consistent with the World Bank procurement guidelines and consultant guidelines, and therefore these may not be applied for the implementation of this Project without modification. These provisions and their respective modifications are:

(a) PPDA 55(2): instead, the tender submission date shall be set so as to allow a period of at least 30 days from the later of: (i) the date of advertisement, and (ii) the date of availability of the tender documents.

(b) PPDA 4(2)(c): instead, Recipient's government-owned enterprises shall be allowed to participate in the tendering only if they can establish that they are legally and financially autonomous, operate under commercial law and are an independent agency of the recipient's government.

(c) The Borrower shall use, or cause to be used, bidding documents and tender documents (containing, inter alia, draft contracts and conditions of contracts, including provisions on fraud and corruption, audit and publication of award) in form and substance satisfactory to the Association.

(d) PPDA 61(4): instead, extension of tender validity shall be allowed once only, and for not more than thirty (30) days, unless otherwise previously agreed in writing by the Association.

(e) PPDA 66(3)(b): instead, evaluation of tenders shall be based on quantifiable criteria expressed in monetary terms as defined in the tender documents. It shall not be based on a merit points system.

(f) PPDA 39: instead, no domestic preference shall be used in the evaluation of tenders. Therefore, as a result of the non-application of PPDA 66(3)(b) and 39, contracts shall be awarded to qualified tenders having submitted the lowest evaluated substantially responsive tender.

(g) PPDA 67: instead, notification of contract award shall constitute formation of the contract. No negotiation shall be carried out prior to contract award.

(h) PPDA 91: instead, shopping procedure will apply for each low value contracts, in lieu of Direct Procurement, except as otherwise previously agreed in writing by the Association.

(i) Regulations 47: instead, the two envelopes bid opening procedure shall not apply under NCB. The Bank's standard bidding documents for goods and works shall be used with appropriate modifications.

69. **Procurement of Works:** Works procured under this Project will include: Labor and Transport contracts by REA and Supply and Installation contracts under KPLC. Procurement will be done using the Bank's Standard Bidding Documents (SBD) for all International Competitive Bidding (ICB) and NCB contracts.

70. **Procurement of Goods:** Goods procured under this Project will include: line isolators / disconnectors; advance meters, advance data management system and metering control centers; conductors; cables, distribution transformers; customer meters; surge diverters, circuit breakers, isolators, air break switches and insulators; wooden poles etc.

71. Framework agreements may be used to implement some actions such as: (a) goods that can be procured off-the-shelf or are common use with standard specifications; (b) non-consulting services that are of a simple and non-complex nature and may be required from time to time by the same agency(ies) of the Borrower; or (c) small value contracts for works under emergency operations. Such arrangements should not restrict foreign competition and should be restricted to a maximum duration of three years. The nature and budget for such goods, including the

circumstances and justification for its use; the particular approach and model to be adopted; the procedures for selection and award; and the terms and conditions of contracts will be defined and agreed between the Borrower and IDA prior to their inclusion in the updated annual procurement plan.

72. Procurement under Public Private Partnership (PPP) Arrangements. A concessionaire or entrepreneur under a BOO/BOT/BOOT or similar type of contract shall be selected by the Borrower under open competitive bidding procedures determined acceptable by the Bank pursuant to para 3.14(a) of the Guidelines. The types of expenditures to be incurred by the said concessionaire or entrepreneur towards which Bank financing will apply include materials and equipment like power generating equipment; power station switchgear and metering equipment.

73. **Procurement of Non-Consulting Services:** Contracts under non-consulting services include, inter alia, geographic mapping of current conditions in terms of existing networks and location of households. In the event that activities such as workshop venues, transport or IT services are identified, the type and budget for such services will be defined and agreed between the Borrower and IDA prior to their inclusion in the updated annual procurement plan.

74. **Selection of Consultants:** Consulting services to be procured under the Project include: hiring of firms to carry out studies, assessments, designs, supervision of works and related activities. They include but are not limited to design and definition of implementation arrangements of the National Electrification Strategy, geographic mapping, design of electrification schemes, incorporation of live-line maintenance practice, etc. Hiring of individual consultants may include inter alia, Senior Procurement Specialist, Supervision Coordinator, Regional Field Supervision Engineers, etc.

75. The GoK-owned universities and research institutions in the Borrower's country that are uniquely qualified on specialized tasks may participate with prior agreement between the Borrower and the Bank at project preparation and disclosed in the project documents or participate as sub-consultants in competitive selections in association with private consultants. Contracts to be procured under these arrangements include monitoring and evaluation (M&E), public private partnerships, etc. The budget for such services will be defined and agreed between the Borrower and IDA prior to their inclusion in the updated annual procurement plan.

76. **Operating Costs:** These items will be procured using the Borrower national procurement and administrative procedures acceptable to the Bank. The Borrower will also pay for costs associated with any resettlement, land acquisition, compensation and relocation of services.

Assessment of the Agency's Capacity to Implement Procurement

77. A procurement capacity and risk assessment was carried out by the Bank on November 13 – 17, 2014 for the three implementing agencies i.e., (i) MoEP, (ii) KPLC, and (iii) REA, to review the organizational structure for implementing the project and the interaction between the project's staff responsible for procurement duties and management of the ministry as well as the KPLC and REA. The key issues and risks concerning procurement for implementation of the project which include systemic weaknesses in the areas of: (i) accountability of procurement decisions; (ii)

procurement record keeping; (iii) capacity of procurement staff; (iv) procurement planning; (v) procurement process administration, up to and including award of contracts; (vi) contract management; and (vii) procurement oversight were assessed.

The Ministry of Energy and Petroleum

78. MoEP will be responsible for overall coordination and oversight of the Project, including, (i) definition of areas to be electrified based on technical and policy development priorities; (ii) consolidating information from implementing agencies; (iii) monitoring the implementation of the Project; and (iv) evaluating the Project. The Ministry has assigned the Head of Procurement (who is also the Deputy Director of Supply Chain Management) to be responsible for procurement activities under KEMP. He possesses the necessary academic credentials with 21 years in procurement out of a total 34 years of professional work experience and will be assisted by 11 professional procurement staff that he manages. The head has some exposure on World Bank procurement procedures and it is suggested that he attends basic procurement training on Bank Procurement Guidelines in Nairobi or Regional Institutes like ESAMI to help him better manage KEMP. The ministry has adequate experience in implementing Bank supported projects and should be able to coordinate and manage procurement activities that concern the ministry under KEMP. Considering the limited experience of MoEP in international procurement using Bank Procurement Guidelines (lack of technical expertise pertinent to undertake procurement in Bank-supported projects, the overall risk assessment of the Ministry is **Substantial.**

The Kenya Power and Lighting Company Limited

79. Much of the procurement activities under the Project will be carried out by KPLC. KPLC has a well-established Procurement Unit (PIU) which is successfully implementing the current Kenya Electricity Expansion Project. KPLC Procurement has adequate qualified procurement staff to run KEEP and may also provide support to the KEMP as appropriate. However since additional procurement activities are anticipated to be carried out under the Electrification Program of KEMP, apart from other professionals in different disciplines, the appointment of one additional qualified procurement officer well versed on World Bank Guidelines under KEMP is necessary. The overall procurement risk assessment to manage the funds under KEMP is therefore, **Moderate.**

The Rural Electrification Authority

80. REA which is an agency of government under the MoEP will implement Component C2 of KEMP and will be supported by a Technical Advisor (Consultant firm) for its implementation. The procurement function in REA is managed by a Supplies Manager assisted by a Senior Procurement Officer, a Procurement Officer and two assistant Procurement Officers. Currently, the PIU has one Procurement Officer. The additional procurement activities under KEMP warrant the need for one additional procurement officer in the PIU. The assessment revealed that training procurement staff of REA including the additional staff on procurement of Goods, Works and Selection of Consultants will be essential. Considering the insufficient capacity of REA's PIU the overall risk assessment is **Substantial.**

81. The three implementing entities are expected to benefit from the professional support of the technical specialists within their technical departments in carrying out their procurement functions independently. The accumulated procurement experience in all the three implementing agencies in implementing Bank support projects combined with support from the Kenya Bank Country Office will put KEMP in a better position to achieve its objectives.

Overall Procurement Risk Assessment and Mitigating Measures:

82. The assessment concluded that the overall procurement risk of KEMP is **Substantial.** The proposed risk mitigating measures are summarized below:

Table 3: Overall Procurement Risk and Mitigation Measures

Risk	Action	Time frame	Responsibility
Insufficient procurement capacity in KPLC Electrification PIU (Component 2) and REA PIU	Assign/Recruit at least one qualified Procurement Specialist (Individual Consultant) in each PIU.	Prior to project effectiveness	Borrower
Insufficient experience in the application of Bank Procurement Guidelines.	(a) Conduct induction procurement training for the new procurement staff on Bank procurement procedures;	Induction training by Effectiveness; and	Bank
	(b) Develop and implement formal training program on Bank procurement procedures to procurement staff with no prior training on same.	Formal training by regional training institutes.	Borrower
	(c) Align the preparation processes of procurement plans, work plans and budget estimates.	Continuous through the life of the Project.	Borrower
	(d) Establish separate effective tracking systems of (i) procurement plan implementation and (ii) processing of payments to contractors and suppliers.	Continuous through the life of the Project	Borrower
National procurement procedures are not fully consistent with Bank procedures.	Financing Agreement includes the exception provisions.	Continuous through the life of the Project.	IDA/Borrower

Procurement Plan

83. A consolidated draft Procurement Plan for the first 18 has been prepared and detailed below: Domestic Preference for ICB shall be applicable in accordance with Para. 2.55 of the applicable Guidelines.

Prior Review Thresholds

84. Prior review and procurement method thresholds for the Project are indicated in the table below.

Goods, Works and Non Consultancy Services

No.	Procurement Method	Threshold (US$)	Prior/ Post/ Review of all contracts	Comments
1.	ICB Goods Works	 ≥ 3,000,000 ≥ 15,000,000	 Prior Prior	
2.	LIB (Goods)	≥ 3,000,000		
3.	NCB Goods Works	 < 3,000,000 <15,000,000	 Prior Review Prior Review	 Above US$1.0 million Above US$10 million Prior Review
4.	Shopping Goods Works	 < 100,000 < 200,000	 Post Review Post Review	
5.	Direct Contracting	≥100	Prior Review	Below US$0.1 million Post Review

Selection of Consultant Services

No.	Selection Method	Prior Review Threshold (US$)	Comments
1.	Competitive Methods (Firms) (QCBS,QBS, FBS, LCS)	≥ 500,000	
2.	Single Source (Firms)	≥ 100,000	
3.	Individual Consultant Selection (ICS)	≥ 200,000	
4.	Consultant Qualification Selection	<300,000	The threshold for CQS is US$300,000 as per the Guidelines.
5.	Single Source (ICS)	≥ 100,000	

Frequency of Procurement Supervision

85. In addition to the prior review supervision to be carried out from World Bank offices, there will be annual supervision missions to carry out post review of procurement actions.

Details of the Procurement Arrangements Involving International Competition

Goods, Works and Non-Consulting Services:

(a) List of goods and works contract packages to be procured following ICB in the first 18 months:

List of Contract Packages to be Procured Following ICB and Direct Contracting

Ref No.	Contract (Description)	Financier	Cost Estimate US$ Million	Procurement method	P-Q	Domestic Preference *(yes/no)*	Review by Bank (prior/post)	Expected Bid-Opening Date
1.	Remote Terminal Units (RTUs) and associated communication equipment (KPLC)	IDA	10	ICB	No	No	Prior	August 2015
2.	Line isolators / disconnectors (KPLC)	IDA	20	ICB	No	No	Prior	August 2015
3.	Equipment and tools for live-line maintenance (KPLC)	IDA	20	ICB	No	No	Prior	December 2015
4.	Advance meters, advance data management system and metering control centers (KPLC)	IDA	38	ICB	No	No	Prior	December 2015
5.	Conductor Cables (C1) MV 500 km, LV 13,000 km and service lines 2,000 km (KPLC)	IDA	20	ICB	No	Yes	Prior	August 2015
6.	Conductor Cables (C1) MV 500 km, LV 12,000 km and service lines 1,750 km (KPLC)	IDA	20	ICB	No	Yes	Prior	May 2016
7.	Distribution transformers-1,000 (KPLC)	IDA	2	ICB	No	No	Prior	August 2015
8.	Poles - 80,000 (KPLC)	IDA	10	ICB	No	Yes	Prior	August 2015
9.	Poles - 80,000 (KPLC)	IDA	10	ICB	No	Yes	Prior	May 2016
10.	Poles – 80,000 (KPLC)	IDA	10	ICB	No	Yes	Prior	May 2017
11.	Customer prepaid meters : C1– 20,000 (KPLC)	IDA	5	ICB	No	No	Prior	January 2016
12.	Pre-paid meter Accessories: C1 (KPLC)	IDA	2.0	ICB	No	No	Prior	January 2016
13.	Works, supply and installation contracts for peri urban electrification Nairobi: (KPLC)	IDA	15	ICB	No	Yes	Prior	October 2015

Ref No.	Contract (Description)	Financier	Cost Estimate US$ Million	Procurement method	P-Q	Domestic Preference *(yes/no)*	Review by Bank (prior/post)	Expected Bid-Opening Date
14.	Works, supply and installation contracts for new connections Coast:C1 (KPLC)_	IDA	10	ICB	No	Yes	Prior	December 2015
15.	Works, supply and installation contracts for new connections Western:C1 (KPLC)	IDA	14	ICB	No	Yes	Prior	February 2016
16.	Works, supply and installation contracts for new connections Central Rift: C1 (KPLC)	IDA	10	ICB	No	Yes	Prior	March 2016
17.	Works, supply and installation contracts for new connections North Rift: C1 (KPLC)	IDA	11	ICB	No	Yes	Prior	November 2015
18.	Works, supply and installation contracts for new connections Mt Kenya: C1 (KPLC)	IDA	12	ICB	No	Yes	Prior	January 2016
19.	Construction Works (REA)	IDA	0.20	NCB	No	Yes	Post	February 2016
20.	Transformers (REA)	IDA	0.12	NCB	No	No	Post	February 2016
21.	Surge Diverters, Circuit breakers, Isolators, Air break switches & Insulators (REA)	IDA	0.07	NCB	No	No	Post	February 2016
22.	Wooden Poles (REA)	IDA	0.27	NCB	No	No	Post	February 2016
23.	Conductors, Cables, Stay Wires, & Binding Wires (REA)	IDA	0.33	NCB	No	No	Post	February 2016
24.	Steel Cross Arms, Channels, Tie Straps, Bolts& Nuts and Overhead line fittings (REA)	IDA	0.13	NCB	No	No	Post	February 2016

