



1. Project Data

Project ID P126579	Project Name Eastern Electricity Highway Project	
Country Eastern and Southern Africa	Practice Area(Lead) Energy & Extractives	
L/C/TF Number(s) IDA-51480,IDA-51490	Closing Date (Original) 30-Jun-2019	Total Project Cost (USD) 500,959,006.53
Bank Approval Date 12-Jul-2012	Closing Date (Actual) 31-Jan-2024	
	IBRD/IDA (USD)	Grants (USD)
Original Commitment	684,000,000.00	0.00
Revised Commitment	586,384,213.47	0.00
Actual	500,959,006.53	0.00

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2. Project Objectives and Components

a. Objectives

The original project development objective (PDO), as in the Project Information Document (2012), the ICR (p.2) as well as the PAD (p.v), was “(a) to increase the volume and reduce the cost of electricity supply in Kenya, and (b) to provide revenues to Ethiopia through the export of electricity from Ethiopia to Kenya”. (The EEP Project Agreement, 2015, did not however provide any details of the PDO).

It should be mentioned that the project constituted the first phase of the regional integration program for power systems in East Africa (APL1). The broader objectives of the Program, supporting the mission of the



East Africa Power Pool (EAPP), were to help integrate the power systems of EAPP member countries including Ethiopia, Kenya, Tanzania, Rwanda and Uganda.

Although the project's indicators were modified during the final restructuring that took place in September 2023, the project was 92 percent disbursed by then; hence, no split evaluation will be applied in estimating overall outcome since it will not have implications on the overall rating.

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

Yes

Did the Board approve the revised objectives/key associated outcome targets?

Yes

Date of Board Approval

28-Sep-2023

c. Will a split evaluation be undertaken?

No

d. Components

Component A1: Transmission Line (**Estimated cost at appraisal:** US\$308.1 million; **Actual cost at closing:** US\$261.9 million). The component included design, construction and commissioning of 1,043 km of bipolar 500 kV HVDC overhead transmission line to connect the power network in Ethiopia, at Wolayta/Sodo substation, with the Kenya network, at the Suswa substation. A total length of 440 km of the line was in Ethiopia and 612 km in Kenya. The lines were funded by AfDB and the French Development Agency, AFD (*Agence Française de Développement*).

Component A2: Converter Substations (**Estimated cost at appraisal:** US\$628.8 million; **Actual cost at closing:** US\$ 443.4 million). This component, financed by IDA, comprised the design, construction and commissioning of one converter substation at Sodo in Ethiopia and one at Suswa in Kenya. The substations were intended to convert alternating current (AC) power into direct current (DC) in Ethiopia and DC power into AC in Kenya (and vice-versa, as needed).

Component A3: Environmental and Social Management (**Estimated cost at appraisal:** US\$30 million; **Actual cost at closing:** US\$34 million). This component, financed by Ethiopian Electric Power (EEP) and Kenya Electricity Transmission Company (KETRACO), provided for implementation of Environmental and Social Management Plans (ESMPs), the Resettlement Policy Framework in Ethiopia and Resettlement Action Plans (RAPs) in both countries.

Component A4: System Reinforcement in Kenya (**Estimated cost at appraisal:** US\$87 million; **Actual cost at closing:** US\$39.1 million). This component, IDA and KETRACO-financed, comprised reinforcement of substations and other parts of the network. This included upgrading of the Isinya substation to operate at 400/220 kV, the addition of a 220/66 kV, 90 MVA transformer at Nairobi North substation, and 220 kV, 200 megavolts amps reactive (MVAR) capacitors at the Athi River substation.



Component B1: Project Management and Supervision (**Estimated cost at appraisal:** US\$45 million; **Actual cost at closing:** US\$23.6 million). The component included a supervision and management consultant firm (AfDB-financed) to supervise Components A1 and A2 in both countries, a consultant firm (IDA and KETRACO-financed) to supervise Component A4, short-term consultants, and operating costs for KETRACO's Project Management Unit.

Component B2: Capacity Building and Technical Assistance (**Estimated cost at appraisal:** US\$10 million; **Actual cost at closing:** US\$20.5 million): The component – which was AfDB-financed in Ethiopia, and AfDB, AFD and IDA-financed in Kenya – included planning and engineering studies, capacity building on HVDC operation and maintenance (O&M), power trading, power management, procurement and financial management (FM), and environmental and social management. In Ethiopia, it included an EEP cost-minimization and revenue maximization study, fixed asset inventory and valuation for EEP, preparation of interim financial reports (IFRs) for EEP and EEU, design and implementation of EEP's quality management system, and advisory support for tariff-setting and financial sustainability assessment.

