



Report Number : ICRR0021330

## 1. Project Data

<b>Project ID</b> P103037	<b>Project Name</b> KE-Electricity SIL (2010)	
<b>Country</b> Kenya	<b>Practice Area(Lead)</b> Energy & Extractives	<b>Additional Financing</b> P125388,P153179,P153179

<b>L/C/TF Number(s)</b> IDA-47430,IDA-58440,TF-10097,TF-A2191	<b>Closing Date (Original)</b> 30-Sep-2016	<b>Total Project Cost (USD)</b> 395,113,355.12
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<b>Bank Approval Date</b> 27-May-2010	<b>Closing Date (Actual)</b> 31-Dec-2017
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	<b>IBRD/IDA (USD)</b>	<b>Grants (USD)</b>
Original Commitment	330,000,000.00	8,150,000.00
Revised Commitment	398,000,000.00	8,150,000.00
Actual	387,279,519.08	8,150,000.00

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<b>Project ID</b> P125388	<b>Project Name</b> KE: GPOBA W3: Kenya Electricity ( P125388 )
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<b>L/C/TF Number(s)</b>	<b>Closing Date (Original)</b>	<b>Total Project Cost (USD)</b> 0.00
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Bank Approval Date	Closing Date (Actual)	
24-Feb-2010		
	IBRD/IDA (USD)	Grants (USD)
Original Commitment	0.00	0.00
Revised Commitment	0.00	0.00
Actual	0.00	0.00

## 2. Project Objectives and Components

### a. Objectives

According to the Financing Agreement dated July 5, 2010 (Schedule 1, page 5), the project development objectives (PDOs) are:

- (1) To increase the capacity, efficiency, and quality of electricity supply
- (2) To expand access to electricity in urban, peri-urban, and rural areas.

The Project Appraisal Document (PAD) of May 3, 2010 and the Implementation Completion and Results Report (ICR) of June 30, 2018 state exactly the same PDOs.

### b. Were the project objectives/key associated outcome targets revised during implementation?

No

### c. Will a split evaluation be undertaken?

No

### d. Components

The project's main implementing agencies include:

- KenGen (Kenya Electric Generating Company)
- KETRACO (Kenya Electricity Transmission Company)
- KPLC (Kenya Power and Lighting Company)
- REA (Rural Electrification Authority)
- MOE (Ministry of Energy and Petroleum)

The project included four main components:



### Component 1: Geothermal Generation

(The total component cost of US\$ 1,035 million was financed as follows: IDA US\$120 million, JICA US\$323 million, AFD US\$210 million, EIB US\$168 million, KfW US\$84 million, KenGen US\$130 million)

This component involved the construction of 280 MW of geothermal generation capacity, which consisted of:

- a. The expansion of the capacity of the existing Olkaria I power station by 140 MW;
  - b. A new power station, Olkaria IV, with a capacity of 140 MW;
  - c. A steam gathering system, geothermal laboratories and workshops, a new KenGen's office block outside the Hell's Gate National Park to minimize human and vehicular movements within the park, the access road to Olkaria IV and geothermal board of consultants.
- IDA's contribution of US\$120 million financed the steam gathering system, the connection of steam wells to the two power stations, associated facilities to transmit power to national grid, installation of construction infrastructure, and facilities required to operate the plants such as access roads, water and electricity supply, borehole roads, and others.

### Component 2: Transmission

(The total component of US\$ 72.5 million was financed by IDA for US\$64.5 million, and KETRACO for US\$8 million)

This component included the construction of three 132-kV transmission lines and substations to step down the voltage from these lines to the distribution systems of (a) Kindaruma-Mwingi-Garissa; (b) Eldoret-Kitale; and (c) Kisii-Awendo.

### Component 3: Distribution

(The total component cost of US\$ 272 million was financed as follows: IDA US\$134 million, AFD US\$10 million, KPLC US\$30 million, REA US\$2 million, and users US\$ 91 million. The World Bank-administered Global Program for Output-Based Aid (GPOBA) also contributed US\$5 million).

This component included the expansion and upgrading of the distribution network and the connection of additional 300,000 customers, 17% of whom will be in urban slums. The four subcomponents were:

- a. Strengthening and extension of the distribution network in the greater Nairobi metropolitan area and in the coast, Mt. Kenya, and Western and Nyanza provinces
- b. Electrification of priority loads in rural areas
- c. Slum electrification of 50,000 low-income customers in urban slums
- d. Revolving fund for Deferred Connection Fee Payments

Activities in this component were supplemented by a GPOBA grant of US\$5.15 million, which aimed to increase access of low-income households in slums by providing grants that subsidize the cost of the connection of grant-eligible consumers.

### Component 4: Sector Institutional Development and Operational Support

(The component cost of US\$11.5 million was financed by IDA)



The three subcomponents included: (a) Institutional Development and Studies; (b) Training; and (c) Project Implementation Support and Monitoring and Evaluation (M&E).

#### **e. Comments on Project Cost, Financing, Borrower Contribution, and Dates**

Project Cost. The total project cost was at US\$1,191 million according to page 6 of the ICR. However, this is inconsistent with the figure of US\$1,461 million provided in the Data Sheets. Annex 3 on Project Cost by Component is also inconsistent with these two previous figures, since the table only includes IDA financing and not "Project Cost" as indicated in the title of the table. The figure of US\$1,461 is used in the paragraph below.

Project Financing. IDA financed two credits, namely, US\$330 million (IDA-47430) and US\$68 million of Additional Financing (IDA-58440). Two trust funds grants from the Global Program for Output-Based Aid (GPOBA) were also provided, namely, US\$5.15 million (TF-10097) and US\$3 million (TF-A-2191). Thus, total World Bank financing was US\$406.15 million, of which US\$395.43 million was disbursed. At appraisal, other co-financiers were expected to contribute an additional US\$1,055.65 million, thus yielding a total project cost of US\$1,461.80 million. These other sources of financing included the European Investment Bank (US\$168 million), the French Agency for Development (US\$10 million), the Japan International Cooperation Agency (US\$323 million), the German Kreditanstalt fur Wiederaufbau (US\$84 million)--in addition to the Borrower and other local sources, as indicated immediately below.