List of Consulting Assignments with Short-List of International Firms

Ref. No.	Description of Assignment	Financier	Cost estimate US$ Million	Selection Method	Review by Bank (Prior I Post)	Expected Proposals Submission Date
1.	Transaction Adviser for REA	IDA	0.60	QCBS	Prior	July 2015
2.	Design and definition of implementation arrangements of the National Electrification Strategy (MoEP)	IDA	0.35	QCBS	Post	August 2015

3.	Preparation of standard construction units for distribution networks in urban, per-urban and rural areas countrywide (MoEP)	IDA	0.6	QCBS	Prior	August 2015
4.	Monitoring of environmental and social safeguards instruments (ESMFs, ESMP, RPF & VMGF)	IDA	0.1	QCBS	Post	August 2016
5.	Support KPLC in the detailed design and implementation of the Revenue Protection Program (preparation of bidding documents, bid evaluation, supervision of implementation) (KPLC)	IDA	2.0	QCBS	Prior	March 2015

List of Consulting Assignments with Individuals

Ref. No.	Description of Assignment	Financier	Cost estimate US$ million	Selection Method	Review by Bank (Prior I Post)	Expected Proposals Submission Date
1.	Project Coordinator (MoEP)	IDA	0.30	ICS	Prior	April 2015
2.	Preparation of action plans for: (i)standardization of distribution networks in all areas (rural, peri-urban urban); (ii) geographic mapping of current condition in terms of existing networks and location of households still to be electrified (MoEP)	IDA	0.05	ICS	Post	February 2015
3.	Assistance to ERC in the definition and implementation of processes for real time monitoring of quality in electricity supply and customer service by KPLC and enforcement of standards and related penalties (MoEP)	IDA	0.10	ICS	Post	June 2015
4.	Assessment of processes currently carried out by KPLC for commercial functions (KPLC)	IDA	0.10	ICS	Post	July 2015
5.	Assessment of processes currently carried out by KPLC for attention of customers' complaints due to quality in electricity supply MoEP	IDA	0.10	ICS	Post	September 2015
6.	Senior Procurement Specialist (KPLC)	IDA	0.50	ICS/SSS	Prior	March 2015
7.	Supervision Coordinator (KPLC)	IDA	0.30	ICS	Prior	December 2015
8.	Regional field supervision engineers (KPLC) x 6	IDA	0.2 x 6	ICS	Prior	January 2016

Safeguards Approach

86. The Project is proposed as category B (Partial Assessment). Resettlement and compensation is of a limited nature. Safeguard policies 4.01 (Environmental Assessment), 4.04 (Natural Habitats), 4.11 (Physical Cultural Resources), 4.12 (Involuntary Resettlement) and 4.10 (Indigenous People) will be triggered.

87. There are no significant and/or irreversible adverse environmental issues anticipated from the investment sub-components to be financed under the Project, as these will all be located in peri-urban areas and in a limited number of villages in rural areas. Potential negative impacts are expected to be small-scale and site-specific and appropriate mitigation measures will be included to address these impacts.

88. ESMFs have been prepared for Components C1 and C2. The ESMFs contain an environmental social screening process, and includes environmental guidelines for contractors. If it is determined through the screening process that any sub-projects would require a full environmental assessment, NEMA approval will be sought before commencement of detailed design to ensure that good practices are included in the technical design. The ESMFs will serve as the environmental safeguards document in cases where a full environmental assessment is not deemed necessary based on the findings of the screening. The ESMFs also requires that all construction materials (in particular wooden poles treated with creosote) are sourced from firms that have undergone a satisfactory environmental impact assessment/audit and have received NEMA approval.

89. Consultations with local stakeholders have been undertaken during the preparation of the environmental documents, and minutes of stakeholder meetings, including measures proposed to address grievances, are included as an Annex to the ESMFs.

90. Given the urban and peri-urban locations of the majority of the sub-projects in Component C1, impact on natural habitats is expected to be minimal. Although there may be a need for replacement of trees that may be removed along Rights of Ways (roads to settlements) no natural forest will be affected. The mini-grid infrastructure in sub-component C2 will have low to moderate negative impacts on the environment, depending on locations and the nature of the investments. These impacts would result from the installation of solar panels (requiring a plan for disposal of batteries), and small wind turbines (which may have an impact on avifauna). A screening process will be followed to ensure that potential negative impacts can be appropriately mitigated, and that sub-projects are not located in critical natural habitats including National Parks and Protected Areas. The impacts and relevant mitigation measures are described in the Environmental and Social Management Framework (ESMF) for component C2 that has been prepared by KPLC (under a service agreement with REA), and that has been disclosed.

91. Nevertheless, to ensure that appropriate measures are taken to protect biodiversity, OP 4.04 (Natural Habitats) is also triggered, to ensure that appropriate mitigation measures are included in EMP and ESMFs. OP 4.11 (Physical Cultural Resources) is triggered as a precaution, although the sub-projects are not expected to traverse areas of cultural or historical importance. Chance find procedures will be included in contracts and EMPs and ESMFs.

92. **Borrower capacity in implementing safeguards**. A review was undertaken of EIAs prepared by KPLC for sub-stations and an underground distribution cable financed under the Kenya Energy Sector Recovery Project, i.e., of electricity infrastructure of similar nature to those planned under the proposed Project. These EIAs were prepared as per Kenyan environmental regulations and the Environmental Framework documentation of the Bank that is used as a guideline in assessing environmental compliance and screening of sub-projects. The EIAs were generally of good quality. KPLC will need to ensure, as a standard practice, that timely and informed consultation with stakeholders are undertaken early in the project preparation process, and adequately documented. Any grievances from stakeholders should be recorded and responded to in a timely manner.

93. Based on experience to date, KPLC's environment unit (Safety, Health and Environmental unit) and REA PIU have sufficient capacity to mitigate potential adverse environmental and social impacts. The PIUs in KPLC and REA will have both environmental and social specialists. Their capacity to implement World Bank safeguard policies will be closely monitored, and any measures deemed necessary to strengthen this capacity will be implemented.

Annex 4: Implementation Support Plan

KENYA: Electricity Modernization Project

1. **Strategy and Approach for Implementation Support.** The strategy for implementation support has been developed on the basis of the nature of the Project and responds to complexities of the Project given the new approaches proposed for implementation. The objective is to ensure that the World Bank's resources and staff are sufficient to supervise and support implementation.

Implementation Support Plan

2. First phase: Technical implementation support will focus on ensuring timely establishment of the Electrification PIU at KPLC, and appropriate technical design of the Project components carried out. Additionally, the Bank support under this phase will focus on the procurement process for concluding the tendering of the major infrastructure packages. In this regard, Terms of Reference for the implementation unit positions at KPLC will be prepared by the client and will be reviewed by the Bank to ensure that tasks are appropriately defined and qualifications and experience are adequate to perform the key functions required for Project implementation. The Bank team will include HQ and country office-based staff and consultants. Specialized expertise will be mobilized as required.

3. Second phase: After the tendering process is finalized in the first phase, Bank team support will focus on monitoring the construction process, contracts management, disbursements, and effectiveness of capacity building and technical assistance activities. The Bank team will include HQ and country office-based staff and consultants, complemented with specialized expertise as required.

Main Areas of Supervision

4. Technical assistance and preparation of the National Electrification Strategy (NES). World Bank specialists will regularly participate in implementation support missions to assist the monitoring and progress of in the preparation of the NES as well as provide guidance as per government request.

Procurement and Technical Aspects

5. World Bank procurement specialists will regularly participate in implementation support missions to assist in monitoring procurement procedures and plans. The procurement plan will indicate those contracts which are subject to prior review. A set of procurement packages to be implemented during the first 18 months has been identified and included in the procurement plan. All other contracts will be subject to post-review. The Bank team will include a Bank staff engineer, complemented with specialized expertise, in depending on each component, in order to review technical specifications and proposals. During the second phase, it is expected to do field supervision of the construction sites. During the regular implementation support missions, the procurement plans will be updated at least once each year (or more often as required to reflect the

actual project implementation needs) and post-procurement reviews will be carried out at a minimum once annually. Procurement supervision will be conducted once a year.

Financial Management Aspects

6. Financial management supervision will start by assessing the progress of staffing the PIUs and reviewing the plan in place in order to execute disbursements following financial management guidance. This supervision will take place before contracts are awarded in case improvement measures need to take place before disbursement. Financial management supervision will also review quarterly progress and financial audits. In terms of resources, a country-office-based staff for eight weeks is expected to be required. FM supervision will be conducted once every year.

7. **Audit.** Internal control functions will be strengthened under the Project as detailed in Annex 3. The Bank team will closely monitor financial management activities to identify in advance potential delays in the preparation of the financial and audit reports and undertake corrective measures. Project financial statements will be audited by an external auditor hired under the project under terms of reference acceptable to the Bank and with the approval of the Kenyan regulations.

Environmental and Social Aspects

8. Environmental safeguards support will include visits to Project areas and the monitoring of mitigation measures. During construction, monitoring is necessary to ensure compliance with environmental and social safeguards related to the infrastructure projects. It is expected that implementation support missions will require three weeks per year. In terms of resources, environmental and social specialists are expected to support the Project for eight weeks each.

IDA Guarantee

9. The Bank team will closely monitor the evaluation of the refinancing proposals from the commercial banks and the outcome of negotiations between KPLC and the selected commercial bank(s). Subsequently the Bank team will support preparation of the Guarantee and Indemnity Agreements.

Overall Support Implementation Needs

10. The Bank team should be composed of a mix of skills and experience for successful project implementation. The table below outlines the expected staff weeks and travel required to make sure the actions and schedule are appropriately resourced.

Table 1: Expected Staff Weeks and Travel

Time	Focus	Skills Needed	Resource estimate (US$000)	Partner Role
First phase (approx. 18 months)	Establishment of the project implementation unit for component C1 at KPLC and strengthening the REA PIU team. Preparation of procurement documents. Preparation ESIA and RAPs (if required). Refinancing of KPLC existing commercial debt.	Engineering; procurement; financial management; environmental; and social and legal.	250	Close cooperation of KPLC and REA.
Second phase (approx. 18-80 months)	Review of progress in construction and capacity building; review of sector technical and financial performance; procurement; monitoring and evaluation; safeguards; financial management.	Engineering; sector regulatory and planning; M&E specialist; financial analyst; economist; environmental and social.	300	Close cooperation of KPLC and REA

Table 2: Expected Staff Weeks and Travel

Skills Needed	Number of Staff Weeks per year	Number of Trips per year
Co-Team Leader	8	0 - Field staff
Co-Team Leader (Guarantee)	8	3
Distribution engineer	6	2
Procurement specialist	6	0 - Field staff
Specialized technical experts	4	As required
Financial analyst	2	1
Legal	3	1 (initially)
Administrative support	3	0 – Field staff
Financial management specialist	5	0 – Field staff
Environmental specialist	4	2
Social specialist	3	2 – Field staff
Monitoring and evaluation expert	3	2

Annex 5: Kenya Power Sector

KENYA: Electricity Modernization Project

1. The Government of Kenya has made substantive progress in implementing the reform agenda in the energy sector. The objectives of the comprehensive reforms which commenced in 1997 were: (i) separation of commercial functions from policy setting, regulatory and coordinating functions; (ii) implementation of power projects on the basis of improved least cost investment planning; (iii) creating more competitive market conditions in electricity generation; and (iv) restructuring power companies and requiring them to operate on a commercial basis supported by a system of performance contracts and with transparent financial relationships. In 2004, the government formulated the National Energy Policy, Sessional Paper No. 4, 2004, that defines the vision for the sector and which has resulted in far-reaching energy sector institutional restructuring, legislation, and regulation. The government is in the process of preparing a new national energy policy and energy law, which when finalized will shape the next generation of sector reforms. Some of the reforms implemented are enumerated in Table 1 below.

Table 1: Status of Implementation of Reforms

Reform and objective	Status in 2014
Cost reflective tariffs for financial viability of the electricity sector and raise capital for system expansion.	Electricity retail tariffs were structured according to long run marginal cost (LRMC). Adjustment of electricity tariffs to the equivalent of 75 percent of LRMC was achieved in October 1996 and further increases in 1999 and 2008 made the tariffs largely cost-reflective as at 2011/12.
Enactment of the Electric Power Act, 1997 to facilitate private sector participation in generation function, remove GOK regulatory role, provide prudential regulation and enhance stakeholder interests. Enactment of the Energy Act, 2006	The Electric Power Act, 1997 was enacted and became operational in January 1998, thereby repealing the previous laws, the Electric Power Act and Electric Supply Lines Act. Also in 1997 the Electricity Regulatory Board (ERB) was established to perform sub-sector regulation functions hitherto performed by MoEP. The Energy Act was promulgated in 2006 and replaced the Electric Power Act, 1996. It provided for the establishment of a single regulator for the energy sector, including petroleum. The Energy Regulatory Commission (ERC) and the Energy Tribunal to hear appeals arising from the decisions of the Commission were set up.
Unbundling of generation function from transmission and distribution functions	Generation was unbundled from transmission and distribution. The generation assets owned by different public bodies (TRDC, TARDA, GOK, and KPLC) were consolidated and transferred to KPC (now KenGen) and TRDC was wound up. The transmission assets owned by GOK and KPC were transferred to KPLC. KenGen was given the mandate of power generation while KPLC was given the mandate for transmission and distribution, including rural electrification.
Private Sector participation in power generation	Kenya procured the first two IPPs in 1996 under a seven year PPA. Currently, there are 7 IPPs in operation providing a total of 563MW to the grid. KPLC has signed PPAs with other IPPs who are at various stages of developing power plants with a combined capacity of about 800MW expected to be commissioned between 2014-2018.