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

Project Cost and Financing

The cost of the project was initially estimated at US\$1,262 million, based on IDA loans of US\$684 million, AFD and Govt. of France (MOFA) loans of US\$578.5 million, and US\$106.2 million equivalent of Borrower contribution. This was revised downwards to US\$1,164 million on account of project cost savings. Actual disbursements by project closing amounted to a further reduced total of US\$826.89 million.

The project experienced significant cost savings on account of competitive procurement under Component A. These savings were deployed in Ethiopia to help strengthen its transmission networks and EEP corporate management. These investments included the Butajira-Worabe 132 kV transmission line and substations to expand the network, purchase of 15 kV and 33 kV switchgears, optical ground wire cables, protection refurbishment for 68 substations to strengthen the network and restore war-damaged sections of the networks, and three-phase smart meters. In Kenya, the savings of US\$96.3 million were cancelled under the project and re-committed under the Kenya Green and Resilient Expansion of Energy Program (GREEN 2), approved December 2023, for financing Static Synchronous Compensators (STATCOMS), aimed at strengthening the Kenya network to enable transfer of higher volumes. (This equipment could have been included in the project, but their design was not finalized to allow for their installation before the project closed).

Borrower contribution

Borrowers' contributions (from Ethiopia and Kenya) of US\$106.2 million equivalent was envisaged at appraisal, as part of the project's financing. Actual amounts disbursed by closing were much lower - at US\$34.9 million equivalent.

Dates



The project was approved on July 12, 2012, becoming effective on December 5, 2013. A Mid-Term Review was held on May 29, 2015. The original closing date of June 30, 2019 was extended several times for a total of four-and-a half years, through seven restructurings, aimed at extending the closing date.

3. Relevance of Objectives

Rationale

Regional and Sector Context

Regional integration has been critical to East Africa's transformation for greater economic opportunities. The region, with 270 million people, had an economic growth averaging 6 percent per annum between 2003-2008, and 5 percent between 2009-2010. However, since all countries in the region were low-income at the time, with per capita incomes of less than US\$1,000, indicating that a still higher rate of growth was essential to achieve a substantial reduction of poverty. Since the high cost of infrastructure, especially in smaller countries, had been a barrier to development, the World Bank's strategy for Africa (2011) had emphasized a regional approach to infrastructure development, thereby lowering capital and operational costs for smaller countries, and providing greater access to more efficient technologies and scale economies.

East Africa had huge energy resources but these were concentrated in a relatively small number of countries, with Ethiopia and the Democratic Republic of Congo (DRC) together accounting for over 60 percent of Sub-Saharan Africa's hydropower potential. Despite energy abundance at the regional level, East African countries had the lowest rates of household electricity access and per capita electricity consumption. Against this background, regional integration provided the best way forward to enable large-scale development of the region's cost-effective and clean energy sources.

In principle, the economic benefits of integration in East Africa outweighed political concerns about reliance on power imports from neighboring countries. Importing low-cost electricity from neighbors made considerable economic sense for countries facing shortages in supply and load shedding, such as Burundi, Kenya, Rwanda, Tanzania and Uganda, and especially for those depending heavily upon imported petroleum for power generation (e.g. Djibouti and Sudan). Exports would, at the same time, provide energy-rich countries with the opportunity to monetize their surplus capacity; the hard-currency revenues resulting helping them achieve a better macro-economic balance.

Power trade favored the introduction of more efficient institutional models in the electricity sectors of participating countries. Countries entering into trade would have to advance institutional and regulatory capacity development of their respective electricity sectors to achieve financial sustainability. The necessity of adopting commercial practices would complement on-going reforms in these sectors. Regional integration would also require strong interaction between energy sector institutions across borders, leading to valuable transfer of knowledge and practices.

For Kenya, by the time of appraisal in 2012, it was apparent that an interconnector to transfer power between Ethiopia and Kenya and other neighboring countries would, by making available low-cost power supply from Ethiopia, have a transformative effect on the Eastern Africa region. This was consistent with the approach advocated by the New Partnership for Africa's Development (NEPAD), adopted by Heads of



State in Lusaka in 2001 to enhance East Africa's growth and participation in the global economy. NEPAD anchored the Eastern Africa Power Pool (EAPP) that was created in 2005 and adopted by the Common Market for Eastern and Southern Africa (COMESA) as the institution for coordinating regional power system integration. The Kenya-Ethiopia interconnector had a strategic importance, as it was considered to be the lynchpin on which all other projects identified in the EAPP Master Plan would depend, and – if implemented successfully – could unlock a fully integrated power market in east Africa. Its commercial viability was confirmed with a 25-year power purchase agreement (PPA), and simulations determined – based on electricity revenue projections for Ethiopia and power supply cost savings for Kenya - that it would be viable on its own, even if other countries were not connected to it. The interconnector was also a critical first part of the backbone of the Eastern Africa Electricity Highway, running from Egypt to South Africa.