The ICR team provided the following additional information. The project disbursement ratio is reported as 97.3%, as the loan amounts available for disbursement in US\$ equivalent were lower than the loan amounts at approval due to the loss in fluctuation of exchange rate and cancellation of US\$310,000 from component A under IDA 5844. Close to US\$10 million of the original credit 47430 and over US\$2.5 million of IDA 58440 were lost to foreign exchange fluctuations. In SDR terms, the full loan amount of SDR 217 million in IDA 47430 was 100% disbursed, compared to US\$319.67million-US\$321 million (depending on the SDR/US\$ exchange rates scenario used in the system) that was disbursed and the US\$330 million assumed at approval. On IDA 58440, only SDR 225,027.73 (or 0.5%) was not disbursed out of SDR48 million. The US\$ equivalent amount at approval was US\$ 68 million, compared to the disbursed amount is only US\$65 million to 66 million (depending on the SDR/US\$ exchange rates scenario used in the system).

The SDR 225,027.73 (equivalent to US\$310,000) was cancelled from IDA 58440, from the generation component (component A) and pertained to a dispute between the implementing agency and the contractor, the payment for which had not been made/documentated by the end of the payment grace period and had therefore to be refunded to the Bank. Therefore if the foreign exchange losses are excluded from the funding available for disbursement, it can be inferred that disbursements for all components under IDA 47430 were 100% and 99.5% under IDA 58440.



Regarding co-financing, a number of development partners financed the geothermal generation component. JICA, EIB, KfW and AFD financed the power plants and infrastructure needed to evacuate power. IDA along with KfW financed steam gathering system as part of the generation component. IDA also financed the local infrastructure and geothermal board of consultants. KfW also financed a consultancy for the E&M contract. In addition to the generation component, IDA financed the T&D, distribution (including access) and sector TA/institutional development components. Other than IDA and local contributors, no development partner was involved in components for T&D, distribution, access and institutional development components. However, the Government launched the 'last mile connectivity program' in 2015 where a number of donors joined including IDA's Kenya Electricity Modernization Program.

Borrower Contribution. KenGen was to contribute US\$130 million for the geothermal component; KETRACO, US\$8 million for the transmission component; and KPLC US\$30 million and the Rural Electrification Authority US\$10 million for the distribution component. The actual figures were not provided in the ICR. Subsequently, the ICR team clarified that during ICR preparation, local contributors provided information that all funds had been disbursed. However, they did not maintain disbursement data by project component. The government had embarked on a major access improvement program with the intention of providing universal access by 2020 (now updated to 2022). There were substantial investments underway in this regard across the sector value chain, and the agencies monitored disbursement as part of the flagship initiative, not at this project's level.

Dates. The project was approved on May 27, 2010. A midterm review was carried out on May 1, 2015, about 1 year and a half before the original closing date of September 30, 2016. As part of the April 20, 2016 restructuring, the project's closing date was extended by 15 months. There were 3 restructurings in May 2013, May 2014, and April 2016 that involved reallocation among disbursement categories, adjustments in components and costs, changes in the implementation schedule, and extension of the closing date. The project closed on December 31, 2017.

### 3. Relevance of Objectives

#### Rationale

Country and Sector Context. In 2008, Kenya developed Vision 2030, a long-term development strategy focused on transforming the country from low-income to strong middle-income by 2030. However, Global economic downturn and other crises occurring in 2008 and 2009 put brakes on that initially strong trajectory toward economic growth and achievement of Vision 2030 goals. Political unrest interrupted trade flows and dampened tourism. A severe drought lowered food production and hydropower-dependent electricity supply. The public finance situation worsened. Kenya's private sector--a main source of economic growth--faced serious infrastructure constraints. Internal infrastructure bottlenecks, especially transport and electricity supply, were constraining the growth of the private sector. At the same time, the electricity sector was



encountering major issues. There was a heavy dependence on hydropower, which had become unreliable due to the drought. Yet geothermal sources of energy were underdeveloped. The under-investment in transmission and distribution was serious, leading to unreliable electricity service and unnecessarily high technical losses. Electricity access levels were low, as much as 20 percent lower than other African countries at a similar income level. The cost of electricity service was high and was an obstacle to expanding electricity access to lower income households. The project was designed and appraised to help address these development constraints.

Relevance of the PDOs. The PDOs were substantially relevant at the time of appraisal and project closing. The PDOs were realistic, as they were provided with adequate resources and were critical components for achieving the Government's least-cost development plan and national electrification strategy. The PDOs were appropriate, given the country and sector policy framework, and were also measurable particularly on the project outputs. The PDOs are fully consistent with the Kenya Country Partnership Framework (CP) for FY2014-2018 and the government's own strategy. The CPF explicitly recognizes that "enhanced infrastructure and logistics are the backbone of long-term growth and IDA financing should be used for some publicly merited investments, in the first instance targeted at electricity modernization through upgrading of selected transmission and distribution networks...". The project supported the government's objectives of expanding access in order to achieve universal access goals by 2020. The Government prepared the Electricity Access Investment Program (2009-2014), which adopted a sector-wide approach to increase generation capacity, expand and upgrade the transmission and distribution networks, and extend affordable electricity to households. The Government's Least Cost Power Development Plan (LCPDP) for FY2015-2035 also confirmed that geothermal power generation is the last-cost alternative to supplying Kenya's base load power requirements. The PDOs currently remain relevant to the FY2019 National Electrification Strategy, which identifies least-cost options including grid expansion and intensification, mini-grids, and stand-alone solar systems that are needed to reach universal electricity access in Kenya.

**Rating**  
High

#### 4. Achievement of Objectives (Efficacy)

##### **Objective 1**

##### **Objective**

To increase the capacity, efficiency, and quality of electricity supply

##### **Rationale**



### Theory of Change

The ICR's discussion of the theory of change (paras 7 to 9) is not based on, and does not reflect the project's own interventions. Instead, the discussion presents highlights of available literature reviews (dated 2010, 2012 and 2016) on how "the delivery of reliable modern energy services contributes to the Bank's twin goals of poverty reduction and shared prosperity, both indirectly through contributions to economic growth, and directly by enriching the lives of beneficiaries of energy services." Thus, attribution is not established in the ICR, since there is no specific discussion whether the project's own inputs and outputs are causally linked to the reported intermediate and final outcomes. Although the literature review provides broadly relevant and interesting background, it does not directly assess the causality chains between the project's diverse array of interventions and results.