Reform and objective	Status in 2014
KPLC and KenGen commercial relation to be on market standard PPA	KPLC and KenGen entered into an interim PPA on 1st August 1999, and on market standard PPAs on July 2008, to a large extent, with similar terms as the IPPs.
Introduction of performance contracts for KPLC, KenGen and other sector entities	The government introduced performance contracting for state corporations (Performance Contracting) Regulations, 2004. This sets out annual performance targets for each state corporation.
Engagement of a management contractor for KPLC	As part of a GoK's Energy Sector Recovery Project (ESRP), KPLC was put on a Management Services Contract (MSC) for 2 years from 1st July 2006 to 30th June 2008. The goal of the MSC was to affect a comprehensive corporate recovery program aimed at improving operational efficiency, reducing system losses, reducing power outages, increasing electricity access through accelerated new connections, reducing voltage fluctuations, reducing time to restore service to customers after outages, and improving revenue collection.
Privatization of KenGen over time starting with an initial public offering (IPO) of 30 percent of its equity.	The IPO for 30 percent of KenGen stock took place on May 17, 2006 and attracted more than 270,000 shareholders.
Establishment of a State owned Geothermal Development Company (GDC)	The Geothermal Development Company (GDC) was established in 2008 to be in charge of geothermal resource assessments and sale of steam to future IPPs and KenGen for electricity generation.
Creation of a Rural Electrification Authority to accelerate the pace of rural electrification in the country.	The Rural Electrification Authority (REA) was established in 2007 and a rural electrification master-plan (REMP) was finalized in 2009.
Unbundling transmission function from distribution function.	The transmission company KETRACO was established in 2008. It will be responsible for new transmission assets. The existing transmission assets remained with KPLC.
Promoting privately or community owned vertically integrated entities either operating renewable energy power plants or hybrid systems, to coexist with licensed electricity distributors.	The most significant measure to promote private or community supply companies has been the Feed In Tariffs Policy on geothermal, solar, wind, biomass and small hydro of April 2010.

Table 2: Electricity Sector Key Performance Data for 2012-13 and 2013-14

Indicator	2012/13	2013/14
Installed capacity (MW)	1,765	1,885
Peak demand (MW)	1,350	1,463
Increase in number of electricity customers	2.3 million	2.7 million
Household electricity access	30%	35%
Number of new connected annually	292,337	436,000
Days Receivable for Customer Debt	38.2 days	35.7 days
Revenue Collection as % of Billing	97%	98%
Losses	18.6%	18.1%
Number of Low Voltage Breakdowns per 1,000 customers per month	7.54	9.6
Average Time to Connect New LV Customers After Payment (Days)	71	42

Power Supply and Demand Balance

2. Kenya's installed generation capacity as at December 31, 2014 was 2,147 MW and the maximum peak demand was 1,512 MW (excluding suppressed demand that is estimated at about 100 MW). There is occasional power rationing in West Kenya due to transmission line constraints. In September 2013 the government announced a plan to develop about 5,000 MW additional capacity by 2018. However, so far, the procurement process of some large projects in the plan (1,920 MW coal, 800 MW LNG and 1,000 MW geothermal) have suffered delays and cannot be completed by 2018. Currently, projects with a combined capacity 1,500 MW are either under construction or at various stages of development.

3. A vigorous electrification program implemented in the last five years has seen household electricity access increase from 23 percent in July 2009 to approximately 35 percent in June 2014. In FY14 alone, KPLC made 436,000 new connections and REA connected 12,500 public facilities (mostly primary schools). The Government's objective is to increase the electrification access rate to 70 percent by 2018.

System Expansion Investment Plan

4. According to the government's Least Cost Power Development Plan (LCPDP) about US$11.345 billion is required to be invested in the generation, transmission and distribution network between 2014- 2018 in order to secure adequacy of generation capacity and improve reliability of supply as shown in the following tables:

Table 3: Generation Expansion 2014- 2018 (US$ million)

	KenGen	IPPs	KenGen/IPPs	TOTAL
Geothermal	1,887.8	945.6	983.0	3,816.4
Wind	49.9	760.0	-	809.9
Co- Generation	-	34.7	-	34.7
Thermal	-	935.6	-	935.6
LNG	-	820.0	-	820.0
Coal			1,332.9	1,332.9
TOTAL	**1,937.8**	**3,495.9**	**2,315.9**	**7,749.7**

Source: Power Sector Medium Term Plan (moderate growth scenario project expansion costs) by LCPDP Committee

Table 4: Transmission Expansion 2014-2018 (US$ million)

	2014	2015	2016	2017	2018	Yearly Average
Expenditure for Transmission	450.01	452.9	601	778.95	479.19	552.41
Fixed O&M	11.25	11.32	15.026	19.48	11.98	13.81
Total	**461.26**	**464.2**	**616.02**	**798.43**	**491.17**	**566.22**

Source: Power Sector Medium Term Plan (moderate growth scenario project expansion costs); LCPDP Committee

Table 5: Distribution Expansion 2014-2018 (US$ million)

	2014	2015	2016	2017	2018	Yearly Average
Expenditure for Distribution	63	179	199	195	103	148
O&M	2.21	6.27	6.97	6.83	3.61	5.18
Total	**65.21**	**185.27**	**205.97**	**201.83**	**106.61**	**153.18**

Source: Power Sector Medium Term Plan (moderate growth scenario project expansion costs; LCPDP Committee

Planned Reforms in 2014 Energy Policy and Bill

5. The government has prepared a new national Energy Policy and Energy Bill which when approved by parliament, will shape the next generation of sector reforms. In 2010, Kenya promulgated a new Constitution which became operational in 2013. The Constitution of Kenya, 2010 significantly altered the governance structure of the country by introducing a devolved system of government (i.e., the National and the County Governments). The Constitution has apportioned functions and powers between the two levels of government and enhanced participation by the citizens in decision making processes.

6. The 2014 draft Energy Policy and Energy Bill seek to align the policy and regulatory framework of the sector with the 2010 Constitution. In particular, the Energy Bill recognizes citizens' entitlement to modern forms of energy and creates an obligation on the part of the national government and county governments to provide affordable energy services to all areas. The Energy Bill introduces more transparency in awarding concessions and licenses for exploitation of natural energy resources and establishing a committee to advise the national government on the licensing, which has to follow an open competitive process. Other key provisions of the 2014 draft Energy Policy and Bill include: (i) sharing of roles of electricity planning, development, services and regulation between the national government and county governments; (ii) provision of open access over transmission and distribution networks to eligible parties; and (iii) requirement for a periodic review of the electricity market with a view to enhancing competition.

Annex 6: Economic and Financial Analysis

KENYA: Electricity Modernization Project

ECONOMIC ANALYSIS

1. **Project development impact.** The primary beneficiaries of the Project will be current and new electricity customers in the areas covered by the Project who will gain access to electricity and/or enjoy more reliable electricity services. Lack of electricity access at household level exacerbates poverty conditions and is a major cause of exclusion and inequality within the country. Without electricity, children cannot study at night; home-based businesses – which are a main source of livelihoods especially among the poor – cannot grow; nearly 70 percent of Kenya's population is forced to rely on polluting and expensive energy alternatives for meeting their basic household needs. The uneven coverage of electricity services also exacerbates disparities in terms of socio-economic status and growth opportunities among the country's regions and between urban and rural areas.

2. Investments under component C will raise access to electricity in high density areas close to the existing electricity networks operated by KPLC as well as by supporting the spread of off- and mini-grid approaches in remote rural areas. Investments under component A promise to significantly improve service reliability levels and reduce un-served demand to the benefit of existing customers. In addition, the revenue protection program (RPP) envisaged under component B will enable a significant reduction in non-technical losses.

3. **Rationale for Public Financing**. A substantial stake of KPLC (49.9 percent) is owned by private shareholders. The Company operates on a commercial basis; it has entered an annual performance contract with the Government – which includes targets on new connections – and a market-standard PPA with KenGen with terms very similar to those applying to PPAs with IPPs. Despite this clear market-orientation, which has inspired power sector reforms in the last two decades, the Government has become very much aware of affordability issues that prevent prospective customers from connecting to electricity services. The connection fee is unnaffordable for most of the unconnected population. Nonetheless, the fee is insufficient to cover the connection costs that have been hitherto borne by KPLC imposing an unsustainable burden on the Company's finances. Expanding electricity access is recognized as a key social goal and a main element in attaining the *Vision 2030*. Accordingly, the Government has set a target of 70 percent of household access by 2016 and universal access by 2020. Under these circumstances, the electrification program is best financed through public investment and customer contributions.

4. **World Bank's added value.** The World Bank can bring significant added value to this Project in light of its vast experience in supporting electricity access scale up through diversified, sector-wide approaches and private sector participation in the power sector in Africa as well as other development regions. The Bank has been at the forefront in supporting Kenya's efforts to reform its power sector and establish efficient commercial operations; thus, it is uniquely positioned to provide technical assistance on institutional, organization and regulatory aspects. The Bank's energy portfolio in Kenya, including recently closed and ongoing operations, spans all energy sub-sectors, from generation, to transmission and distribution, to regional power trade. Risk mitigation by the WBG has been instrumental in attracting some of the major IPPs and mobilizing

private investment in the power sector. The proposed Project is well aligned with this vast and diversified portfolio and complements well some of the ongoing operations, notably the KEEP and the Kenya Private Sector Support Program jointly supported by IDA, IFC and MIGA.

Methodology and assumptions

5. The economic viability of the Project is assessed based on a traditional cost-benefit analysis. The analysis is restricted to the Project activities that generate benefits for which an economic value – intended as welfare gain accruing to the society as a whole – can be clearly identified and measured. Component D is excluded because of the difficulty to value the outcomes of a technical assistance activity, which in this case include improvements in terms of institutional, organizational and regulatory capacity within the energy sector; more efficient design and construction of electricity networks; better monitoring of service quality etc. The proposed IDA Guarantee is also excluded because its benefits are typically financial.

6. The analysis focuses on the more quantifiable benefits deriving from the Project. Specifically, two main sources of benefits have been identified:

(a) Incremental electricity consumption resulting from the improvements in service delivery envisaged under component A and the electrification program envisaged under component C; and

(b) Energy cost savings resulting from reduced non-technical losses among large and medium customers as it is envisaged under component B.

7. All main assumptions concerning electricity supply and demand are derived from the last KPLC Annual Report[4] and summarized in table 1. In particular, the available energy supply is estimated based on the total energy purchased by KPLC from all generation sources (including KenGen; IPPs; Emergency Power Producers – EPPs; and imports) as well as off-grid supply under the Government's Rural Electrification Program. Similarly, total and monthly consumption of electricity, including by class of consumers, is derived from KPLC's electricity sales statistics. Load growth is assumed at seven percent per year[5].

Table 1: Demand and supply statistics (2014)

Total energy purchased*	GWh/year	8,840
Total sales **	GWh/year	7,244
Total sales **	Kshs million/year	105,396
Sales within small commercial (SM) and commercial & industrial customer segment (CI)	GWh/year	4,926
Sales within SM&CI	Kshs million/year	73,133
Sales within domestic customer segment (DC)	GWh/year	1,777
Sales within domestic customer segment (DC	Kshs million/year	31,029
Number of domestic customers (June 30, 2014)	#	2,023,0790
Total Number of Customers (June 30, 2014)	#	2,766,441
Monthly consumption by domestic customers	kWh/month	74

*Source: Kenya Power Annual Report and Financial Statements – Financial Year Ended 30 June, 2014, * System total ** including exports*

[4] Kenya Power Annual Report and Financial Statements – Financial Year Ended 30 June, 2014

[5] KPLC tariff application of 2013 estimates load growth of 7 percent in 2014 and 2015, 8 percent in 2016 and 10 percent in 2017. Includes sales to households under the rural electrification program.

8. Benefits and costs are assessed separately for the relevant project components and results consolidated at the end to establish the economic rate of return (ERR) and the net present value (NPV) of the Project as whole.

9. The economic evaluation spans over a period of 20 years, in line with the typical economic life of electricity distribution infrastructure. Investment costs are assumed to be incurred over a maximum period of five years, although the disbursement schedule varies across project components. Costs exclude price contingencies and interest during construction, as it is by definition in the economic analysis. Operation and maintenance costs are assumed at a standard 2 percent per year of the cost of infrastructure procured under the Project. Both costs and benefits are estimated in economic terms at constant 2014 prices and set up as cash flows over the lifetime of infrastructure, including the construction and operation period. The net present value of benefits and costs is calculated using a discount rate of 10 percent.

Economic analysis of component A

10. A significant part of electricity demand remains unserved in Kenya because of power outages. The automation of KPLC's distribution network and the implementation of live-line management envisaged under component A are intended to reduce response times in case of system interruptions and make service more reliable. Un-served demand is expected to decrease significantly as outages become shorter. Specifically, given the coverage of interventions envisaged under component A, it is assumed that the average duration of interruptions – and accordingly un-served demand – will be reduced by at least 10 percent. Automation will target the network system in Nairobi, which is home to a primary growth pole in the country. Power outages in the urban and peri-urban areas of Nairobi impose big losses in terms of foregone production and large costs for running expensive self-generation. They increase the cost of doing business and frustrate firms' productivity. As a result, the economic value associated to reducing un-served electricity demand, intended as the cost of un-served energy to the economy, is huge in these areas. For the purpose of this analysis, and in the absence of better estimates, the cost of un-served energy to the economy is assumed at US$0.84/KWh[6], which is a rather conservative assumption given the locations involved and their growth potential.

11. Economic costs under this component comprise all investment and O&M costs associated with the installation and operation of automation and LLM equipment and technologies. Investments are assumed to start in FY16 and be completed by FY18 and benefits to materialize immediately thereafter.

Economic analysis of component B

12. The RPP envisaged under component B is intended to reduce non-technical (NT) losses among large and medium customers. This group broadly corresponds to the combination of the "small commercial" and the "commercial and industrial" customer categories identified by KPLC and presented in table 1. The two categories together account for more than 70 percent of total electricity sales; thus, protecting revenues from such a high-value segment is a top priority to KPLC.