Against this background, the APL Program as a whole (of which the project was the first phase) supported the integration of power system of five countries (Kenya, Tanzania, Ethiopia, Uganda and Rwanda) with a combined population of 212 million and GDP of US\$107 billion. The EAPP Master Plan designated the transmission interconnections among these countries as priorities for the development of the East African power market. These interconnections would create the transmission backbone for the region, with Kenya as the central node, and Ethiopia initially supplying much of the electricity traded in this network. Over the longer term, once the planned Tanzania-Zambia interconnection was built, the EAPP power systems would be linked to the South African Power Pool.

Alignment with Country Strategies

The Project's development objectives were consistent with those of the World Bank Group (WBG)'s Africa Regional Strategy (2011), which included improving critical infrastructure services, especially cross-border, so as to increase household electrification rates by supporting construction/rehabilitation of additional transmission lines, interconnection of national grids and creating additional power generation capacity. The project was similarly consistent with the Africa Regional Integration and Cooperation Assistance Strategy (2018), Pillar 1 of which focused on Regional Connectivity, including Energy Access and Markets, placing priority on expansion of regional energy transmission networks, increasing power trade between neighboring countries and via regional power pools. The Kenya Country Partnership Framework (2023-2028) included a significant increase in the number of electricity grid and off-grid connections in its priority objectives, to be achieved through the then-ongoing Eastern Electricity Highway project and two other operations. Similarly, under Objective 1.2 of the Ethiopia Country Partnership Framework (CPF) for 2018-2022, the Government of Ethiopia was focused on leveraging the electricity sector for economic growth. Under this Objective, increasing access to reliable energy supply was prioritized, with support to the export of geothermal energy to neighboring regional markets and increasing power sector revenues as one of the World Bank's priorities in this regard.

Based on the above, Relevance is rated High.

Rating

High

4. Achievement of Objectives (Efficacy)



OBJECTIVE 1

Objective

“To increase the volume and reduce the cost of electricity supply in Kenya”

Rationale

Theory of Change (TOC)

The design of the operation was fairly straightforward. Key activities included the construction of a 1,043 km-long transmission line between Ethiopia and Kenya, coupled with converter substations in both countries, system reinforcement in Kenya and capacity building/technical assistance to project management units in both countries. Causal linkages between the project’s activities and planned outcomes were fairly straightforward. The activities were expected to lead directly to the expected outcomes of increased volumes of electricity exported from Ethiopia to Kenya, while enabling regional trade with third-party countries, cost savings to Kenya on electricity imported from Ethiopia, and correspondingly, to increased revenues to Ethiopia from these exports. Finally, to improved flexibility and stability of Kenya’s electricity network.

Indicators used to measure the achievement of objectives were similarly straightforward. Achievement of project outcomes for PDO1 was measured by indicators measuring the amount of electricity exported from Ethiopia to Kenya each year (GWh) and savings to Kenya on electricity supply costs (US\$/kWh). For PDO2, it was measured in terms of revenues to Ethiopia from these electricity exports (US\$/year). The project also had a core outcome indicator: namely, the number of indirect project beneficiaries in Kenya, measured by the number of people in Kenya with an electricity connection provided by the Kenya Power & Lighting Company (KPLC).

Key assumptions underlying the TOC (provided subsequently by the team) included the following: (a) that a legally binding power purchase agreement (PPA) would be negotiated between EEP and KPLC, that would be endorsed by the governments of Ethiopia and Kenya, (b) the negotiated price in the PPA would be appreciably less than the average cost of generation in Kenya, (c) that neighboring countries subsequently would sign PPAs with Ethiopia that would utilize the interconnector for the purchase of power, and (d) complementary network investments (including cross-border lines) would be completed, removing any physical constraints to wheeling power.