The arrows in the accompanying "results chain diagram" are not really "pathways", as described in the ICR. Rather, the columns--and the boxes under the columns--are snapshots that basically list the activities under each of the four components, and the physical outputs. In a sector where there are so many operational entities and financing sources (including multiple donors and private investors), the causal pathways are unclear from the snapshots provided. For example, the completion of studies and provision of training jumps to "capacity strengthened" without tracing whether the incremental improvements were caused by, *inter alia*, the implementation of the recommendations from the studies, the adoption of new policies, the modification and mainstreaming of new procedures and practices, and measurable changes in operational behavior. Moreover, within the dynamic context of Kenya's complex and persistent energy sector issues, the relative significance of the project's contributions is unclear from the diagram. For example, the diagram indicates that 57,667 connections of slum consumers were "new", while also citing that 177,667 slum consumers were connected, thus suggesting that interventions outside the project were also being counted in the diagram. This lack of clarity is also demonstrated by the absence of any indications of the significance of project results against the overall magnitude of the slum connection problem.

Thus, in the assessment presented below of the efficacy of PDO 1, one would expect to see credible links between the column on Activities and Outputs (i.e., procurement actions and disbursement of funds leading to construction of infrastructure). However, the causality chains that would directly link project Outputs to the reported Development Outcomes are very weak, since such an assessment of attribution was not presented in the ICR. The presence of many active donors and financiers in the energy sector necessitated a sharper analysis of project attribution.

Regarding the definitions of quality (PDO1) and access (PDO2), the ICR team clarified that the selection of indicators that defined quality were based on the level of data that would be available. The project had chosen indicators that would be feasible to monitor bearing in mind the level of automation in distribution system management in KPLC. Until recently, a large part of the KPLC's offices were not covered by the system and breakdowns and outages were still being reported manually. In fact, during the third restructuring, the indicator formulation and definition was updated to be more specific and aligned to KPLC's measurement system.



## Outputs

The following outputs were achieved by the project's December 2017 closing date (the issue of "zero" baselines is discussed under PDO 2):

- 280 MW of incremental geothermal power generation capacity were constructed and operational (140 MW at Olkaria I and 140 MW at Olkaria IV), both generating an estimated 2,269 GWh in FY2018. Associated infrastructure was installed, including access roads, supply of water and electricity, borehole roads, offices).
- 7 substations and 3 transmission lines were completed.
- 24 distribution substations were completed with project financing.
- 32 other distribution substations were constructed, with financing for materials coming from the project and installation from counterpart funds.
- 340 kilometers of transmission lines were constructed or rehabilitated.
- 11,507 kilometers of distribution lines were constructed or rehabilitated.
- 255,000 meters were installed.
- 7 sector-level institutional studies were completed.
- Training was provided to staff of MOEP, KenGen, KPLC, KETRACO, and ERC on sector issues relevant to the project.

## Outcomes

(Electricity access and connection of slum consumers are discussed under PDO 2 below.)

### **1. The target for lowering electricity losses was not achieved, as performance worsened.**

Compared to a baseline of 16.3 percent losses per year in the project area, the end target of 15.9 percent was not achieved, as actual losses worsened to 18.9 percent at project completion. The ICR Review originally raised the following issues: (i) the ICR does not assess the extent to which the worsening of losses had canceled out the new generation achieved under the project; and (ii) the ICR does not analyze the role of the Bank--both strategically and operationally--in possibly exacerbating system losses because the Bank was significantly increasing generation capacity and supporting enormous increases in electricity access through the extension of low-voltage distribution lines, at a time when existing transmission lines were overloaded and the commission of new lines were delayed. The ICR gives these precise reasons for the higher system losses that resulted (paragraph 46, page 17). In short, generation and consumption were both being accelerated, despite the clear knowledge that the new supplies could not be evacuated to consumers due to shortages in transmission capacity. This was not just a post-completion phenomenon. In FY2017, the ICR (paragraph 41, page 15) reports that the power generation from both Olkaria power plants had to be curtailed because of "transmission congestion of the only line evacuating electricity from the Olkaria geothermal field to the load center of Nairobi...". Geothermal capacity at Olkaria was being rapidly commissioned despite the delays in the completion of another transmission line.





In response, the ICR team clarified that the level of system losses did not cancel out the benefits of additional power supply. Generation capacity has also grown significantly having doubled over the period from 1,310 MW to the current 2,670 MW, and the country has overcome the capacity and energy shortfall. In fact, the least cost power development plan points to a overcapacity in the immediate future. The ICR team also clarified that the country has a transmission master plan that forms part of the least cost power generation plan. During 2012-2018, about 2,200km of new transmission lines has been added by Ketraco (almost 50% of existing transmission assets). KETRACO's Transmission Master Plan 2017-2035 estimates that 6,000km of transmission lines are required by 2022 and further 4,500km by 2035 for a total cost of US\$ 5.8 billion. About 1,700km of these lines are under construction, which include 845km domestic lines and 839km regional interconnectors with Ethiopia, Uganda and Tanzania. The ICR team indicated that the government was pushing strongly for universal access (and has recorded the most impressive expansion of access in Sub-Saharan Africa this decade), but it had also provided and gathered (from donors) considerable resources to meet its goals, both in terms of financial support and commitment, which led to KEEP substantially achieving and surpassing intended outcomes.

## **2. The target of reducing service interruptions was more than achieved.**

According to the ICR (paragraph 49, page 17), the number of service interruptions fell significantly from 9.79 per 1,000 customers (June 2015) to 1.94 per 1,000 customers at project closing (December 2017), due to mainly to enhancements in grid reliability. KPLC strengthened the distribution network by implementing extensive measures that focused on maintenance of the low-voltage network. While significant, service interruptions is only one dimension of "quality". The other dimension is the issue of low or fluctuating voltages, which the project and the ICR did not address. (The Project Appraisal Document did not provide a technical definition of electricity service quality.) Thus, although highly important, "service interruptions" alone seems to be an inadequate measure of quality, especially in light of the whole evolution of how "energy access" was being defined and measured as part of the high-profile Sustainable Energy for All (SE4All) dialogue that occurred globally (with the UN and the Bank at the helm) during the project's implementation. None of the SE4All qualitative and quantitative improvements for measuring energy access was reflected in the original and restructuring documents of the project; there were also no references in the ICR, despite the Bank's high-level commitments and support for SE4All.

## **3. Enhancement of the country's security of supply was achieved.**

The increase in geothermal generation capacity is from a domestic, renewable energy that is also Kenya's least-cost energy source. At project closing, according to the ICR (para 42, page 16), "geothermal capacity stood at 652 MW. constituting 27 percent of total installed capacity, and providing 45 percent of total energy needs, up from 13 percent in 2013." This incremental renewable energy capacity has displaced what would otherwise be thermal generation capacity and represented significant savings in equivalent fuel costs. In terms of geothermal energy development, Kenya is now one of the ten leading countries globally.