[6] Derived from economic analysis of Kenya Electricity Expansion Project, 2010.

13. The RPP is expected to bring non-technical losses attributable to large and medium customers – currently estimated at 3 percent out of the 6.7 percent down to zero. As a result, overall NT losses will be reduced to 3.7 percent. Two types of benefits can be associated to reducing non-technical losses. First, revenues from high-value customers will increase. This is primarily a financial benefit for KPLC. It would generate a welfare gain to the society at large – and therefore also translate into an economic benefit – when KPLC applies the increased revenues to continue investing in improving service quality and expanding electricity access. A second effect associated with reducing non-technical losses is a potential marginal reduction in electricity demand by large and medium customers. The lower consumption could reflect in a marginal reduction in generation. The associated savings constitute an economic benefit under this project component. Their value is calculated based on the levelized cost of generation in Kenya, which is estimated at US$ 0.12/kWh.

14. Economic costs include the investments for installation of AMI meters and of a meter control center, which are assumed to be incurred in two years starting from FY16, and the related operation and maintenance costs.

Economic analysis of component C

15. The analysis of this component focuses on the electrification of peri-urban areas to be implemented by KPLC.[7]

16. The electrification program is expected to add 125,000 residential connections to KPLC network. New electricity users that will be connected under the program will experience welfare gains in many aspects, including long term social and economic benefits related to income opportunities, education, health, and general quality of life. The most commonly measured gain is the incremental consumer surplus (CS), which has two main components: (i) the avoided cost of alternative fuels for applications such as lighting and information/entertainment; and (ii) the value associated to having access to utilities that would not be available without electricity. The economic analysis assesses this variation in the CS based on the willingness to pay (WTP) for electricity of non-connected households.

17. In the absence of more updated analyses, the WTP has been derived from a socio-economic study carried out in 2008 as part of the Kenya's Rural Electrification Master Plan (REMP). Using a sample of 1,776 households, the study assessed an average monthly expenditure on electricity substitutes in the amount of US$15. As a result, the WTP for electricity on the part of non-connected households was estimated at US$0.39/kWh. Although the proposed Project will concern different locations and probably customers with a different socio-economic profile compared to the households surveyed by the REMP, the WTP estimated by the study can be used with reasonable comfort for this analysis as the REMP findings are very much in line with those of a survey conducted by KPLC in 2006 over a sample of 800 households in peri-urban areas in preparation for the country's new connection policy. This estimated the WTP was US$15/month for households in regular peri-urban areas and US$15.3 for households in slum areas.

[7] The off-grid electrification in rural areas is excluded for now since the exact scope, implementation modalities and locations covered by this sub-component remain to be defined.

18. An accurate economic analysis would require differentiating between the value attached to the amount of consumption through alternative fuels that is replaced with electricity and the value – generally lower – attached to any additional consumption that might be induced as a result of having access to electricity. In the absence of any better proxy, this analysis has used the same WTP for valuing both replaced and induced consumption. Indeed, households connected under the Project may also attribute the same utility to the two of them. Their energy consumption before being connected is presumably much lower than the average consumption of existing domestic customers (74 kWh/month). Once connected, it may take a while before they reach the typical consumption levels of more mature customers. The analysis assumes that at least in the first few years their consumption will not exceed 50 kWh/month, which is the lowest bound in the residential customer segment. The induced consumption would account only for a little share of total consumption. Also, such a low consumption will not pose affordability issues. Most likely, new customers will have an electricity bill lower than what they used to pay for alternative energy sources.

19. Economic costs include the investments costs identified for installation of new connections, which are expected to be incurred over four years starting from FY16; the costs related to their operation and maintenance; as well the costs associated with serving the incremental electricity consumption, which is estimated based the levelized cost of generation.

Results

20. Based on the methodology and assumptions described above, the estimated ERR and the NPV of the Project as a whole are 20.9 percent and US$218.2 million respectively (Table 2). As result, the Project is assessed to be economically viable.

Table 2: Summary of Economic Analysis

Base Case	NPV (US$ million)	ERR (%)
Component A	57.3	22.1%
Component B	88.3	30.9%
Component C	72.5	16.5%
Project	**218.2**	**20.9%**

21. The disaggregation of results by Project components shows that returns are very high for components A and B. In particular, the revenue protection program envisaged under component B is the most beneficial. Its ERR is very high (above 30 percent), which proves the great profitability of reducing NT losses among high-value customers. Component A is the second largest source of benefits, with an ERR above 22 percent and a NPV of US$57.3 million. The ERR of the electrification program (16.5 percent), although the lowest among Project components, is very much in line with average rates of return of investments in distribution network expansion and/or rehabilitation. A detailed economic analysis is presented in Table 3.

Table 3: Economic Analysis

Component A - Improvements in service delivery		**FY15**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY35**
Without project													
Electricity consumption	GWh/year	6,574	7,034	7,527	8,054	8,617	9,220	9,866	10,557	11,295	12,086	12,932	25,440
Unserved demand due to service interruptions	GWh/year	101.3	108.4	116.0	124.1	132.8	142.1	152.0	162.7	174.1	186.3	199.3	392.0
With project													
Unserved demand due to service interruptions	GWh/year	101.3	108.4	116.0	124.1	119.5	127.9	136.8	146.4	156.7	167.6	179.4	352.8
BENEFITS													
Reduced unserved demand	GWh/year	-	-	-	-	13.3	14.2	15.2	16.3	17.4	18.6	19.9	39.2
TOTAL BENEFITS	US$ mil./year	-	-	-	-	11.2	11.9	12.8	13.7	14.6	15.6	16.7	32.9
COSTS													
Capex	US$ mil.	-	15.0	20.0	15.0	-							
O&M	US$ mil.	-	-	-	-	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
TOTAL COSTS	US$ mil.	-	15.0	20.0	15.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
NET BENEFITS	***US$ mil.***	-	***(15.0)***	***(20.0)***	***(15.0)***	***10.2***	***10.9***	***11.8***	***12.7***	***13.6***	***14.6***	***15.7***	***31.9***
Component B - Revenue Protection		**FY15**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY35**
Without project													
Non-technical losses	%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Energy sent out	GWh/year	8,653	9,259	9,907	10,600	11,342	12,136	12,986	13,895	14,868	15,908	17,022	33,485
Non-technical losses	GWh/year	579.8	620.3	663.8	710.2	759.9	813.1	870.1	931.0	996.1	1,065.9	1,140.5	2,243.5
With project													
Energy sent out	GWh/year	8,653	9,259	9,907	10,600	11,342	12,136	12,986	13,895	14,868	15,908	17,022	33,485
Non-technical losses	%	7%	7%	7%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Non-technical losses	GWh/year	579.8	620.3	663.8	392.2	419.7	449.0	480.5	514.1	550.1	588.6	629.8	1,238.9
Reduced technical losses	GWh/year	-	-	-	318.0	340.3	364.1	389.6	416.8	446.0	477.3	510.7	1,004.5
BENEFITS													
Increased sales	GWh/year	-	-	-	222.6	238.2	254.9	272.7	291.8	312.2	334.1	357.5	703.2
Saved energy supply	GWh/year	-	-	-	95.4	102.1	109.2	116.9	125.1	133.8	143.2	153.2	301.4
Saved energy costs	US$ mil./year	-	-	-	11.8	12.7	13.6	14.5	15.5	16.6	17.8	19.0	37.4
TOTAL BENEFITS	US$ mil./year	-	-	-	11.8	12.7	13.6	14.5	15.5	16.6	17.8	19.0	37.4
COSTS													
Capex	US$ mil.	-	20.0	20.0	-	-							
O&M	US$ mil.	-	-	-	-	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
TOTAL COSTS	US$ mil.	-	20.0	20.0	-	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
NET BENEFITS	***US$ mil.***	-	***(20.0)***	***(20.0)***	***11.8***	***11.9***	***12.8***	***13.7***	***14.7***	***15.8***	***17.0***	***18.2***	***36.6***
Component C - Electrification of households		**FY15**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY35**
New connections	#	-	-	-	40,000	85,000	125,000	125,000	125,000	125,000	125,000	125,000	125,000
Total incremental consumption	GWh/year	-	-	-	24.0	51.0	75.0	80.3	85.9	91.9	98.3	105.2	206.9
BENEFITS													
TOTAL BENEFITS	US$ mil.	-	-	-	10.5	22.4	32.9	35.2	37.7	40.3	43.1	46.1	90.8
COSTS													
Capex	US$ mil.	-	30.0	45.0	45.0	30.0							
O&M	US$ mil.	-	-	-	-	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Cost of providing incremental consumption	US$ mil.	-	-	-	3.0	6.3	9.3	10.0	10.7	11.4	12.2	13.0	25.7
TOTAL COSTS	US$ mil.	-	30.0	45.0	48.0	38.4	12.3	13.0	13.7	14.4	15.2	16.0	28.7
NET BENEFITS	***US$ mil.***	-	***(30.0)***	***(45.0)***	***(37.4)***	***(16.0)***	***20.6***	***22.2***	***24.0***	***25.9***	***27.9***	***30.1***	***62.1***
PROGECT		**FY15**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY35**
TOTAL NET BENEFITS	***US$ mil.***	-	***(65.0)***	***(85.0)***	***(40.6)***	***6.0***	***44.3***	***47.7***	***51.4***	***55.3***	***59.5***	***64.0***	***130.6***

Sensitivity analysis

22. A sensitivity analysis has assessed the robustness of the Project under less favorable conditions that may affect project implementation such as project cost overruns as well as changes in the main assumptions used by the analysis that may reduce the economic value of the Project.

23. Project costs overruns of 15 and 20 percent reduce the ERR of the Project to 18.3 and 17.6 percent respectively (Table 4). These are still satisfactory outcomes. A reduction of non-technical losses of two percentage points, as opposed to the three assumed in the base case scenario, makes the RPP envisaged under component B much less profitable. The ERR for this component drops to 22.1 percent; its NPV to US$45.7 million, nearly half than in the base case scenario. Nonetheless, the impact on the Project as whole is not significant; ERR and NPV decrease to 18.9 percent and US$175.5 million respectively. Similarly, if the average duration of service interruptions envisaged under component A is reduced by eight percent – as opposed to the estimated 10 percent – the ERR and the NPV of the Project decrease only marginally to 20 percent and US$197.2 respectively. The viability of component A is more severely affected, although the ERR and the NPV remain high at 18.3 percent and US$36.4 million respectively.

24. A further sensitivity analysis has assessed the impact of higher levels of electricity consumption among newly connected households. In particular, the analysis has assumed that new customers immediately start consuming the same amount of electricity as existing customers. If so, the ERR and NPV of component C would jump to 26.2 percent and US$201.1 respectively. The Project as a whole would become much more profitable; the ERR would increase to 23.5 percent, the NPV to US$168.5 million.

Table 4: Sensitivity Analysis

ERR (%)	Component A	Component B	Component C	**Project**
Base case	22.1%	30.9%	16.5%	***20.9%***
Project cost overruns = + 15 percent	19.6%	27.6%	14.3%	**18.3%**
Project cost overruns = + 20 percent	18.9%	26.7%	13.6%	**17.6%**
NT reduction of 2%	22.1%	22.1%	16.5%	**18.9%**
Reduction of average duration of service interruptions of 8%	18.3%	30.9%	16.5%	**20.0%**
Average HH consumption once connected = 73 kWh/month	22.1%	30.9%	23.5%	**24.7%**
NPV (US$ million)	Component A	Component B	Component C	**Project**
Base case	57.3	88.3	72.5	***218.2***
Project cost overruns = + 15 percent	50.2	82.4	52.3	**184.9**
Project cost overruns = + 20 percent	47.8	80.4	45.6	**173.8**
NT reduction of 2%	57.3	45.7	72.5	**175.5**
Reduction of average duration of service interruption of 8%	36.4	88.3	72.5	**197.2**
Average HH consumption once connected = 73 kWh/month	57.3	88.3	168.5	**314.2**

25. A switching value analysis has also been carried out to identify the variation in the main parameters considered above that would make the Project and selected components unviable (table 5). The ERR of the Project as a whole would drop below the hurdle rate of 10 percent if costs overruns nearly double (increase by more than 98.4 percent), which is highly unlikely. A reduction of the average duration of service interruption by only 4.5 percent would make component A unviable and reduce the ERR and the NPV of the Project as a whole to 18.4 percent and US$160.5 million. If non-techncial losses are reduced by only 0.9 percentage point, component B would become unviable and the ERR and NPV of the Project would drop to 16.8 percent and US$128.6, respectively.

Table 5: Switching Value Analysis

ERR (%)	Component A	Component B	Component C	**Project**
Base case	22.1%	30.9%	16.5%	***20.9%***
Project cost overruns = + 98.4 percent	11.4%	17.2%	6.6%	**10.0%**
Non-technical losses reduction of 0.9 percentage point	22.1%	9.6%	16.5%	**16.8%**
Reduction of average duration of service interruptions of 4.5%	9.9%	30.9%	16.5%	**18.4%**
NPV (US$ million)	Component A	Component B	Component C	**Project**
Base case	57.3	88.3	72.5	***218.2***
Project cost overruns = + 98.4 percent	10.6	49.4	(60.1)	(0.1)
Non technical losses reduction of 0.9 percentage point	57.3	(1.2)	72.5	**128.6**
Reduction of average duration of service interruptions of 4.5%	(0.3)	88.3	72.5	**160.5**

Annex 7: Financial Analysis of Kenya Power and Lighting Company Limited

KENYA: Electricity Modernization Project

1. The following financial analysis was performed on the basis of Kenya Power and Lighting Company's (KPLC) audited financial statements for the fiscal years ended on June 30 of 2011, 2012, 2013 and 2014. Financial projections were prepared by KPLC's financial adviser.

Ownership and Business Activities

2. KPLC is majority owned and controlled by the Government of Kenya (GoK) through a 50.1 percent direct equity interest. The balance of the Company's shares is owned by private parties, either directly or through nominees. KPLC's shares are listed at the Nairobi Securities Exchange.

3. The main business activity of KPLC is the distribution and retail sale of electricity to consumers in Kenya. For this purpose the Company purchases electricity in bulk from Kenya Electricity Generating Company Limited (KenGen), Independent Power Producers (IPPs), Uganda Electricity Transmission Company Limited (UETCL) and Tanzania Electricity Supply Company Limited (TANESCO).