The financial benefits of imports to Kenya in displacing more expensive generation lay in a reduction in the tariff burden on electricity customers, while revenues to Ethiopia from electricity exports underpinned the development of the country’s hydropower assets. The project was the first phase of the Adjustable Program Loan (APL), mentioned in Section 3 earlier, which identified a number of priority investments to realize the EAPP, including the Kenya-Tanzania double-circuit 400 kV line in Phase 2 of the Program and the Tanzania-Rwanda and Tanzania-Uganda 200 kV lines in Phase 3. As the lynchpin project of the EAPP, the Kenya-Ethiopia interconnector would make available lower-cost electricity to countries in the Pool, thereby supporting their electricity access goals. Although countries in the Pool may have had abundant renewable energy resources, they faced high capital costs in developing their power systems. Electricity trade allowed importing countries to offset large lumpy investments in domestic generation, reducing capital costs and easing the fiscal burden of power sector development.



Outputs

- Construction of the Sodo converter station was completed in April, 2020, and the Suswa converter station in January, 2021 – fully achieving the target.
- Interconnector availability of 99.89 percent was achieved by closing (target was 99 percent).
- 1043 km of transmission lines were constructed under the project by closing (target was 1000 km). The High Voltage Direct Current (HVDC) transmission interconnection between Ethiopia and Kenya was completed in monopolar mode in December 2022, and partial operational acceptance issued, allowing electricity exports to commence. Full operational acceptance was expected in August 2024 (after the ICR was prepared).
- Commissioning and operational acceptance of the system reinforcement under Component A4 (Isinya, Kimuka and Nairobi North substations) were achieved on different dates in 2021. Three substations were successfully reinforced, against a target of 2. These reinforcements were intended to enable operation of the Nairobi Ring and the Nairobi-Mombasa line at 400 kV, thereby ensuring greater stability of the network in Kenya.
- Under Project Management and Capacity Building, the appointment of a supervision consultant took place on schedule, by project closing. In addition, 121 KETRACO staff underwent training during this period (target: 150) and 210 staff benefited from knowledge transfer (target: 200) by January 2024.

Outcomes

Achievement of the objective of increasing the volume and reducing cost of electricity supply in Kenya was measured by two indicators; (a) the amount of electricity exported from Ethiopia to Kenya each year, and (b) the savings to Kenya on electricity supply costs. In addition, a third indicator measuring the number of project beneficiaries – namely all KPLC residential consumers (comprising all household members) - was included.

(a) Based on the PPA signed in 2012, the target value of the amount of electricity exported from Ethiopia to Kenya per year was 2,978 GWh, three years after commissioning (in FY20, per the original schedule). Actual achievement was 1,008 GWh in FY24 (the first complete year of exports after commissioning), with transfers on the line being restricted to 200 MW (equivalent to 1,445 GWh) until after installation of STATCOMS at Raba and Suswa substations in mid-2026. Thereafter, 400 MW of transfer would become possible (consistent with revised PPA terms). On the basis, exports were projected to reach 2,467 GWh/year in FY27, five years after commissioning, and 2,889 GWh/year by FY30.

(b) The savings to Kenya on electricity supply costs were estimated on the basis of the difference in cost of electricity supply in the country, with and without imports (i.e. had the interconnector not been built), times the amount of electricity imported from Ethiopia. The value of the indicator is calculated by applying a ratio of US\$0.013 (see ICR, para 29) to the volume of exports – which indicates estimated savings to Kenya of US\$15.6 million by January 2024, increasing to US\$32 million by FY27 (or 5 years after commissioning of the interconnector).

(c) Kenya carried out an ambitious campaign to add a million new connections per year between 2015 and 2019. This resulted in a more-than-doubling of KPLC's residential customers by project closing. As such, beneficiaries of lower-cost imports from Ethiopia reached over 8.6 million residential customers by June 2023,



equivalent (on an average household size of 5 persons per household) to an aggregate number of some 43 million beneficiaries. This was well in excess of the target of 15.7 million beneficiaries (from a baseline of 13.9 million).

In terms of overall efficacy of PDO1, the objective was mostly achieved. The successful construction of the transmission line was a significant achievement with a potential transformative impact on the region. However, the timetable for exports to ramp up became stretched on account of delays arising for a variety of reasons – such as challenges (including court injunctions) to land acquisition for the transmission line, along with compensation to project-affected persons (PAPs) in Kenya, and the impact of Covid-19 restrictions, which affected contractors and the pace of construction. Taking this into account, efficacy of this objective is rated Substantial.