## **4. The lower-cost electricity generation source delivered savings to consumers.**

The ICR (paragraph 42 and 43, page 16) reports that "The tariff paid by electricity consumers [was] reduced by about 4 Kenyan shillings compared to what the bills would have been in the absence of the electricity



produced by Olkaria." The average reductions were 22 percent for domestic consumers and 25 percent for commercial and industrial consumers.

The project's infrastructure outputs were completed and are in operation. The reduction of service interruptions was more than achieved; greater security of supply and delivery of lower-cost electricity were also achieved. Reduction of electricity losses was not achieved. On balance, the efficacy of PDO 1 is rated substantial. However, the articulation of the causal chains was weak or absent in the ICR's theory of change, and attribution was assumed but not assessed in the ICR.

**Rating**  
Substantial

## **Objective 2**

### **Objective**

To expand access to electricity in urban, peri-urban, and rural areas

### **Rationale**

#### Theory of Change

The PAD and the ICR did not develop a theory of change related to the expansion of electricity access. This is symptomatic of the outdated concept that access just means connections. Consequently, the ICR paragraphs discussing this PDO 2 focusses on connections. However, as discussed above in the PDO 1 outcome related to service interruptions, the relevant current definition and strategic approach to energy access has become more comprehensive as a result of the global dialogue, the Bank's high-level commitments, related to SE4All. Access is no long seen as just physical connections. Its multiple dimensions--including reliability, quality, affordability, duration, legality, etc.--have been the subject of several publications and workshops by the Bank's Energy Sector Management Assistance Program (ESMAP) intended to mainstream ESMAP's analytical work on the Multi-Tier Framework for Measuring Energy Access (MTF). There is little or no reflection of this current energy knowledge and practice in the ICR or the restructuring documents which coincided with SE4All and MTF. In response, the ICR team clarified that "The first set of MTF baseline surveys is still ongoing and Kenya's preliminary results were presented to the Government of Kenya in November and is inherently consistent with KPLC figures on utility connections."

#### Outputs

These are the same as those listed under PDO 1 above.



## Outcomes

### **1. The target for electricity access is reported as having been exceeded by 115 percent but the evidence is not fully clear.**

KPLC is reported to have provided electricity access to about 23.6 million people, compared to the target of 11 million. However, that the ICR (table on page 38) indicates a baseline of zero, which does not seem consistent with the project activity of expanding the already existing capacity of Olkaria I power station, for which prior connections were already made without this project. In other words, the incremental capacity financed by the project would lead to incremental connections, which means that the baseline cannot be zero since the existing capacity had already made previous connections. A zero baseline suggests an overstatement of the project's benefits, which is tantamount to attributing results that had already been achieved without the project.

The ICR (paragraph 51, page 17-18) reports that "KPLC" (not "the project") connected 23.6 million people electricity, based on extrapolating 5 persons per household and 4.72 million household customers having been connected. The targeted number of customers was 2.2 million. These aggregate figures were based on KPLC's 2017 Annual Report, whereas from the perspective of the Bank's own accountability for the results of its project interventions, the more relevant source of figures would have been the M&E framework that was set up for the project. The ICR further reports that recently KPLC had been connecting 1.14 million customers per year. However, it is unclear which proportion of this corresponds to the project. Moreover, the true extent of rural connections is unclear, as the ICR (paragraph 52, page 18) indicates that the 4.4 million rural customers--or 18.8 percent of the 23.6 million people connected--was just a "proxy", i.e., not based on actual measurements but rather on KPLC's classification of its customers as 18.8 percent "rural". In sum, with the true number of rural customers only an extrapolation, and the relative shares of peri-urban and urban customers unknown, the respective incidence of the project's development and welfare benefits on these consumer categories is not known. What is mainly known is the aggregate number of connections, which is not fully consistent with the current definitions and practices related to energy access in the Bank and in other international development organizations.

In response, the ICR team subsequently clarified that the results framework as modified during the third restructuring specifies that the source for the information for the access would be KPLC's annual report because the number of people provided with access could not be reported at the project level. Correspondingly the restructuring also increased the target for the indicator. Paragraph 51 therefore quotes from KPLC's annual report to make the case that the objective of access has been met and surpassed. Regarding the question raised about the zero baseline, the ICR team also clarified that the project was measuring additional connections/access from the baseline date of June 2010 and customers existing at the base line data have been excluded from the project results. As at June 2010, KPLC had 1,463,639 connected consumers, representing 7,318,195 people with access (data confirmed by its annual report). A total of 4,718,648 new connections were added between July 2010 and June 2017, translating to the reported 23.6 million additional people with access. At the global level, as at June 2017, the total number of consumers connected by KPLC, including the ones made before 2010 were 6,182,282 (confirmed by the company's annual report), translating to 30,911,410 people with access.



## **2. The target for connections of slum consumers is reported as having been exceeded by 7.2 percent.**

The ICR Review raised the question that the ICR's reported end target of 174,000 connections includes the baseline, which it should not, because the 120,000 slum consumer connections in the baseline already pre-existed the project. Thus, the incremental achievement of the project was 57,895 connections but the true comparator incremental target is not indicated. This lack of clarity is enhanced by the confusion in the theory of change diagram on page 3, which indicates an intermediate outcome of 177,667 slum consumers connected but at the same time also indicates that only 57,667 are "new", thus inappropriately showing that connections "without" the project are also being counted as outcomes "with" the project. Moreover, based on the (erroneous) figures presented, the actual connections exceed the targeted connections by 2.2 percent and not 7.2 percent.

The ICR team clarified that the success of the Slum Electrification component illustrates the changes that the World Bank and the Global Partnership on Output-based Aid (GPOBA) scheme under the project has fostered[. Before the project, Kenya had not been successful in major slums, such as Nairobi. After initial targets of 40,323 connections financed from the original IDA credit and GPOBA were quickly met, additional funding was provided from both IDA and GPOBA to scale up slum electrification, resulting in additional 57,667 connections. The Bank recognizes the project results against the overall magnitude of the slum connection problem, which is why a slum electrification component has been included in the Kenya Electricity System Improvement Project (P166646), currently under preparation and scheduled for Board approval in FY2019.