Historical Financial Performance

4. The following Table summarizes KPLC's financial performance during the period from July1, 2010 through June 30, 2014.

Table 1: Historical Financial Highlights

In Kshs. Million	2010/11	2011/12	YoY % var	2012/13	YoY % var	2013/14	YoY % var
Revenues							
Electricity Sales	42,486	45,008	6%	47,916	6%	62,597	31%
Fuel Cost Adjustment	25,913	41,896	62%	31,771	-24%	38,376	21%
Other	4,755	8,759		9,222		4,422	
Total Revenues	**73,154**	**95,663**	31%	**88,909**	-7%	**105,395**	19%
Operating Expenses							
Power Purchase Cost (ex-fuel)	20,214	21,080	4%	24,761	17%	30,659	24%
Fuel Costs	26,151	42,789	64%	32,297	-25%	38,973	21%
F/x Costs	3,425	6,094	78%	5,120	-16%	3,008	-41%
Other	17,695	19,680		21,028		22,796	
Total Operating Expenses	**67,485**	**89,643**	33%	**83,206**	-7%	**95,436**	15%
Operating Income	**5,669**	**6,020**	6%	**5,703**	-5%	**9,959**	75%
Finance Cost	**415**	**1,216**	193%	**2,495**	105%	**4,009**	61%
Profit	**4,220**	**4,617**	9%	**3,446**	-25%	**6,456**	87%
Assets							
Current Assets	35,151	28,159	-20%	37,728	34%	50,412	34%
Fixed Assets	86,020	105,973	23%	146,485	38%	169,697	16%
Total Assets	**121,171**	**134,132**	11%	**184,213**	37%	**220,109**	19%
Current Liabilities							
Borrowings	4,764	6,250	31%	8,193	31%	16,968	107%
Bank Overdraft	-	1,690	n/a	6,758	300%	3,567	-47%
Other	23,367	23,443		23,924			
Total Current Liabilities	**28,131**	**31,383**	12%	**38,875**	24%	**48,847**	26%
Long-Term Liabilities							
Borrowings	19,757	21,512	9%	42,886	99%	53,141	24%
Other	26,204	25,362		39,213			
Total LT Liabilities	**45,961**	**46,874**	2%	**82,099**	75%	**98,375**	20%
Total Liabilities	**74,092**	**78,257**	6%	**120,974**	55%	**147,222**	22%
CAPEX	24,714	25,950	5%	42,631	64%	26,651	-37%

Income Statement

5. Revenues: KPLC operates as a commercial company aiming for full cost recovery through a regulated tariff structure. The Company does not receive any subsidies and its revenues are fully dependent on the retail tariff and electricity sales/market demand. Costs associated with fuel and foreign exchange are passed through and recovered from customers, therefore they are accounted for as revenues and as expenses. Historically, KPLC's total revenues display significant year on year (YoY) variation which is mostly attributable to annual changes in fuel mix resulting from variable hydrology. In years with poor hydrology such as Fiscal Year (FY)12 and FY14 power generation relied heavily on thermal plants, consequently the fuel cost component of the revenues escalated substantially. The meaningful increase in Electricity Sales between FY12 and FY14 is the result of the combined effect of the retail tariff adjustment effective from December 2013 and a 10 percent increase in volumes sold during the calendar year. Operating Expenses have remained stable over the years. Annual variations are related to the fuel mix and to the additional power purchases needed to satisfy increased demand and sales. Operating Income has therefore remained stable reflecting the combined effect of the cost recovery nature of the tariffs and the pass through of the most variable and significant element of the operation i.e., fuel cost. Again, the sharp increase in FY14 reflects the combined effect of increased sales and higher tariffs.

6. In contrast, non-Operating Costs and in particular, Finance Costs (Interest on Loans) multiplied during the period, increasing from the equivalent to US$5 million in FY11 to US$45 million in FY14: a nearly nine-fold increase in four fiscal years. This change reflects the substantial increase in KPLC's debt during the same period: from the equivalent to US$288 million in FY11 to US$828 million in FY14. Please refer to Balance Sheet below for additional information.

7. Operating Profit remained stable during the period despite the substantial increase in Financing Cost mostly as a result of the substantial and steady increase (approximately 20 percent per year) in depreciation associated with additional assets. The substantial increase in operating profit in 2013/14 reflects improved revenues.

Balance Sheet

8. Assets: KPLC's assets grew in excess of 80 percent between 2010 and 2014. This was the result of a large Capital Investment program associated mostly with new connections and to a lesser extent with service improvement investments such as expansion and upgrading of the distribution network. These investments required expenditures equivalent to US$291 million in FY11, US$305 million in FY12, US$500 million in FY13 and US$300 million in FY14. Notably, due to their development nature, these investments do not result in immediate and proportional revenue increase and instead demand prolonged amortization periods. The investments in new connections placed a particularly heavy burden on KPLC as connection fees paid by new customers were insufficient to pay for connection costs forcing KPLC into a situation where the Company subsidized approximately 70 percent of connection costs equivalent to approximately US$700 per customer.

9. Debt: The Capital Investment program mentioned above was financed with a combination of cash from operations (approximately 25 percent) and new debt (approximately 75 percent). Due

to the unplanned and accelerated pace of the investments related to new connections, KPLC was unable to secure long-term concessional funding and instead had to resort to medium and short term Commercial Loans and Bank Overdrafts creating a situation of Asset-to-Liability mismatch. The Company's debt profile changed with higher interest rates and shorter tenors which reflect commercial market conditions as well as the progressively weaker financial condition of the Company.

10. The quality of KPLC's assets has improved over time, with an increased share of new and well-performing assets. The Company's indebtedness level, although high was still at acceptable levels as of FY14 with Net Leverage of 50 percent and Debt to EBITDA of three times. Nonetheless, due to the moderate pace of revenue growth the Company's ability to generate sufficient cash to repay their debt as due while continuing with their service improvement investments is a matter of concern. This is analyzed in the following section.

Cash and Liquidity Position

11. KPLC's cash position evolved from a positive balance equivalent to US$114 million in 2010/11 to a low of US$9.4 million in FY12, and a negative US$23 million in FY13 when KPLC's cash reserves were fully depleted to pay for its accelerated investment program. As of June 2014, KPLC had returned to positive cash levels, however the Company was still facing difficulties to meet its ongoing payment obligations on a timely basis and continued supporting itself with Bank Overdrafts (US$40 million as June 2014) to make up for the cash gaps.

12. As of FY14 KPLC's annual Debt Service stood at approximately US$130 million, which constituted more than 50 percent of the Company's Cash from Operations. Debt maturities for the next five years amounted to an aggregate of US$494 million, of which over US$400 million relate to short and medium-term commercial debt (table below).

Table 2: Debt Repayment

US$ million	FY15	FY16	FY17	FY18	FY19
Debt Repayment	146	118	111	71	47

13. The Company requires funds to implement essential investments associated with improvement in the quality and the reliability of the service as well as critical system upgrades and expansions. In the past, these investments have exceeded US$200 million per year and approximately 25 percent was funded with cash.

Financial Ratios

14. The increase in KPLC's total debt, the use of short-term debt to finance long-term investments, the size of the investment program vis-à-vis the Company's cash generation capacity and the subsidization of connections, has resulted in a significant erosion of KPLC's liquidity position and a negative evolution of the Company's financial ratios during the past four fiscal years as illustrated in the table below.

Table 3: Financial Ratios

Ratios	FY11	FY12	FY13	FY14
Debt/EBITDA (x)	1.55	1.92	3.70	3.08
EBITDA/Interest (x)	25.34	11.75	5.87	5.21
CFO/Debt	60%	45%	28%	26%
FOCF/Debt	-41%	-43%	-46%	-10%
Net Debt/Net Debt+Equity	25%	38%	52%	50%

15. KPLC is currently in compliance with the Current Ratio and in breach of the Debt Service Coverage Ratio and the Self Financing Ratios under the Project Agreement for the KEEP. The proposed Project will support KPLC in restoring its financial ratios to compliant levels. Furthermore, the proposed Project replaces the Self-financing Ratio with the Return on Assets to Equity Ratio. The former is a ratio that is suitable for companies in a stable operational phase whose investments are focused on maintenance and minimal growth and thus is not suitable for KPLC a company that is undergoing rapid growth. In contrast, the Return on Assets to Equity Ratio will be a useful indicator of the sustainability and adequacy of KPLC's growth.

Table 4: Financial Ratios

KEEP/IDA Ratios	Requirement	2013/14
DSCR	>1.2x	0.55
Current Ratio	>1.0x	1.03
Self-Financing Ratio	>25%	-25%

16. The historical financial analysis demonstrates that KPLC's financial structure changed significantly in the past four years. The Company's balance sheet grew on the back of substantial investments (approximately US$1.4 billion), however the fast investment pace does not reconcile with KPLC's moderate revenue growth. The funding structure whereby long-term assets were financed with short- and medium-term loans and development investments were financed with commercial funds resulted in the erosion of KPLC's financial position and placed its financial integrity in jeopardy. This investment and financing strategy is not suitable for the Company and is not sustainable going forward.

17. KPLC is in urgent need of a comprehensive overhaul of its financing structure and strategy. A refinancing/restructuring of KPLC's commercial debt is essential in order to extend and reschedule maturities and to reduce interest rates to match the Company's debt servicing capacity. Going forward, KPLC's incremental investments should be subject to strict planning focused on service needs and independent from government policies, in order to ensure affordability without threatening the Company's financial sustainability. Furthermore, investments associated with access to electricity (i.e., new connections) which placed a heavy burden on KPLC in the past and created the current liquidity constraints, should no longer be financed with KPLC's resources but instead with separate funds raised by the GoK, while KPLC should only be in charge of technical implementation.

Financial Projections

18. The following Table summarizes KPLC's Base Case financial projections for the period from July1, 2015 through June 30, 2020.

Table 5: Summary Financial Projections

Summary Financial Projections- Base Case											
KSh million											
	2014/15	**2015/16**	**%var**	**2016/17**	**%var**	**2017/18**	**%var**	**2018/19**	**%var**	**2019/20**	**%var**
Revenues											
Electricity Sales	82,251	93,273	13.4%	106,615	14.3%	128,494	20.5%	155,943	21.4%	189,858	21.7%
F/x recovery	683	1,198		2,237		3,808		7,503		15,111	
Fuel Cost Recovery	29,196	29,615		31,008		36,930		40,188		45,183	
Total Revenues	**112,131**	**124,086**	10.7%	**139,861**	4.7%	**169,233**	19.1%	**203,634**	8.8%	**250,152**	12.4%
Operating Expenses											
Power Purchase Cost (ex-fuel)	(40,881)	(49,393)	20.8%	(55,599)	12.6%	(67,703)	21.8%	(85,572)	26.4%	(112,886)	31.9%
F/x Costs	(683)	(1,198)	75.2%	(2,237)	86.8%	(3,808)	70.2%	(7,503)	97.0%	(15,111)	101.4%
Fuel Costs	(29,479)	(29,972)	1.7%	(31,156)	4.0%	(36,930)	18.5%	(40,188)	8.8%	(45,183)	12.4%
Other	(21,821)	(24,963)		(29,380)		(34,452)		(41,641)		(46,265)	
Total Operating Expenses	**(92,865)**	**(105,525)**	**13.6%**	**(118,372)**	**12.2%**	**(142,894)**	**20.7%**	**(174,904)**	**22.4%**	**(219,446)**	**25.5%**
Operating Income	**19,266**	**18,561**	**-3.7%**	**21,489**	**15.8%**	**26,339**	**22.6%**	**28,730**	**9.1%**	**30,707**	**6.9%**
Finance Cost	**5,514**	4,856	-11.9%	4,949	1.9%	4,654	-6.0%	4,201	-9.7%	3765	-10.4%
Profit	**6,551**	**5,908**		**7,652**		**12,458**		**15,244**		**16,325**	
Assets											
Current Assets	63,581	55,883	-12%	50,819	-9.1%	51,805	1.9%	51,180	-1.2%	57,101	11.6%
Fixed Assets	185,211	201,953	9%	210,789	4.4%	213,362	1.2%	226,630	6.2%	237,606	4.8%
Total Assets	**248,791**	**257,836**	**4%**	**261,608**	**1.5%**	**265,168**	**1.4%**	**277,810**	**4.8%**	**294,707**	**6.1%**
Current Liabilities											
Borrowings	6,097	8,890	46%	11,027	24.0%	11,579	5.0%	11,652	0.6%	-	-100%
Bank overdraft	-	-		-		-		-		-	
Other	29,670	31,097		32,597		34,172		35,828		37,569	
Total Current Liabilities	**35,767**	**39,987**	**12%**	**43,624**	**9.1%**	**45,751**	**4.9%**	**47,481**	**3.8%**	**37,569**	**-20.9%**
Long-Term Liabilities											
Borrowings	89,925	86,401	-4%	78,159	-9.5%	69,154	-11.5%	59,816	-13.5%	63,400	6.0%
Other	40,596	39,102		39,167		38,832		42,291		47,107	
Total LT Liabilities	**130,521**	**125,503**	**-4%**	**117,326**	**-6.5%**	**107,986**	**-8.0%**	**102,107**	**-5.4%**	**110,507**	**8.2%**
Total Liabilities	**166,288**	**165,491**	**0%**	**160,950**	**-2.7%**	**153,738**	**-4.5%**	**149,587**	**-2.7%**	**148,076**	**-1.0%**
CAPEX	**20,870**	**21,933**	**5%**	**14,165**	**-35.4%**	**7,294**	**-48.5%**	**17,866**	**144.9%**	**16,034**	**-10.3%**

19. KPLC's Base Case financial projections are based on the following assumptions: (i) Annual demand growth of seven percent, which represents the average maximum demand of the past five years rounded up to reflect the anticipated continued increase in connections; (ii) US$978 million of Capex for the period, focused on network upgrades and improved service quality; (iii) Reduction of technical and non-technical losses from the regulated allowed level of 17.4 percent in 2015 to 15.9 percent in 2018 and beyond; and (iv) a tariff adjustment in 2018 as provided by current regulation.