Rating

Substantial

OBJECTIVE 2

Objective

“To provide revenues to Ethiopia through the export of electricity from Ethiopia to Kenya”

Rationale

The Theory of Change for PDO1 was the same as for PDO1. The objective of increasing revenues to Ethiopia via the sale of electricity to Kenya was directly correlated to the objective of increasing the volume of electricity supplied to Kenya from these exports. The relevant outcome indicators assigned to this objective were (a) the volume of electricity exported from Ethiopia (in GWh), and (b) the quantum of revenues accruing to Ethiopia on account of its exports to Kenya.

Outputs

Outputs for PDO1 were equally applicable to PDO2.

Outcomes

Achievement of outcomes was as follows: (a) The volume of electricity exported from Ethiopia reached 1,203 GWh by FY25 (projected), against a target of 732 GWh. As mentioned earlier – under PDO1, these exports were projected to reach 2,467 GWh by FY27. (b) Revenues to Ethiopia (estimated by applying the price defined in the PPA) to the volume of exports) reached US\$78 million by January 2024, against a target of US\$47.5 million, and were projected to reach US\$161 million by FY27 (i.e. five years after commissioning the interconnector).

Based on the above, efficacy for this objective is rated Substantial.

Rating

Substantial



OVERALL EFFICACY

Rationale

The project contributed substantially to the achievement of the development objectives by helping to increase the volume of electric power availability, at lower cost, in Kenya, whilst providing enhanced revenues to Ethiopia, which was exporting this power. Though the ramp-up in power delivery and export was slower than planned for (five years versus three), it should be borne in mind that the project is expected to contribute to Kenya's power needs for the next 30 years or so. From that perspective, it is likely to have a transformative impact through improved energy security utilizing renewable electricity generation. From a longer-term perspective, both Kenya and Ethiopia have been able to strengthen their transmission networks, improving service reliability, and their transmission system operations.

Based on this, the project's overall efficacy is rated Substantial.

Overall Efficacy Rating

Substantial

5. Efficiency

Economic Efficiency

Economic evaluation was conducted at both appraisal and at project closing (by the ICR). Since the benefits (revenue to Ethiopia and cost-savings to Kenya) moved in lockstep with the volume of exports to Kenya, the economic internal rates of return (EIRR) and net present value (NPV) estimates were directly proportional to exports.

On this basis, the ex-ante EIRR was estimated at an average of 24.1 percent (21.8 percent for Ethiopia and 25.5 percent for Kenya), with an NPV of US\$1,059 million (the sum of US\$320 million for Ethiopia and US\$739 million for Kenya). Competitive bids for the construction of the converter station and transmission line lots resulted in a cost savings of about 20 percent relative to appraisal estimates, resulting in a lower investment cost, which should have boosted its economic return. Notwithstanding this, the EIRR at project closing was estimated at a much lower 13.3 percent (average of 11.1 percent for Ethiopia and 14.1 percent for Kenya), and the NPV at a similarly lower US\$68 million (-US\$16 million for Ethiopia and US\$84 million for Kenya), mostly on account of significant delays impacting the construction and acceptance of the facilities, offsetting the reduction in costs.

Operational/Administrative Efficiency

The construction and acceptance of the facilities took approximately an additional five years compared to the original implementation schedule, necessitating multiple restructurings to extend the project's closing date by a cumulative 4.5 years. According to the ICR (Annex 7, p.38, para 3), the original project schedule was over-optimistic on two key counts: the length of time it would take to identify and compensate PAPs in Kenya, and the



amount of time needed to finalize the bidding documents and procure contractors for the main contract. There were additional constraints that arose, unanticipated. These included constraints in the high voltage transmission network which affected the design configuration of the converter station in Suswa and its ability and capacity to safely manage the quantity of imports (ICR, p.39, para 5), challenges to land acquisition for the transmission line, KETRACO’s delay in settling invoices, and vandalism of ground electrode and theft of copper, including insulator and conductors, all of which had to be replaced and changes made to the configuration of the towers to better protect them against repeat attempts. All of this had a negative impact on the project’s administrative and operational efficiency.

Taking account of the sub-par performance of both economic and operational & administrative efficiency, the project’s overall 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	✓	24.10	0 <input checked="" type="checkbox"/> Not Applicable
ICR Estimate	✓	13.30	0 <input checked="" type="checkbox"/> Not Applicable

* Refers to percent of total project cost for which ERR/FRR was calculated.