The ICR team subsequently provided additional information regarding the effectiveness of the pay-as-you-go mechanism, indicating that KEEP helped address affordability barriers to electricity for the slum population. With the pay-as-you-go mechanism, KPLC changed the way it was doing business, adopting a community-based approach in slum communities. This meant no longer taking down illegal connections. Instead, it focused on listening to community members and leaders, and marketing the benefits of the legal connections – safety, reliability, and affordability. In just one year, the project saw a thirty-fold increase in the number of safe, reliable, and affordable household connections to electricity. GPOBA provided funding to KPLC for each new legal connection, supplemented by its own resources. This “last mile” approach, drawing from rural electrification programs, provided an assurance that electricity was actually reaching individual households. It also allowed KPLC to offer new connections under the program at a much lower rate than before. Under this scheme, legal power was now less expensive than what people had been paying middlemen for the illegal lines. Most consumers use as pay-as-you-go scheme, buying pre-paid chits, available at any corner store, and paying for electricity in small increments. In fact, many of the former vendors of illegal electricity are now in the (legal) business of selling KPLC chits. The availability of safe, reliable and affordable power has meant that the demand for KPLC's legal connections has increased significantly. In fact, the slum electrification program in Kenya has garnered significant attention and written in top journals, as follows:

[1] <https://www.sciencedirect.com/science/article/pii/S2214629618303529>

[2] <http://www.worldbank.org/en/news/feature/2015/08/17/bringing-electricity-to-kenyas-slums-hard-lessons-lead-to-great-gains>



### **3. Targeted subsidies were provided for connecting low-income customers in slum areas.**

Using an output-based mechanism, the Global Program on Output-Based Aid (GPOBA) and IDA provided US\$8.15 million and US\$20.5 million, respectively, for a total of US\$28.65 million, to address affordability barriers to connecting low-income slum consumers. Although not directly stated by the ICR, the total subsidy per customer apparently amounts to US\$885 per connection, comprising US\$510 from KPLC and the Government, \$250 from IDA, and \$125 from GPOBA. The ICR does not assess cost-effectiveness, i.e., whether this is high or within the range of costs based on KPLC's previous practice and regional benchmarks. The relative share between (i) new connections and (ii) existing informal connections that were switched to KPLC, was also not analyzed; moreover, the "pay-as-you-go" method used for the latter is not assessed, at least for lesson-learning purposes. It is unclear if the US\$885 per connection was true for all the slum dwellers that were connected, since the costs for those already informally connected--but were switching to KPLC--may have been lower because there would have been already some sunk costs (e.g., existing wiring).

### **4. Targeted off-grid activities were not achieved and funds were cancelled. Targets for electrification of priority loads in rural areas (using reallocated funds) were achieved or exceeded.**

The pilot off-grid electrification activities in remote rural areas were cancelled due to implementation delays. The funds were reallocated toward electrification of priority loads in rural areas, resulting in the construction of 1,058 "community electricity connections" and the electrification of 15,511 business centers. The theory of change diagram (ICR, page 3) also cites the connections 6,471 "community centers"; however, the difference between these and the 1,058 "community" electricity connections is unclear. It is also unclear whether the "community electricity connections" meant electric wires delivered to the city gate (an output) whereas the electrification of businesses, and community centers (?), referred to the actual individual connections of the business end-users (an outcome). Again, the focus of the ICR reporting was on connections, and not on the larger development outcomes of electricity access.

It is unclear from the ICR (paragraphs 51 and 52) if the reported increases in the number of connections is on an incremental basis as a result of the project's interventions, or is based on KPLC's overall reporting in its Annual Report of June 30, 2017. This confusion arises from the ICR's statement that the Bank's financing "...was instrumental in contributing to meeting and exceeding the access indicator" while citing the KPLC Annual Report as the source. Moreover, the number of people connected (23.6 million) was estimated by multiplying the 4.72 million households with the assumption of 5 persons per household. While this is not erroneous, the base figures from KPLC were in terms of household units. Moreover, the ICR itself (paragraph 52, page 18) indicated that the PAD did not define urban, peri-urban and rural areas as stated in the PDO, hence their respective demographic profiles and potentially widely differing characteristics (e.g., larger family units in rural areas) were also not known.

Overall, based on measurable outputs and intermediate outcomes that are focused on connections, the efficacy of PDO 2 is rated substantial. However, this narrow approach missed the opportunity to assess broader development outcomes from the project, in line with the positive evolution of the



international development community's current definition and measurement of energy access and service delivery.

**Rating**  
Substantial

## Rationale

## Overall Efficacy Rating

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## 5. Efficiency

### Economic Analysis

The ICR conducted the economic analysis of the completed project both at the project and component level, whereas the PAD conducted the economic analysis only at the level of project components , i.e., generation, transmission and distribution. The ICR also included the Additional Financing and adds environmental benefits. The overall project economic internal rate of return (EIRR) is 16 percent, using the same discount rate of 12 percent used at appraisal. On the basis of the three components, the EIRRs were higher at the appraisal stage than at the completion stage, as follows: at appraisal, the EIRRs were 23 percent for generation, 32 percent for transmission, and 21 percent for distribution; at completion, the EIRRs were all lower at 14.3 percent for generation, 27 percent for transmission, and 11.5 percent for distribution at the completion stage. There were the result of the following factors:

- The lower costs of geothermal generation have in turn lowered the long-run marginal cost of electricity for the system, thus lowering the estimated opportunity costs and the expected economic benefits from the generation component.
- Estimated economic benefits from the transmission component decreased because of delays in implementing the transmission assets.
- System losses increased, thus lowering the estimated flow of benefits from incremental energy savings.
- The lower consumer willingness to pay--based on the 2016 Kenya Household Budget Survey--reduced the expected economic benefits from the distribution component.



The cost overrun of US\$53.2 million in steam field development (under the geothermal generation component) was anticipated at project design and appraisal stages, given the uncertainty in the final location of the geothermal wells and their technical characteristics. This cost overrun accounted for most of the US\$68 million of Additional Financing for the project. The actual per unit investment cost of US\$3,327/kW achieved at the two Olkaria power plants was lower than the appraisal estimate of US\$4,307/kW and the US\$3,413 estimate in the Long-Term Power Generation and Transmission Master Plan.

There were also cost overruns in the distribution component as a result of the Government expanding the scope of the program while shortening the implementation timetable, in order to speed up its efforts toward universal electricity access.

The ICR did not discuss the cost-effectiveness of subsidizing low-income slum consumers at US\$885 per connection. The ICR also did not assess the efficiency of the pay-as-you-go approach to incentivize slum household to switch from informal to KPLC service provision.

Implementation Efficiency

With the exception of the off-grid component that was cancelled because of serious implementation delays, all project components were completed by the December 31, 2017 closing, which was extended by 15 months from the original closing date of September 30, 2016. Although eventually completed, the transmission component also experienced significant implementation delays, thus also delaying the expected energy savings. These delays were mainly caused by difficulties in the right-of-way and land acquisition, lack of land regulations, missing or unclear guidance on compensation and benefits-sharing, and inadequate budgetary allocation from the government to KETRACO.