20. The highlights of KPLC's Base Case financial projections are: (i) a reduction in annual Capex from a US$335 million annual average between FY2010-2014 to a US$170 million annual average between FY2015-2020. This reduction reflects the change in financing strategy for new connections whereby these investments will no longer be financed with KPLC's resources; (ii) a significant reduction (12 percent) in financing costs (interest on loans) between FY15 and FY16, which reflects the benefits of the IDA Guaranteed refinancing; and (iii) a steady and moderate decrease in total debt which reflects the Company's ability to repay existing debt and fund future Capex with limited reliance on additional debt.

21. The Company's financial advisor also prepared various scenarios of projected results which demonstrate the impact that lower demand growth, higher than expected installed capacity, higher

Capex, and delay in the adjustment of the tariff by the regulator would have in the Company's financial performance.

22. On the basis of the financial projections and the inputs of the financial advisor, KPLC is developing an action plan which includes the immediate refinancing of US$500 million of existing commercial debt, strengthening the Company's financial planning activities, and development of a detailed financing plan to identify the lowest cost and asset matching funding sources for future Capex, as needed.

Annex 8: IDA Guarantee Term Sheet

KENYA: Electricity Modernization Project

PRELIMINARY SUMMARY OF INDICATIVE TERMS AND CONDITIONS OF THE PROPOSED IDA GUARANTEE

This term sheet contains a preliminary general summary of indicative terms and conditions of a potential IDA Guarantee (the Guarantee) for a private-sector financing to be contracted by KPLC. These terms would be subject to further development based on KPLC choice regarding the financing structure and the mix of financing sources to be used for their expansion plan.

This term sheet does not constitute an offer from IDA to provide a Guarantee. The provision of the Guarantee is subject, inter alia, *to satisfactory appraisal by IDA of the operation, further consideration, selection, review and acceptance of the underlying financing structure and transaction documentation, and the approval of Management and the Board of Executive Directors of IDA in their sole discretion.*

[Borrower][8] [Issuer][9] :	The Kenya Power and Lighting Company Limited (KPLC)
Guarantor:	International Development Association (IDA)
Guaranteed Beneficiaries:	[Commercial bank lender(s) to be identified /noteholders]
Use of proceeds:	Restructuring of KPLC's existing commercial debt
Financing currency:	Kenya Shilling or USD
Financing amount:	Up to US$ [500] million
Maximum IDA Liability:	[A partial amount of financing, not to exceed US$200 million]
Final maturity:	[To be decided]
Guaranteed Event:	Failure by the [Borrower/Issuer] to repay [TBD].
Guarantee Support:	IDA would cover any outstanding scheduled payment of [TBD] up to the Maximum IDA Liability, which the [lenders][noteholders] would have otherwise received from the [Borrower/Issuer] under the guaranteed financing documents, but for the occurrence of a Guaranteed Event.
Choice of law:	[To be determined]
Status of the IDA Guarantee:	The obligations of IDA under the IDA Guarantee will constitute direct, unsecured obligations of IDA ranking pari passu, without any preference among themselves, with all of its other obligations that are unsecured and unsubordinated.

[8] If loan.
[9] If debt security placement.

IDA Guarantee Fee: The Beneficiaries will pay to IDA a Guarantee Fee of [0.75] percent on the *present value* of the Maximum IDA Liability, payable [on each fee payment date in advance of each fee period against the average balance of the present value for such a fee period][upfront][10].

Other provisions related to IDA's policy and legal requirements for guarantees:

Subrogation: If IDA makes a payment under the Guarantee, IDA would be entitled to stand in the place of the [lenders][noteholders] and exercise the rights of such [lenders][noteholders] to seek reimbursement for amounts paid by IDA.

Amendments and waivers: IDA will be entitled to be kept fully informed about any proposed waiver or amendment to the terms of the transaction. Certain amendments or waivers to the provisions of the finance documentation and guarantee, insofar as they relate to the Guarantee, require the prior written consent of IDA, including but not limited to any material amendment or modification to a finance document or any amendment or waiver that materially and adversely affects the rights and obligations of IDA.

[**Suspension**: IDA may, during the availability period for drawdown of the guaranteed financing, inform the Agent that no further drawdown of the guaranteed financing, from the date of notification by IDA up until such notice is revoked by IDA, will be covered by the Guarantee upon the occurrence of the following types of scenarios, *inter alia*: (i) an event of default occurs under the guaranteed financing; (ii) KPLC has breached a material obligation under the Project Agreement and such breach continues after any applicable cure period; or (iii) the Agent or a beneficiary of the Guarantee engaged in certain sanctionable practices (fraud, corruption, coercion, collusion, obstruction) relating to the guaranteed financing. If the event giving rise to a suspension has been waived by IDA, or remedied to IDA's satisfaction, then IDA may revoke its suspension notice and let the Agent know which amounts are reinstated for coverage under the Guarantee][11].

Exclusion: IDA may deny payment to a beneficiary of the Guarantee in the following types of scenarios, *inter alia*: (i) a sanctionable practice (fraud, corruption, coercion, collusion, obstruction) has been found to have been committed by the Agent or a beneficiary of the Guarantee; (ii) the Agent or a beneficiary of the Guarantee, *inter alia*, amends the guaranteed financing documents, [or transfers, or assigns the loan to a non-commercial lender][12] without

[10] Fee payment method (upfront or on each fee payment date) to be chosen by KPLC. For clarity, fee payment dates are expected to coincide with interest payment dates for the guaranteed financing.

[11] This clause would only be applicable if there were expected to be multiple disbursements of the financing (that is, if there were to be an availability period for drawdowns).

[12] If the underlying financing is a loan, then, except as IDA may otherwise agree, assignments or transfers of the guaranteed loan may only be to an entity established as a bank or financial institution duly licensed to carry out banking or financial business in its country of domicile. Such assignee may be a partly or wholly government-owned institution, but cannot be an export credit agency, multilateral institution or state entity. Such assignee must not have been declared ineligible to be awarded an IDA-financed contract in accordance with World Bank Sanctions Procedures and must not be an entity included on the consolidated list of individuals and entities maintained by the United Nations Security Council Committee established pursuant to United Nations Security Council Resolution 1267.

IDA's prior written consent; (iii) the Agent or a beneficiary under the Guarantee engages in Repackaging Arrangements in respect of the Guarantee.

Repackaging Arrangements: The [lenders][lead managers] will severally undertake for the benefit of IDA that, provided the Guarantee remains in effect, they will not enter into or permit any of their affiliates to enter into any arrangement pursuant to which any security or other similar obligation is created or issued, the economic effect of which is the separation of rights of payment from IDA under the Guarantee and of rights of payments from KPLC under the financing, which is referred to as "Repackaging Arrangements".

IDA Obligations Binding: IDA's obligations under the Guarantee shall be binding upon IDA and remain in full force and effect until payment in full of the obligations of IDA under the Guarantee or termination of the Guarantee, as the case may be, provided that the obligations of IDA under the Guarantee shall not be treated as a separate obligation of IDA independent from the principal amount guaranteed.

Termination: IDA may terminate the Guarantee in the following types of scenarios: (i) untrue statements are made by the Agent or a beneficiary of the Guarantee in connection with a demand for payment under the Guarantee; (ii) the IDA Guarantee Fee is not paid; or (iii) the Guarantee is otherwise terminated due to full repayment of guaranteed amounts.

No Discharge: Neither the obligations of IDA under the Guarantee nor the rights, powers and remedies conferred upon the Agent with respect to IDA by the Guarantee or by applicable law or regulation shall be discharged, impaired or otherwise affected by: (i) any insolvency, moratorium or reorganization of debts of or relating to KPLC; (ii) any of the obligations of KPLC under the financing agreements being or becoming illegal, invalid, unenforceable, void, voidable or ineffective in any respect; (iii) any time or other indulgence being granted to KPLC in respect of its obligations under the financing agreements; or (iv) any other act, event or omission (other than the failure of the Agent to make a timely and duly completed demand under the Guarantee) which might otherwise operate to discharge, impair or otherwise affect any of the obligations of IDA under the Guarantee or any of the rights, powers or remedies conferred on the Agent by the Guarantee or by applicable law or regulation.

Reduction of Demand: If, after the Agent has made a demand on IDA for payment under the Guarantee, but before IDA has made payment of the amount so demanded, the Agent receives payment in respect of such amount from KPLC (or the Agent recovers otherwise than from IDA) any sum which is applied to the satisfaction of the whole or any part of such amount, the Agent shall promptly notify IDA of such fact and IDA's liability under the Guarantee in respect of such demand shall be reduced by an amount equal to the portion so paid by KPLC (or so recovered by the Agent) and so applied.

Conditions Precedent: Usual and customary conditions for financing of this type including the following:

a) Provision of relevant legal opinions satisfactory to IDA (including a legal opinion from the Attorney General of the Republic of Kenya relating to the Indemnity Agreement and a legal opinion from a duly authorized official of KPLC);

b) Payment in full of the [first installment of the] Guarantee Fee; and

c) Conclusion of a Project Agreement between KPLC and IDA, an Indemnity Agreement between IDA and the Republic of Kenya (Kenya) , a [Guaranteed Loan Agreement among the Agent, Lender[s], KPLC and IDA][13] *or* [Fiscal Agency Agreement among the Agent, KPLC and IDA, a Warranty Agreement among the lead managers and IDA] **[14]**, and any other applicable documentation.

Indemnity Agreement: Kenya will enter into an Indemnity Agreement with IDA in respect of the Guarantee under which it will undertake to reimburse and indemnify IDA on demand, or as IDA may otherwise direct, for all payments under the Guarantee and all losses, damages, costs, and expenses incurred by IDA relating to or arising from the Guarantee.

Any obligation by Kenya to reimburse IDA for payments made under the Guarantee will rank *pari passu* with all other external indebtedness of Kenya, including external indebtedness of Kenya to IDA.

Project Agreement: Agreement between KPLC and IDA with respect to implementation of the operation setting out the requirements[15] on institutional arrangements, use of proceeds, etc.

[Warranty Agreement:] [*If debt security placement, KPLC would enter into a Purchase Agreement with the lead managers (initial purchasers) of its note. IDA would enter into a Warranty Agreement with the lead managers in order to make and receive certain representations and warranties about the information each set of parties provides to the other in that type of transaction, as well as to receive certain undertakings from the lead managers about not entering into Repackaging Arrangements (as described above), etc*.]

Supplemental

LETTERS: ***SUPPLEMENTAL LETTERS FROM KPLC AND KENYA, AS APPLICABLE, TO IDA SUBSTANTIALLY SIMILAR TO THOSE IN IDA FINANCIAL INTERMEDIARY LENDING: (1) LETTER FROM KENYA REGARDING PROVISION OF ECONOMIC AND FINANCIAL DATA, (2) LETTER FROM KPLC CONTAINING CERTAIN REPRESENTATIONS AND (3) LETTER FROM KPLC REGARDING PERFORMANCE INDICATORS***

[13] If loan (the Guarantee would be included in the loan agreement with KPLC and the lenders)

[14] If debt security placement, the Guarantee would be included in the fiscal agency agreement with KPLC and the fiscal agent.

[15] These requirements are expected to be similar to those in previous FIL loan agreements with KPLC.

Annex 9: National Electrification Strategy

KENYA: Electricity Modernization Project

1. Key institutional design principles of the National Electrification Strategy (NES) that will be prepared are:

- All investments needed to actually connect new users must be included in the scope of the electrification works. In order to remove the insurmountable barrier created by unaffordable (and conceptually unsuitable) connection fees, electrification of a certain area must comprise all the supplies and construction works (investments) needed to connect all new users in the area (including individual connections). New users will pay a charge to cover only operating costs of the activities carried by the Kenya Power and Lighting Company (KPLC) to connect them (inspection of internal premises, installation of the meter, etc.).

- All electricity users countrywide will pay a regular "electrification charge (EC)" together with the monthly bill for electricity consumption issued by KPLC. Revenues collected from the EC will be completely separated ("ring fenced") from tariff revenues for service provision through full transfer of the EC by KPLC to the special-purpose "National Electrification Fund (NEF)".

- Planning of electrification must address the following matters: (i) prioritization: the definition of a clear, transparent and objective system to prioritize the areas to receive electricity and the projects to be selected; (ii) institutional aspects: definition of roles in the planning process of stakeholders involved in the electrification program; (iii) technical planning: definition of service quality levels to be achieved and identification of optimum technology options (from a country perspective) to extend national grid and develop mini grids and individual systems meeting the predefined service quality levels; (iv) financial planning: identification of sources of funds needed to carry out investments and ensure service sustainability.

- Grid extension versus mini grids and off-grid: "Grid level" service is the permanent (or "steady state") condition to be achieved in all cases. However, transitory solutions may be considered in cases where "grid level" service is not viable in the short and medium term. Off-grid electrification (through mini-grids or individual systems) could be considered as a ***transitory option*** suitable in remote areas, as the service they provide can represent a clear improvement in the quality of life of beneficiaries, even without reaching "grid level" service. Implementation of transitory solutions should be based on the priorities for electrification.

2. **Institutional aspects to be addressed in the design of the NES are:**

- Definition of the roles of Ministry of Energy and Petroleum (MoEP), KPLC, Rural Electrification Authority (REA), Energy Regulatory Commission (ERC), communities and other stakeholders in the planning process. The electrification strategy must involve and commit all sector stakeholders and local community participation. Involving local

communities from the start can help improve the design, gain local support, mobilize contributions in cash or in kind, and increase local ownership, contributing to operational sustainability.

3. **Technical aspects in planning of the NES include:**

- Definition of acceptable quality-of-service levels (may be different for urban and rural areas). Quality-of service levels should be established through specific standards based on customers' acceptance and willingness to pay for the cost of a specific quality level. Standards should be set for both technical and commercial dimensions of the service. Required levels of service and associated penalties and rewards should be phased in over time and synchronized with tariff levels (full enforcement of the service quality regime requires tariff levels allowing recovery of total costs of efficient service provision).