6. Outcome

The project’s development objectives were highly relevant not only to the electricity sectors of Ethiopia and Kenya, but also to the development of the EAPP. The project successfully laid the foundation for development of the other transmission infrastructure projects that will enable power trade in the EAPP, and in the long run to the potential integration of the EAPP and SAPP (Southern African Power Pool). The project’s efficacy was rated Substantial because the ramp-up in power delivery and export fell significantly behind schedule, delaying the benefits of the investments. Project efficiency was rated Modest for economic, as well as administrative & operational, efficiency. As such, project’s Overall Outcome is rated Moderately Satisfactory.

a. Outcome Rating

Moderately Satisfactory

7. Risk to Development Outcome



The overall risk of the project was underpinned by the sustainability of the PPA – the 25-year tripartite agreement signed in July 2022, between EEP, KETRACO and KPLC, and later approved by regulators in both countries. The PPA stipulated the maximum daily power transfer for the first seven years (to be renegotiated by the concerned parties for the subsequent phase). It was complemented by a legal agreement on system operations, a technical agreement on operational guidelines, and an administrative agreement on coordination and management. KPLC, in Kenya, has had an excellent record for honoring PPAs, and the Government has always supported it. From this perspective, the sustainability risk is low. However, it will be essential for high-level leadership in both countries to continue to be committed to meeting whatever challenges may arise in the future regarding the challenges that may arise over the long-term operation of the line.

Other, technical, risks, which – on the face of it appear to be manageable – include (a) the need to establish O&M protocols (ancillary to the PPA); (b) the need to sustain the training of engineers manning the facility on O&M, given the specialized nature of the plant. This would include the need to continue exchange visits by staff of EEP and KETRACO, and cooperation program between KETRACO and PowerGrid of India; (c) the need for both utilities to allocate adequate resources for inspection and maintenance of the line – especially in remote areas where theft and vandalism had been issues; (d) installation of STATCOMS at Rabai and Suswa will be critical for operation of the line after 2025. Kenya will be exposed to payment of compensation to Ethiopia if the Kenyan system is unable to offtake 400 MW in November 2025.

8. Assessment of Bank Performance

a. Quality-at-Entry

According to the ICR (p.17), the World Bank's approach to the design of the operation recognized that the construction of an interconnector entailed both high risks and high rewards in terms of transformative impact on the region. The project's PDOs reflected the priorities of the EAPP development as well as the key strategies for development of the sector in the two countries. Social and environmental risks were analyzed in the PAD, along with technical, financial and economic aspects. Required safeguards documents were prepared and disclosed prior to commencement of the project. The project's procurement strategy for the engineering, procurement and construction (EPC) contracts took into account the need to ensure competition, while setting clear technical and financial eligibility requirements for potential bidders. As indicated earlier, this did result in significant savings of IDA proceeds, which could be deployed for acquisition of additional transmission equipment in Ethiopia.

One shortcoming arising was that the project timeline prepared at appraisal underestimated the time required for construction. This included the time involved in providing compensation to PAPs and for ramping up exports, post-construction. This underestimation led to in the multiple restructurings that followed and the need to extend the project's closing date by several years. The project's implementation arrangements relied on the PIUs housed within the two utilities. However, the PIUs were dependent on allocation of funds in annual government budget cycles – which were often less than adequate. To provide a degree of independence, the project design could usefully have explored better alternatives; for instance, the use of a two-country Special Purpose Vehicle (given that the Interconnector was revenue generating), which utilized a portion of the revenues generated.



Overall, the project's quality at entry is rated Satisfactory.

Quality-at-Entry Rating
Satisfactory

b. Quality of supervision

The project was adequately supervised, the Bank team undertaking 20 supervision missions over the nearly 11-year implementation period. According to the ICR (pg.18), the Bank team was proactive in addressing challenges to achievement of the project's development objectives. The team was prompt in identifying and effectively dealing with issues as they emerged (e.g. land acquisition issues, challenges to KETRACO in dealing with grievances and delays in budget made available by the Kenya National Treasury). The Bank team also carried out intensive supervision of RAP and ESMP implementation, and developed excellent working arrangements with the other co-financiers. Since the Bank was the lead agency in implementing this large project, it undertook to ensure consensus with AfDB and AFD, who were financing discrete components of the operation, conducting joint implementation support missions and agreed-on findings, reported back via joint aide memoires (information provided subsequently by the team).

Based on this, quality of supervision is rated Satisfactory.