Given the cancellation of the off-grid component and the decrease in economic benefits from the transmission component due to implementation delays, as well as the higher transmission losses, the project's efficiency is rated modest.

**Efficiency Rating**

Modest

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal		0	0 <input type="checkbox"/> Not Applicable



ICR Estimate	✓	16.00	100.00 <input type="checkbox"/> Not Applicable
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\* Refers to percent of total project cost for which ERR/FRR was calculated.

## 6. Outcome

The relevance of project objective is high. Regarding project efficacy, the achievement of PDO 1 is substantial, and the achievement of PDO 2 is also substantial. Project efficiency is modest. The overall project outcome is moderately satisfactory.

### a. Outcome Rating

Moderately Satisfactory

## 7. Risk to Development Outcome

The main risks to the sustainability of project development outcomes are related to financial as well as environmental and social issues.

Financial Risks. The sustainability of project outcomes depends significantly on ensuring that KenGen and KPLC maintain satisfactory financial positions, both of which are under enormous pressure from the push to rapidly expand and meet electricity access targets..

- KPLC: KPLC remains financially weak but is undertaking measures to improve its operational and financial performance, partly through organizational restructuring, reviewing its processes, and optimizing its cost structure. In its FY2019 budgetary allocations, the government has made provisions for paying government arrears for (i) the "last mile" electrification program and (ii) additional operation and maintenance costs for rural electrification customers.
- KenGen: Short-term obligations and increasing debt levels have exerted pressure on KenGen's finances. External financing has become necessary to bridge financial gaps resulting from inadequate cash flows for covering investment requirements. Consequently, KenGen has had difficulty in meeting financial covenants. In September 2017, the Bank-funded Public-Private Investment Advisory Facility (PPIAF) helped to produce an Investment and Financing Strategy that proposed a debt restructuring option, which would significantly reduce KenGen's overall financing costs, improve its financial liquidity and solvency, and position it toward financial sustainability. IDA has also approved a KenGen Guarantee Program recently intended to enhance its ability to attract long-term private capital.





Environmental and Social (E&S) Risks. KenGen has a system for assessing E&S impacts that is based on Kenyan Law and project financiers' requirements, but does not have its own policy. As part of the aforementioned KenGen Guarantee Program, an assessment was conducted that found KenGen's occupational health and safety systems to be adequate. However, no formal social risk management system is currently in place, which KenGen recognizes as a deficiency. Consequently, KenGen has set the development of a social risk management (SRM) system as a corporate priority. According to the ICR (paragraph 150(ii), page 41), KenGen has also committed to the establishment of a Community Relations Department, a Community Engagement Policy to address grievances and focus on indigenous communities, and a land acquisition and resettlement policy.

## **8. Assessment of Bank Performance**

### **a. Quality-at-Entry**

Although the project was large and complex, its design was comprehensive and sound. However, the PAD did not develop any theory of change and provided only a results monitoring framework; moreover, the ICR's theory of change was really a partial literature review that focused only on selected works that positively correlated energy access with economic and other welfare benefits. The technical, economic and financial analysis underlying project design was adequate and thorough. The project's set of activities reflected an aggressive strategy for expanding electricity access and covered the full value chain including generation, transmission and distribution. Project teams from the Bank and the implementing agencies were closely coordinated during project preparation. Key staff for implementation had already been mobilized, conceptual designs were prepared, and a procurement plan for the first 18 months was ready when the project was approved. More specifically, draft prequalification documents (generation component) were completed and technical specifications (distribution component) were under preparation at project approval. The government and the Bank team also conducted extensive stakeholder consultations. For example, 11 public consultations were held for the Environmental and Social Impact Assessment of the Olkaria I plant, and KenGen followed up by meeting with senior community members and stakeholders. Procurement arrangements were also designed to be flexible, since important elements were not known during the design stage. For example, implementation of the generation component started although only 40 percent was known in terms of the characteristics of the steam wells. To accommodate and mitigate the effects of a possible cost overrun, contracts were structured to include re-measurement of steam well characteristics.

There were, however, some minor shortcomings in the monitoring and evaluation (M&E) indicators. Some intermediate indicators were duplicated and others had to be reformulated during the project restructuring. The important system loss indicator, which would normally apply to static and stable systems, may have been premature if not inappropriate for the project, as it did not take into account the large increases in electricity supply within the national system and the overloading of major transmission lines. Also, the M&E indicators as designed captured results only at the aggregate level and did not collect data for the urban, peri-urban and rural areas -- even though this was explicitly stated in PDO 2.



## **Quality-at-Entry Rating**

Moderately Satisfactory

### **b. Quality of supervision**

The project was supervised intensively, particularly after the Request for Inspection was issued (see Other Issues below, which discusses safeguard). From October 2011 to November 2014, 30 missions were held in order to ensure that the Management Action Plan was implemented satisfactorily. The implementing agencies initially did not fully understand the challenges of implementing the Bank's safeguards policies. Consequently, the Bank project team provided KenGen with support to implement the safeguards. The Additional Financing included funding to enhance the capacity of the implementing agencies to comply with safeguard policies. The Bank team was responsive to implementation needs as they arose and the project was restructured when needed. There were three restructurings, the third one demonstrated the flexibility and responsiveness to the anticipated increase in costs for the generation component, as indicated immediately above. Moreover, the non-performing off-grid electrification activities were cancelled owing to implementation delays and the corresponding funds were reallocated to meeting priority loads in rural areas.

## **Quality of Supervision Rating**

Moderately Satisfactory

## **Overall Bank Performance Rating**

Moderately Satisfactory

## **9. M&E Design, Implementation, & Utilization**

### **a. M&E Design**

#### M&E Design.

The project's M&E framework were keyed to 6 PDO indicators. Three were keyed to PDO 1: (i) electricity generation from renewable geothermal capacity generated (GWh); (ii) interruptions per 1,000 customers; and (iii) electricity losses per year in the project area. Two were keyed to PDO 2: (i) people provided with access to electricity in the project area; and (ii) direct project beneficiaries. The sixth indicator was added during the Additional Financing and would also measure PDO 2: new slum consumers connected to the grid. These indicators were adequate, with the possible caveat that



"interruptions" may not be the sole indicator of "service quality" under the current definitions of energy access. The definitions also imply that "number of people provided" is an inadequate indicator for electricity access. In short, the current practice among international development agencies applies a multi-tiered framework that goes significantly beyond the (outdated) definition of access as numbers of connections and numbers of interruptions.