- Optimization of technical design: determination of the most cost-effective options to achieve service quality levels. Incorporating low-cost technologies (single wire earth return and others) in the planning and design stage can make possible to drastically reduce investment costs while meeting predefined service quality levels. This could have an enormous impact on accelerating the pace and scope of electrification programs. Centralized procurement could also help to optimize investment costs.

4. **Main financial aspects to be addressed in the design of the NES are:**

- Review of current arrangements for financing electrification towards the creation of the NEF. In the 1970's, the government established a rural electrification program including the creation of a dedicated fund to manage a five percent levy charged to all electricity customers nationwide to support the electrification of the country (Rural Electrification Program Levy Fund - REPLF). This approach is fully valid from the conceptual point of view. Current arrangements should be reviewed and adjusted to allow the establishment of a National Electrification Fund (NEF) that becomes the key financial support for the implementation of the national electrification strategy.

- Definition of optimized arrangements for the NEF: consitent with the key design features of the NES, the NEF should finance all investments needed to connect all new regular users located in the area to be electrified (large industrial projects are excluded from the NES basic approach and considered on an "ad-hoc" basis). Main aspects to be addressed in the creation and management of the NEF include:

    - Sources of funds: government budget, loans/grants provided by development partners (DPs), contributions from all electricity users based on affordability (specific tariff charge), reimbursable contributions from new users, etc.

    - Operational and fiduciary management: definition of clear procedures to ensure effectiveness, transparency and accountability in the operational and fiduciary management of the NEF, and full consistency with other all components of the NES.

5. Providing KPLC with the appropriate tariff structure w which allows the Company to recover the cost of service provision to new users. Under the proposed NES, KPLC will be the implementing agency of investments in electrification funded by the NEF countrywide. Costs incurred by KPLC to provide service to all its customers meeting the predefined quality standards will be recovered through the regulated tariff. KPLC will not be responsible for financing any electrification work not included in its tariff revenues.

6. Implementation of the NES implies reforms to address the institutional, technical and financial issues described above.

7. As already indicated, preparation of the NES is the main task in Component D (technical assistance) of the KEMP. However, the GoK, KPLC and the World Bank agree that there is no reason to wait until the NES is ready to apply the main reform concepts supporting it to implement electrification projects allowing the achievement of significant results that will further strengthen the strategy. The electrification of peri-urban areas to be implemented under Component C1 will show the way towards the sustained application of the NES countrywide at the fastest pace compatible with financial resources available.

Annex 10: Scaling-Up Renewable Energy Program (SCF-SREP) in Low Income Countries

KENYA: Electricity Modernization Project (KEMP)

Indicator	SCF-SREP/IDA KEMP Project Component C2 (Off-grid Electrification)[16]	Transformational Scaled-up Phase: *Kenya Vision 2030*
Number of women and men, businesses and community services benefiting from improved access to electricity as a result of SCF-SREP interventions	13,500 – 20,250 of which half female	Universal Access
Annual electricity output from RE as a result of SCF-SREP interventions (MWh/yr)	828 - 1,242	Substantial potential for scale up if the business model succeeds
Tons of GHG emissions savings17 - Tons per year (tCO2eq/year) - Tons over 20 year lifetime (tCO2eq)	- 657 – 986 tCO2eq/year - 13,141 – 19,711 tCO2eq over 20 year lifetime	Substantial potential for scale up if the business model succeeds
Financing leveraged through SCF-SREP funding (US$ million, cumulative)	Total: US$ 13.2 million[18] - US$ 2.5 million (WB) - US$ 10.7 million (Private)	Substantial potential for scale up if the business model succeeds
SCF-SREP leverage ratio	1 : 1.8	NA
Key transformational aspects of SCF-SREP intervention	Demonstrate feasibility of innovative PPP business model for hybrid mini-grid investments, which can be promptly replicated and offer an alternative to the existing diesel-based mini-grid model for rural electrification	

Co-benefits

- Strengthen private sector role in off-grid electrification
- Foster economic development in rural areas
- Increase energy security and employment opportunities in rural areas
- Improve quality of life in rural areas, especially of female population from positive impacts on time saving, employment, education, safety, and maternal health
- Minimize public subsidies required for increasing electricity coverage in rural areas through use of renewable energy and private sector efficiencies

[16] Results reported in this column represent those from the SCF-SREP-funded Component C2 (off-grid electrification) under the World Bank Kenya Electricity Modernization Project (KEMP), which will also improve service delivery and reliability of the distribution network, establish a revenue protection program for sustainable loss reduction in electricity supply, and provide financing for the connection of new households in a more cost-effective manner.

[17] CO_{2eq} savings were estimated by applying a proxy-based method, which was approved by the SCF-SREP sub-committee and proposes an emission equivalent factor based on diesel-generated electricity: 793.7 tCO_{2eq} per GWh.

[18] While SCF-SREP funds will leverage US$13.2 million in support of off-grid electricity services for communities that are distant from the grid, the KEMP project will contribute significant amounts of IDA resources to enhance the distribution network and help restore KPLC's financial sustainability.

A. Introduction

Country and Sector Context

1. See Sections I and II of the Project Appraisal Document.

2. **Problem Statement.** The *Kenya Vision 2030 (the "Vision")* identifies energy and electricity as key elements of the country's sustained economic growth and transformation. Also, *the Vision 2030* establishes the overarching objective to reach universal electricity access by 2030. Attaining the goal of universal access will require complementing efforts for extending the national grid as well as providing electricity through mini-grids and stand-alone services. The challenge is particularly significant given large variations in access to electricity coverage between urban and rural areas. Today, around 35 percent of households in Kenya have access to electricity. Of these, the vast majority are located in urban and peri-urban areas. Rural areas have very low access rates to electricity reaching only six percent of the rural population.

3. The provision of electricity in rural areas will require a combination of grid extension and the introduction of alternative models for sustainable rural electrification, which the proposed Scaling-Up Renewable Energy Program (SCF-SREP) intervention intends to achieve through innovative and scalable models for hybrid mini-grid investments. Current experience in Kenya reveals that electricity uptake has been slow in diesel-powered mini-grids because, among other reasons, potential customers cannot afford the connection charges. Reportedly, about 20 percent of the households in mini-grid service areas obtain a connection.

4. Private sector engagement in either generation, or generation and distribution offers the prospect of increasing efficiencies, lowering costs and increasing connection rates. SCF-SREP funding will support cost-efficient and scalable business models for achieving rural electrification on a sustainable manner, which is essential if the national electrification goal is to be reached by 2030. This project proposes the deployment of hybrid mini-grids based on public-private partnerships as an alternative model for increasing electricity coverage in rural Kenya.

Kenya's SCF-SREP Investment Plan

5. The SCF-SREP Investment Plan for Kenya was endorsed by the SCF-SREP Sub-Committee in September 2011 with an initial allocation of up to US$50 million. Investments included in the Plan will support Kenya's initiatives towards achieving a transformational change that will lead the country towards a low greenhouse gas (GHG) emissions development pathway by harnessing Kenya's abundant renewable energy resources.

6. The following investments are included in the Plan:

(i) 200MW of Geothermal - to accelerate the shift to geothermal based power as the main source of base load generation capacity;
(ii) Hybrid Mini-grids Systems – to support scale-up of ongoing program for expansion of pilot renewable energy hybrid mini-grids in rural areas to increase

electricity access among households and institutions as well as to reduce local pollution and GHG emissions; and

(iii) Solar Water Heating (SWH) – to develop market incentives to scale up SWH systems for commercial, industrial, and residential buildings and to increase uptake of SWH and reduce peak demand.

Table 1: SCF-SREP Investment Plan for Kenya (US$ Million)

Project		GoK	SCF-SREP	AfDB / WBG	Dev. Partners / Commercial Loans	Private Investors	Total
SCF-SREP Initial Allocation	200MW of Geothermal – Phase A	126	40	234			400
	Hybrid Mini-Grid Systems	1	10[19]	10	42	5	68
SCF-SREP Reserves	200 MW of Geothermal – Phase B	4	25	75	200	96	400
	Solar Water Heating	1	10	2		47	60
Total		**132**	**85**	**321**	**242**	**148**	**928**

B. Project Description

7. The proposed SCF-SREP-funded hybrid mini-grid investments (US$7.5 million from SCF-SREP, US$2.5 million from IDA) will be implemented under the *World Bank Kenya Electricity Modernization Project (KEMP)*. Where connection to the national grid is not viable in the short and medium term, the use of SCF-SREP funding will be used for off-grid hybrid mini-grid investments based on Public-Private Partnerships (PPP) (Component C2 of KEMP). Typically, the schemes will be implemented in villages of approximately 400 prospective users and approximate demand of 250-500kVA to provide electricity services to residential, public, and commercial customers. Electrification of those areas will be implemented through mini-grids supplied by hybrid generation systems, combining renewable resources (solar or wind) and thermal units running on diesel. Funding from the SCF-SREP will be used to buy down the capital intensity of renewable energy generation of the hybrid mini-grid system, while SCF-SREP and World Bank resources committed to the KEMP for connection of new electricity users will finance associated distribution network infrastructure.

8. The final design of the off-grid hybrid mini-grid investments (*Component C2*) will be decided based on data collection, pre-investment studies, and institutional and regulatory framework considerations. The power supplier will be competitively selected based on lowest cost of electricity service and subject to meeting demand, service and quality standards. The business models will adopt a technology neutral approach.

[19] The US$10 million SCF-SREP funding will be allocated in two separate World Bank and IFC projects supporting the transformation of rural electrification in Kenya. The World Bank project (US$7.5 million) will support the deployment of hybrid mini-grid systems. The IFC project (US$2.5 million) will establish a trade finance facility for stand-alone solar PV and micro-grids.

PPP Business Model

9. This sub-component will implement a model for electrification through isolated mini-grids based on Public-Private-Partnership (PPP). The hybrid generation system will be implemented by an Independent Power Producer (IPP) (mini-grid private sector power supplier) with a Power Purchase Agreement (PPA) with KPLC. The IPP will invest in the fuel-based generation component and SCF-SREP financing will cover the supply and installation of the renewable generation facilities and IDA financing will cover the cost of the mini-grid distribution network. The construction of the distribution infrastructure will be implemented by the Rural Electrification Authority (REA) and new users will become KPLC customers. To ensure sustainability of provision of electricity services to users connected to the mini-grid, a contract between KPLC and a local company (possibly the IPP) for providing operation (network and commercial) and maintenance services will be signed. Fees charged by the services contractors will be passed-through into KPLC's allowed tariff revenues set by the Energy Regulatory Commission (ERC).

10. The power supplier will be selected competitively (e.g., based on offering the lowest levelized cost of electricity subject to meeting other performance requirements). REA will prepare the mini-grid Purchase Agreement and conduct the tendering process, jointly with KPLC. KPLC will review results and sign the mini-grid PPA with the IPP. The investor will receive a performance based grant (SCF-SREP funded). Subsidy options include: capital subsidy (based on the renewable generation capacity installed); generation based subsidy (based on the energy generated); and a combination of capital and generation based subsidy.

11. Pre-feasibility work will be carried out to inform technical optimization, economic and financial evaluation and subsidy design. As part of this pre-feasibility work, IFC (in co-ordination) with the Bank commissioned a market-sounding survey for mini-grid business models in November 2014. The draft report found there were mixed reactions on how to structure the subsidy element with some respondents preferring a capital subsidy, others preferring a generation based incentives while a few preferring a no-subsidy approach citing distortionary risks associated with subsidies. Capital subsidies and generation based incentives need not be mutually exclusive. The two can be offered as a package.

12. ERC will be responsible for approving the Mini-grid Power Purchase Agreement, issuing the licenses to the mini-grid private sector power suppliers and (if necessary) the operations and maintenance service contractors.

13. **Cost assumptions.** The table below provides the breakdown of cost assumptions for hybrid mini-grid investments based on 250kW stations and PPP business model. While these cost estimates are based on available data for four existing diesel mini-grid stations with integrated solar PV, it is expected that the combination of declining costs, expertise and efficiencies of private sector, risk reduction and competition would result in lower cost. For the four mini-grids, the solar PV installed costs ranged from $6,000 to nearly $9,000 per kW and around $2,000 per kW for diesel generation. The cost for distribution network totaled $1,200 per kW and $300,000 per mini-grid station was estimated for civil works (land acquisition, buildings, roads, water supply, fuel tanks, and piping, etc.). The total cost for 250kW hybrid mini-grid system (solar PV, diesel) is estimated at $1.4 million or approximately $5,600 per kW.

Table 2: Cost Assumptions

Cost assumptions based on 250 kW hybrid mini-grid System		**US$**
Load factor	20%	n/a
RE fraction	30%	n/a
RE cost	6,000 $/kW	$450,000
Diesel cost	2,000 $/kW	$350,000
Distribution cost	1,200 $/kW	$300,000
Civil works cost	$300,000	$300,000
Total		**$1,400,000**

14. **Transformation.** The project will help test a different model for electrification with public and private participation. The demonstrational effect from the proposed SCF-SREP-funded project will enable replication and scaling-up of similar privately-led investments throughout the country, which will be essential to achieve the universal access goal by 2030. The project will contribute to the transformation of rural electrification in Kenya by exploring an alternative to the current model of diesel-based mini-grid electricity supply. Specifically, the project will focus on removing the principal constraints to engaging the private sector to partner with public sector to deliver electricity services to households in the mini-grid service area, powered in-part by renewable energy sources. The public-private partnership models will seize on the public sector experience for setting up the conditions for attracting and catalyzing private investment, as well as private sector experience for cost optimization. By mitigating constraints and enhancing confidence for private investments, sustained expansion of services can proceed without or with more limited government or donor support in the future.

15. **Rationale for SCF-SREP Financing.** There are still major challenges to overcome as Kenya strives for achieving universal access to electricity. Notably, the significant disparity in electricity coverage between urban and rural centers signals the necessity to introduce new, innovative, and scalable initiatives for rural electrification. The competitive allocation of SCF-SREP funding will be essential to increase the economic attractiveness of hybrid mini-grid business models through capital cost buy down for renewable energy capacity added to the system. In the absence of SCF-SREP funding, the public sector will most likely continue with the current approach of supplementing grid extension efforts with the deployment of costly diesel-powered mini-grid systems without the involvement of the private sector. SCF-SREP support will be of vital importance to demonstrate the relevant role the private sector can play in building sustainable business models for rural electrification, especially in alleviating the need for limited public resources for increasing electricity coverage in rural areas. In this context, the use of SCF-SREP financing will be fundamental to help mitigate constraints and enhance confidence to engaging the private sector to partner with the public sector for the delivery of electricity services using renewable energy resources.