Quality of Supervision Rating
Satisfactory

Overall Bank Performance Rating
Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

The Monitoring and Evaluation (M&E) plan for tracking the achievement of outcome and intermediate indicators was largely in keeping with standard World Bank practice. PDO outcome indicators were to a large extent dependent upon the successful and timely construction of the facilities, as well as an active PPA, but also by external factors such as electricity demand in Kenya (which had actually decelerated and had an impact on the quantum of imports it could offtake). That said, outcome indicators remained valid as they reflected the stated objectives and the causal links were direct between project outputs (construction of facilities) and achievement of outcomes.

b. M&E Implementation

The ICR indicates (para 60) that M&E reporting was negatively affected by the withdrawal of the Supervising Consultant during the Covid-19 pandemic period, but that KETRACO was able to take over



that role adequately. However, the ICR is silent on such issues as the extent to which indicators in the results framework were actually measured and reported, whether the data were of reliable and of good quality, and whether M&E functions and processes were likely to be sustained after project closing.

c. M&E Utilization

According to the ICR (para 61), project-generated data, tracking the progress of works across various contracts, was more than sufficient to keep stakeholders, including financiers, up-to-date on the challenges encountered. However, financiers themselves did note that there was little coordination and information exchange between the EEP and KETRACO project implementation units (PIUs), who were hence not always abreast of each other's challenges.

M&E Quality Rating

Substantial

10. Other Issues

a. Safeguards

The ICR did not clarify the project's environmental & safeguards rating. However, as per the PAD, it is noted that the project was classified as Category A – Full Assessment, due to “potentially significant environmental and social impacts”. The following safeguards were triggered under the Bank's Safeguards Policy: OP/BP 4.01 (Environmental Assessment), OP/BP 4.04 (Natural Habitats), OP/BP 4.10 (Indigenous Peoples), OP/BP 4.11 (Physical Cultural Resources), OP/BP 4.12 (Involuntary Resettlement). Their application and impact varied for the two countries.

As such, in Ethiopia, an Environmental and Social Management Assessment (ESIA) and a Resettlement Action Plan (RAP) were prepared in 2012, at inception. These were updated and prepared to include the convertor station and Ground Electrode + High Voltage Transmission Line (TML) in 2016. These also identified E&S risks and impacts of the project. All E&S instruments were disclosed at EEP's website and the World Bank's Info Shop/External Website. Supervision by the co-financiers identified shortcomings in good industry practices and safeguards requirements at some of the workers' camps, which needed to be addressed by the contractor in 2017. Additionally, theft of materials posed a safety concern. Remedial actions included heightened surveillance and a change in design of the towers to include a barrier to deter thieves from climbing the towers.

As regards compliance with RAP implementation in Ethiopia, the project paid compensation for loss of assets and property at full replacement cost and effectuated prior to commencement of the construction activities. Project-affected persons (PAPs) were adequately consulted and informed about the potential adverse impacts of the project, available options, mitigation measures and their rights to receive compensation. The construction and commissioning of the Livestock Feed Processing Plant (LFPP), though delayed, was eventually completed and PAPs were organizing themselves into cooperatives to manage the scheme, which would benefit about 200 families who lost their communal grazing land to the project.



Regarding Kenya, compliance in Kenya, a total of 2,638 PAPs were affected there, 983 of which had their structures identified for compensation. Some 2,313 had their crops or trees damaged. The compensation process did not go smoothly, encountering many challenges, including slow and inadequate provision of budget by the National Treasury to KETRACO for compensation. The process was complicated by difficulty in locating and contacting PAPs and confirming ownership through searches in the lands department. In 2017, due to encroachment on some sections, about 85 km of the line had to be rerouted. Other problems included unclear modality for compensation for community-owned land (held in trust for the respective communities by county governments). Indigenous Peoples (OP 4.10) were encountered in one of the lots and provided with in-kind compensation through which community sub-projects of their choice were constructed. Although the project triggered Natural Habitats (OP 4.04) and Physical Cultural Resources (OP 4.11), they were not encountered during implementation.

b. Fiduciary Compliance

The ICR reports (para 69) that – as regards financial management (FM) in Kenya – project audit reports were submitted on timely basis. Audit opinions on financial statements were unqualified over the project's life and the Management Letter did not identify internal control weaknesses. The quality and timeliness of quarterly IFRs however did fluctuate on account of changes in staffing and system updates. Further, oversight by EEP's internal audit team was less than adequate and delays were experienced in utilizing funds advanced to the project's designated account (DA), as a result of which the DA remained inactive over the last two years of project implementation – leaving an undocumented DA balance which would be refunded to IDA.

The Bank team did follow up on entity FM issues during implementation, supporting EEP in improving its in improving its FM arrangements in terms of adoption of IFRs, asset valuations, installation of smart meters, etc. EEP was able to take steps to clear its entity audit backlog, address audit findings and internal control weaknesses identified, and obtain clean audit opinion on its entity financial statements for the past five years. Overall FM performance has been rated Moderately Satisfactory since FY20.