Moreover, as the ICR correctly indicates (paragraph 94, page 29), the efficiency indicator of "electricity losses per year" was inadequately disaggregated into its technical (heat, magnetic or transformation losses) and non-technical (metering failures, theft) loss components. Consequently, only the aggregate levels of efficiency (or inefficiency) could be measured but the lack of disaggregation into the PDO-specified geographical areas of "urban, peri-urban and rural" makes it difficult to diagnose the location and magnitude of the problems. (ICR, paragraph 95, page 29) Since no definitions or specifications of boundaries were made available, the M&E design was left to use inference and extrapolation in quantifying results. This decreased the value of the data for lesson-learning, as assumptions (such as rural households have the same number of individuals as urban household, or the basket of energy needs of urban household were the same as the basic or subsistence energy basket of rural households) were being implied by the aggregate numbers.

The M&E framework was designed to include four levels of monitoring: (i) project implementation; (ii) financial performance; (iii) environmental and social impacts; and (iv) impact evaluation to assess welfare impacts.

## **b. M&E Implementation**

An M&E hierarchy was established for implementing the M&E framework. Each of the implementing agencies had a Project Implementation Team (PIT) to collect performance data. The heads of those PIT teams comprised a Project Coordination Team (PCT) that operated and reported under the overall chairmanship of the overall project coordinator within MOE. The PCT consolidated the reports on implementation progress and submitted them to MOE, the Ministry of Finance, and the Bank. The PCT was also responsible for meeting quarterly to discuss the reports and any implementation challenges.

In addition, the Bank team also assisted KPLC and the Rural Electrification Authority in designing a tool to monitor transmission and distribution work contracts. The tool was adopted by the implementing agencies and led to more rigorous tracking than earlier possible.

## **c. M&E Utilization**



The M&E framework and the data that was collected were useful in terms of physical implementation. The quarterly reports informed the implementing agencies on issues and necessary adjustments to keep the implementation schedule on track. The reports monitored time, cost, quality, human resources, risks, stakeholders and fiduciary aspects. A technical example involves the reports' finding that some well sites were unsuitable, thus requiring KenGen to change its well drilling practice from shallow drilling (2,000 meters) to deep drilling (3,000 meters). This led to the implementation of an optimization study, on which basis additional investments in steam field equipment were decided, which--while leading to cost overruns--also helped avoid potentially disastrous long-term outcomes if drilling had continued at shallow depths.

Quarterly monitoring data were also shared with the Bank's sector and country teams, which helped facilitate decisions, including project restructuring.

Although some of the data being collected did not have sufficient disaggregation (e.g., energy access in urban, peri-urban and rural areas), the shortcomings were minor to moderate, hence the quality of the project's M&E framework and data utilization were substantial.

## **M&E Quality Rating**

Substantial

## **10. Other Issues**

### **a. Safeguards**

The project triggered four Bank safeguard policies: Environmental Assessment (OP 4.10); Natural habitats (OP 4.04); Indigenous Peoples (OP 4.10); and Involuntary Resettlement (OP 4.12). The main environmental impacts were "relatively minor air and water pollution during construction and limited loss of non-critical animal and plant habitats", while the social impacts were related to land acquisition and the resulting loss of assets, relocation of people, disruption to indigenous peoples with socio-economic and cultural connections to the project area." (ICR paragraph 108, page 32). The implementing agencies prepared an Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Plan (ESMP) for the generation component. For the distribution and electrification components, Environmental and Social Management Frameworks (ESMFs) were prepared. All these documents were disclosed in Kenya and the Bank's InfoShop. The ICR (paragraphs 109, 111 and 112, page 32) indicates that:

- "Environmental safeguards remained in satisfactory compliance throughout the project implementation period."
- The ESMPs for Olkaria I and IV Units 4 and 5 "were implemented in a satisfactory manner."



- "ESMPs for transmission lines and substations and distribution lines were developed, implemented and monitored during construction in a satisfactory manner and in compliance with the safeguard requirements for each of these project components."

The project also supported a capacity assessment of KPLC and the preparation of operating guidelines for KPLC's Safety, Health, and Environment Department, which was commissioned and resulted in the hiring of additional environmental engineers and social specialists.

With respect to social aspects, the implementing agencies prepared and publicly disclosed an ESIA and a Resettlement Action Plan for the generation component, ESIA and RAP for the three transmission lines, ESMF and Resettlement Policy Framework (RPF) for the distribution component, and an Indigenous Peoples Planning Framework. The generation and transmission components required substantial supervision. In particular, compliance with the Involuntary Resettlement safeguard policy for the geothermal component was a concern throughout the project, and was rated moderately unsatisfactory from 2013-2015. On October 16, 2014, some members of the Maasai community that were affected by the resettlement activities under the generation component submitted a request for inspection to the World Bank's Inspection Panel; the complaints were also submitted to the European Investment Bank's Complaints Mechanism (EIB-CM). The members claimed that the resettlement increased their impoverishment, intra-community disputes, and health issues. The Inspection Panel found that there was non-compliance with both the Indigenous Peoples and Involuntary Resettlement policies. A mediation process was started to agree on remedial actions, with the participation of the Bank's Grievance Redress System. In February 17, the Bank's Board discussed and approved the Management Action Plan (MAP), which was agreed with the Project Affected Peoples (PAPs) through the mediation process. In April 2018, Bank management reported to the Board that most of the MAP actions had been completed. Management is committed to continue reporting to the Board annually until all the MAP provisions are completed. Regarding the transmission component, compensation to PAPs for loss of land assets stood at 90.9 percent and 92.4 percent for the Kisii-Awendo and Eldoret-Kitale transmission lines, respectively. KETRACO opened an escrow account and deposited outstanding compensation owed to the PAPs for the two lines, which will be paid as the pending cases are resolved. (ICR, paragraph 23, page 35)

## **b. Fiduciary Compliance**

Financial management (FM) performance was rated moderately satisfactory or satisfactory throughout the project's implementation period. On the Borrower's side, project FM was the responsibility of an Accounting Officer and an Assistant Accountant; in addition, the Ministry of Energy recruited a financial management specialist to augment FM capacity. KenGen, KPLC and REA established finance sections with similar staffing. The Bank conducted annual FM missions. FM systems were found to be fair and adequate. All the implementing entities were also found to be in compliance with the submission of audit reports, which were received on time, with no FM-related issues identified. However, the flow of funds was slow due to lengthy



payment processes. Opening Letters of Credit from various banks (that were acceptable to IDA) also became challenging because they were not aware of World Bank-backed Letters of Credit. The project's required budget was also affected in some years due to the limited budgetary ceilings available for allocation. Overall, the ICR assess FM as moderately satisfactory during the project's implementation period.