C. Assessment with SCF-SREP Investment Criteria

Increased installed capacity from renewable energy sources

16. There are currently 14 mini-grid power stations in Kenya with a total installed capacity of 19.16 MW, comprising of 18.1 MW thermal, 0.55 MW wind, and 0.51 MW solar. The proposed KEMP project will support the development of an additional 6 - 9 mini-grid investments (250-500kVA) with at least 1.5–2.25 MW installed capacity, including at least 0.5–0.7 MW of renewable energy capacity. These estimates were conservatively assumed based on implementation of 250kVA mini-grid systems, whereas it is anticipated that 500kVA mini-grid systems will also be implemented.

Increased access to energy through renewable energy sources

17. The proposed hybrid mini-grids will serve communities with households, public sector facilities, businesses and industrial loads. Since the majority of customers are likely to be households, it is estimated that the SCF-SREP-funded project will provide access to electricity to approximately 2,700 – 4,050 households or approximately 13,500 – 20,250 people (assuming five people per household).

Low emission development

18. Kenya's installed capacity for power generation is dominated by hydro power at about 46 percent, with thermal capacity at 38 percent and geothermal capacity at 14 percent. Nearly half of the hydro capacity is not available during periods of severe drought. In an attempt to have a generation mix that is not vulnerable to weather changes, while at the same time reducing the contribution of the expensive thermal power, the Government has set a strategy for promoting the use of "green energy" (low carbon sources) for electricity generation. The proposed SCF-SREP-funded project will therefore support Kenya's efforts for low carbon development by contributing to the expansion of electricity access in rural areas. The scaling-up of hybrid mini-grid systems using renewable energy will allow for "greener" expansion of electricity access in rural areas, offering a cleaner and more cost-efficient alternative to the current model of diesel-based power generation. The construction of renewable hybrid mini-grids will not only increase energy access and improve energy security in rural areas, but also enhance climate resilience and development of a green economy and will reduce the use of fossil fuels and firewood for domestic consumption.

19. The application of the proxy-based method agreed for the SCF-SREP program, which applies an emission factor based on diesel-generated power, helps estimate CO_{2eq} savings for this project. Based on the proxy 793.7 tCO_{2eq} per GWh, the proposed SCF-SREP-funded project will help avoid 657 – 986 tCO_{2eq} every year and 13,141 – 19,711 $mtCO_{2eq}$ over the lifetime of the investments, hereby estimated at 20 years.

Affordability and Competitiveness of Renewable Sources

20. The long-term goal of becoming a middle-income country by 2030, as envisioned under the *Vision 2030,* has encouraged the Government to develop infrastructure for cheaper and adequate electricity. The high cost for extending the national grid in rural areas, where power demand is low and settlements dispersed, remains a significant barrier for rural electrification. Since the early 1980's, the off-grid rural electrification program has relied on diesel power mini-grid systems, which had low investment requirement, but exhibited high fuel and operating costs with a levelized cost of electricity of approximately 50 US$cent per kWh. The deployment of hybrid mini-grid systems, fueled in part by renewable energy resources, will offer lower levelized cost of electricity in rural areas.

21. Modelling studies using HOMER software for an illustrative hybrid station using solar PV as the renewable energy technology choice located in northern Kenya and with a representative load profile (peak demand of about 260kW and daily energy demand of 3.3 MWh/day) was conducted to determine whether hybrid mini-grid systems would offer the least cost solution. The analysis, which considered several configurations of solar PV, diesel, and battery, confirmed that hybrid configurations offer least levelized cost of electricity and that the system with the lowest levelized cost of electricity can deliver electricity at about 85 percent of a diesel-only system cost. In all cases, the hybrid systems also exhibited stronger economies of scale both in terms of levelized cost of electricity and capital investment required per electricity demand. The SCF-SREP-funded project will explore all avenues for cost reduction to minimize levelized cost of electricity and offer the least cost supply of electricity in rural areas. Thorough analyses will be conducted to determine the optimal technology choice and configuration to minimize capital investment and diesel fuel use, as well as optimizing staffing requirement and increasing the customer base to justify the investments on economic grounds.

Productive Uses of Energy

22. The SCF-SREP funded sub –component of the KEMP Project will strive to build markets and increase demand for electricity services in target communities. Customer creation and promotion of productive uses of electricity will also contribute to the sustainability of the project, as the sustainability of the proposed business models also hinges on reaching the estimated demand for power in the communities being served. The project will build on KPLC's experience to promote productive uses of electricity through pre-electrification customer education, partnerships with equipment manufacturers, financial institutions, and other stakeholders. The electricity generated from hybrid mini-grids would stimulate income generation activities through productive uses of energy and job creation. Hybrid mini-grids have the potential to enable a range of services, including residential lighting and refrigeration, operation of electrical appliances, batter charging centers, machines for the grinding of grain, etc.

Economic, Social, and Environmental Development Impact

23. The SCF-SREP funded sub –component of the KEMP Project is in line with the vision of the Government for the electricity sector. It will contribute to the expansion of electricity infrastructure for economic and social development using renewable energy (low carbon sources)

and maximizing private sector investment in renewable energy generation. The engagement of the private sector in off-grid electrification will contribute to the Government's strategy for increased access to electricity using hybrid mini-grids powered in part by renewable energy sources. The project will seize on the skills and knowledge of the private sector for optimizing project design and cost minimization, which offers the prospect of increasing efficiencies, lowering costs of electricity supply and increasing energy access in remote areas.

24. The proposed sub-component will help to: (i) increase quantity and quality of electricity services in remote areas for households, public sector facilities, businesses and industrial loads; (ii) minimize public subsidies required through use of renewable energy and private sector efficiencies; (iii) reduce dependency on costly imported diesel for power generation in remote areas; (iv) accrue educational benefits (e.g., through the provision of electricity to schools and households, lighting allows children to study at night); (v) reduce GHG emissions from using renewable energy sources (in part) for power generation; (vi) increase income or productivity from promoting productive uses of electricity in agricultural, commercial, and industrial activities; (vii) strengthen Kenya private sector involved in off-grid electrification; (viii) generate employment opportunities, mainly related to construction, operation, and maintenance of hybrid mini-grid systems; and (ix) increased public safety in service areas due to street lighting.

Economic and Financial viability

25. The financial internal rate of return was estimated at 12 percent based on a preliminary financial analysis conducted for an illustrative hybrid mini-grid investment. The financial analysis assumed cost of debt of eight percent, loan tenor of 10 years, 70 percent debt, US$ inflation on diesel fuel and O&M assumed as 2.5 percent per annum. Cost of diesel fuel is directly passed through and not included in the fixed feed-in tariff that KPLC would pay for electricity to the private supplier. A capital grant of $1,000 per kW of renewable capacity was assumed in order to create an incentive to maximum renewable share and reduce electricity supply cost. A minimum return on equity of 20 percent and a debt service coverage ratio of 1.2 was assumed. Life of supply contract was assumed as 25 years.

26. Economic and financial analyses for the KEMP Project, including detailed description of methodology and assumptions, are presented in Annex 6.

Leveraging of Additional Resources

27. The proposed SCF-SREP-funded mini-grid investments will crowd-in other sources of financing through innovative public-private partnership business models for hybrid mini-grids development. The use of SCF-SREP funding will be essential to leverage limited available public resources through increased private sector participation. The financing leverage ratio is estimated at 1:1.8 with most of the funding coming from the private sector. An additional $450 million IDA resources will be mobilized under the KEMP Project toward the enhancement of the distribution network and in support of KPLC's financial sustainability, which will help KPLC offer strong and reliable off-take commitments to private investors in new power generation capacity.

Gender

28. The sub-component will expand electricity coverage in rural areas and the positive impact of rural electrification will affect positively on the living conditions of approximately 13,500 – 20,250 people, of which half are estimated to be female. The positive impacts of rural electrification on women are well known, ranging from time saving, employment, and education, to safety and maternal health. Electricity will improve the quality of life to the whole family, and in particular to women through increasing the time they can spend on income generating activities. Evidence suggests that household electrification raises rural employment among women by enabling home micro-enterprises. Street lighting in public spaces is a valuable service for improving personal safety for women, men, and children.

Co-Benefits of Renewable Energy Scale-up

29. The proposed sub-component is expected to have direct impact on Kenyan living conditions and economic productivity, bringing a series of co-benefits to rural communities, including:

30. *Reduced cost of and increased rates of electricity supply.* The engagement of the private sector in either generation, or generation and distribution will offer the prospect of increasing efficiencies, lowering power supply costs, and increasing connection rates. The development of innovative public-private partnership models will seize on the skills and knowledge of the private sector for optimizing project design and minimizing cost. The proposed sub-compoent proposes an improvement to the current model for off-grid electrification using diesel fueled mini-grids.

31. *Strengthened private sector role and participation in off-grid electrification.* The proposed SCF-SREP-funded sub-component will remove major constraints to engaging the private sector to provide off-grid electricity services to complement the ongoing public sector efforts to expand electricity access in rural areas. The provision of adequate financing incentives and establishment of suitable implementation arrangements will enhance private sector confidence which is necessary for future expansion of sustainable energy access efforts without or with more limited government or donor support.

32. *Savings in Public funds.* Increased private sector investment and enhanced efficiency in off-grid electrification efforts will lead to savings in public funds which can be used to attend other national priorities aimed at contributing to economic and social development in the country.

33. *Increased energy security in rural areas.* Increased penetration of renewable based mini-grids will help Kenya diversify and contribute to a more sustainable energy mix in rural areas, reducing dependence on imported fossil fuels and thus enhancing the energy security in these areas.

34. *Low carbon development.* The development of hybrid mini-grids will lead to savings of CO_{2eq} emissions in the order of 657 - 986 tons per year, or an equivalent of 13,141 – 19,711 tCO_{2eq} over the lifetime of the investments. This is a conservative estimate and assumes that electricity

would have been generated using diesel-powered systems. In addition, the sub-component will lead to local pollution benefits from avoided use of kerosene for lighting.

35. *Employment opportunities.* The proposed sub-component will lead to job creation for private developers and staff in charge of operating and maintaining the mini-grid stations. While it is not entirely clear how many additional jobs will be created, it is estimated that considerable staff will be required for operating and managing the mini-grid stations. As a reference, KPLC optimized norms for staffing mini-grid stations recommend 27 staff per mini-grid station serving more than 1,000 customers or 18 staff for stations servicing less than 1,000 customers. By adopting these norms as guidance, the deployment of 6 – 9 hybrid mini-grids proposed under the project will lead to the creation of approximately 200 jobs.

36. *Economic benefits.* The delivery of reliable electricity services will maximize economic development opportunities for rural communities. The provision of public lighting will directly benefit local shops and markets, which can now be open for business during extended nighttime hours. Economic benefits will also spur among private entrepreneurs, who would be able to add value to their businesses through the promotion of productive uses of electricity (e.g., grain milling, carpentry, tailoring). The provision of electricity will also contribute to the creation of new businesses that use electricity, including economic activities that are new to the area.

37. *Improved quality of life in rural areas.* The improvement will come from either direct electricity access or indirect access to improved services resulting from the Government's program to connect clinics, schools and trading centers. The provision of reliable electricity services in rural areas can lead to better education, health and public security. The availability of electric lighting during the evening will allow children to study for longer hours, contributing directly to better educational outcomes. Improved instruction could also result from the use of computers and other equipment in schools. Lighting services in public spaces will also increase personal safety for individuals wandering and working in previously dark public areas.

D. Monitoring and Evaluation

38. Overall monitoring and evaluation of KEMP project activities will be performed by MoEP. For the SCF-SREP funded sub-component C2 for off-grid electrification, REA will be responsible for the implementation, monitoring and evaluation, and will report to the MoEP. The project's key performance indicators for the off-grid hybrid mini-grid component are aligned with the indicators required under the SCF-SREP program. the regular monitoring and reporting on the agreed project indicators will be conducted by a Project Implementation Unit (PIU) in REA, which will include a dedicated M&E officer. REA will have the responsibility to collect data and report on the performance indicators (see Annex 1: Results Framework) on a semiannual basis for the PDO indicators and for the intermediate outcome indicators at the component level. An impact assessment from the proposed project activities will be undertaken at project completion as part of the implementation completion report for the KEMP project.

E. Implementation Readiness

39. *Country and Energy Sector Strategies.* The Government is strongly committed to expanding electricity infrastructure through the *Vision 2030*. The guiding principle of the Government's strategy for expanding infrastructure in the electricity sector is to *"promote equitable access to quality energy services at least cost while protecting the environment"*. To implement the strategy, the Government has prepared the *Electricity Access Investment Program 2009-2014* (the Program). The Program integrates the results of three separate planning studies: the Least-Cost Power Development Program (LCPDP) 2009-2029 (for generation capacity development); the Rural Electrification Master Plan; and the Kenya Electrification Investment and Policy Prospectus. The investments included in the Program, of approximately US$5 billion cover all three elements of the Government's strategy for electricity development simultaneously (i.e., capacity expansion, enhanced security, and increased access). The Government has outlined a new program, the *Last Mile Program* for electricity access. The access strategy that was followed in the past had some serious flaws as connections were made in response to individual customer application which failed to leverage the benefits of economics of scale. The new National Electrification Strategy that is in the early stage of design will include, among other measures, proper planning and implementation of the program, definition of priorities, definition and effective application of subsidization schemes aimed at covering the gap between investment costs of connecting and the customers' ability to pay (affordability).

40. *Institutional arrangements.* The Ministry of Energy and Petroleum (MoEP) will be responsible for the overall coordination of the KEMP project and Rural Electrification Authority (REA) will be responsible for implementation of Sub-component C2 for off-grid electrification. Annex 3 describes project implementation arrangements specific to the SCF-SREP-funded component (i.e., sub-component C2), including responsibilities of KPLC, REA, ERC and the private sector.