**c. Unintended impacts (Positive or Negative)**

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**d. Other**

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**11. Ratings**

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Moderately Satisfactory	Moderately Satisfactory	---
Bank Performance	Moderately Satisfactory	Moderately Satisfactory	---
Quality of M&E	Substantial	Substantial	---
Quality of ICR		Substantial	---

**12. Lessons**

The following key lessons were derived from the project's implementation experience (IEG formulated the lessons because the ICR provided the underlying discussion but did not explicitly articulate the lessons):

**The inclusion of mini-grid and off-grid components in a large energy supply expansion and access project requires focused attention, substantial implementation support, and sustained monitoring and follow-up.** The project's much larger components related to generation and transmission, and distribution claimed much of the attention throughout the project cycle, at the expense of providing the critically needed support for the relatively smaller and newer mini-grid and off-grid components, which eventually had to be cancelled. The inclusion of such components in a complex project that covered geographically diverse generation, transmission and distribution components is not optimal as the smaller components eventually receive little support.

**Top management support for community-based approaches and the commitment of significant resources are required for the successful scaling-up of electricity connections in poor urban settlements.** The top management of KPLC adopted a strong, community-based approach to (i) connect slum dwellers in urban areas and move them away from informal access to illegal and poor-quality electricity, and (ii)



to expand "last mile" access. KPLC's focus was less on simply taking down illegal connections, and more on listening to the community members and marketing the safety, reliability and affordability benefits of legal connections.

**The output-based aid (OBA) approach can be effective in subsidizing and expanding electricity connections.** The OBA mechanism enabled the implementation agencies to shorten procurement processing periods--typically longer in standard Bank procurement--and be more responsive to their customer base. However, adequate resources need to be available to the agencies in order to fund up-front costs. When resources are scarce, revolving funds could be used.

**Renewable energy lends itself to alternative models for scaling-up with private sector financing.** Kenya is seeking to attract long-term private investments to sustain its development of domestic renewable energy. This approach has already resulted in significant private investments in generation, now accounting for 30 percent of installed capacity. The Bank's financing helped the Government demonstrate the viability of large geothermal capacity development; moreover, the project's operational lessons will be useful to the Geothermal Development Company and the Kenya Electricity Transmission Company in seeking alternative approaches to infrastructure expansion that involve financing other than government sources.

The ICR's Section 12 raises two important issues that are not really Lessons and Recommendations as such (pages 41 and 42). However, given their importance and for learning purposes, those two issues are noted here, i.e., the lack of transmission capacity (paragraph 155) and the inadvisable use of a system loss indicator. Paragraph 155 highlights the highly important strategic issue that the government was pushing strongly for universal access despite the shortage in high- and medium-voltage transmission and distribution (T&D) network. At the same time, there was a considerable expansion of the low-voltage network and distribution lines to connect new customers. As a result, the power generated could not be evacuated to the burgeoning volume of consumers. The government's strategy in the face of this gap and the Bank's advisory and funding role needed further evaluative assessment in the ICR in order to arrive at the relevant lessons and recommendations.

Paragraph 156 is also raises an issue that merited further analysis. The ICR questions the inclusion of system losses as an indicator, by indicating that such an indicator would be appropriate in cases where there is a mature and static system with minimal variations in supply and demand. However, the ICR argues that such a system could not be expected while implementing the project's large and dynamic interventions that cover generation, transmission and distribution. Moreover, the optimum loading of the T&D components could only be expected one to two years after commissioning. Thus, measuring the system loss indicator during project implementation was premature and "inadvisable" because "improvements in system losses are likely to be realized only after project implementation." While this is a valid point, the ICR also needed to conduct a linked analysis to the foregoing issue of transmission capacity shortages, which significantly influenced the variability in generating supply and meeting demand (as indicated earlier, Olkaria I's operation had to be curtailed because the electricity generated could not be evacuated).



### 13. Assessment Recommended?

No

### 14. Comments on Quality of ICR

Although too long at 42 pages for the main text, the ICR is well written and analyzed for the most part (for example, Annex 4 on Efficiency Analysis was thorough and methodologically transparent). The ICR demonstrated a clear effort to focus on providing evidence behind the reported results and the ratings. There was also a strong emphasis on accountability. For example, the section on Environmental, Social and Fiduciary Compliance (pages 32 to 38) was detailed, candid and comprehensive, although some information (such as the ISR ratings for safeguards and fiduciary aspects) could have been placed in an annex. In terms of the report structure and components, the ICR complies with the OPCS guidelines for ICR preparation.

However, the ICR tended to focus on "connections" as the unit of analysis, despite the multi-tiered approach to energy access that was spurred by SE4All and largely adopted by the international development community. This weakness, which detracts from the current relevance of the ICR's assessment of results, is discussed in various parts of the foregoing ICR Review. Moreover, the ICR's theory of change is based on an a selective (and positively biased) literature review rather an assessment of (i) the causality chain across project results and (ii) the validity of attributing development outcomes to the project's specific interventions, taking into account multiple actors in a highly complex energy sector in Kenya. Finally, it is sometimes unclear if the ICR is citing project-specific results (derived from the project's own M&E framework) or KPLC's own reporting, and at times the language used in the ICR elicits some doubt on the objectivity of the ICR.

There were also important inconsistencies:

1. Page ii of the Data Sheets show zero disbursement by the Borrower and all the cofinanciers, yet the ICR table on page 6 shows the respective contributions of the various other co-financing sources.
2. Annex 3 (Project Cost by Component) show US\$330 million as the total amount approved for all the project's components at the time of project approval. However, the US\$330 million figure is only for IDA-47430; the World Bank also provided IDA-58440, TF-10097 and TF-A2191. Taken together, Bank financing was US\$406.15 million, according to the Data Sheets. Annex 3 also indicates that the actual project cost that IDA had financed was US\$401 million at project closing; however, the Data sheets indicate the actually disbursement of IDA funds was US\$395.43 million.
3. In Annex 1 on the Results Framework and Key Outputs, the column for Original Targets of PDO Indicators shows "zero" for all the cells, suggesting that there were no original PDO targets.
4. Project Costs are inconsistent between the Data Sheets, page 6, and Annex 3, which had an erroneous and misleading title.

Overall, giving relatively more weight to the ICR's considerable effort to focus on results, supporting evidence, and accountability, as well as its candidness and comprehensiveness, ICR quality is rated substantial.





**a. Quality of ICR Rating**  
Substantial