The ICR also reports (para 70) that – as regards Ethiopia – the project's annual reports were submitted on timely basis, with unqualified audit opinions on its financial statements over the project life. The Management Letter did not contain any internal control weaknesses. As in Kenya, the quality and timeliness of quarterly IFRs did suffer fluctuations due to changes in staffing and system updates. Also, oversight by the internal audit team of EEP was similarly less than adequate, with delays occurring in utilization of funds advanced to the project DA, resulting in an undocumented DA balance at project closing, which would be refunded back to IDA. The Bank team's response was similar to that in Kenya, assisting EEP to clear its entity audit backlog and other steps. Overall FM performance was similarly rated Moderately Satisfactory since FY20.

The project's procurement performance was assessed by the ICR (para 68) as Moderately Satisfactory, reflecting overall compliance with procurement procedures and arrangements. However, it is noted that over the project cycle staff capacity limitations, institutional weaknesses and contract management challenges results in contract time overruns, delayed payments to contractors and service providers, leading to significant implementation delays. The Bank team provided continuous advice and guidance to the implementing agencies on procurement issues, reviewing procurement plans and recommending



actions to improve procurement processes, governance, decision-making and institutional strengthening of the PIUs.

c. Unintended impacts (Positive or Negative)

The OPGW (Optical Ground Wire), which combined grounding (including protection from lightning strikes) and communications features, has generated additional revenues for EEP and KETRACO from telecom companies that had contracted capacity (ICR, para 50).

d. Other

Though the project did not have any specific gender-focused interventions, the ICR notes (para 46) that KETRACO is implementing gender equality work plans, and EEP is also addressing gender disparity issues through complementary energy projects.

11. Ratings

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

12. Lessons

IEG derives the following lessons from the ICR:

1. In a complex cross-border project, sequencing of construction contracts calls for close oversight: As demonstrated by the project, sequencing the completion of construction contracts in parallel and co-dependent on each other proved to be hugely challenging, making the role of an oversight body critical. Despite the project having elaborate arrangements for project oversight, including a Joint Project Coordination Unit, a Joint Steering Committee and a Joint Ministerial Commission, the arrangements were never fully realized. In practice, pressing issues that surfaced during the co-financiers' implementation support missions requiring higher-level interventions were brought piecemeal to the utility CEOs and relevant ministers by them, and not fully resolved. Going forward, it will be important to ensure that participant countries trading power on the interconnector establish problem-solving arrangements at the appropriate levels when the co-financiers have ended their implementation support.



2. In infrastructure projects involving land acquisition with large numbers of PAPs, it is prudent to delay the launch of bidding on construction contracts until PAPs have assented to the wayleave and/or payment of compensation for PAPs has commenced: The project experienced several years of delay in identifying and seeking the assent of PAPs in Kenya, which led to multiple collateral impacts. Works projects already completed were vandalized, and contractors had to be remobilized to remedy the damage. An inadequate budget provided by the Government to KETRACO led to delayed compensation payments to PAPs and late payments to contractors, prompting more contractor claims, and the cycle continued. Contractors making bids on such projects typically factor in the likelihood of delays based on the experience of past projects, so bids might not be as competitive as they might otherwise have been.

3. For a complex project involving two or more countries, use of a special purpose vehicle (SPV) can offer advantages over reliance on PIUs: The project showed that PIUs in both countries were dependent upon allocation of funds (which were sometimes inadequate) in the annual government budget cycles. The Kenya-Ethiopia interconnector was however revenue-generating, and an SPV structure would have enabled a portion of the revenue to be retained and utilized for managing consultants, paying compensation to PAPs and financing training courses and other activities. This would have allowed the supervision of construction and mobilization of technical consultancy resources to have been handled more effectively than arrangements that relied upon PIUs housed within the two utilities.

13. Assessment Recommended?

No

14. Comments on Quality of ICR

The ICR is generally well written, concise and internally consistent. Useful information is provided and discussed on the activities and implementation of the project, as well as the efficacy of its objectives and environmental and fiduciary compliance. However, there are also some shortcomings: For instance, the theory of change, which is presented diagrammatically, could usefully have provided some detail on the causal linkages and the critical assumptions underpinning the success of the interventions. The discussion on relevance of project objectives would similarly have benefited from more specificity on the consistency of project objectives with the country and regional strategies of the World Bank Group. The analysis of project efficiency would have benefited from inclusion of a discussion on operational & administrative efficiency, as the overall analysis significantly underplayed the impact of the project's delays. Finally, the analysis of the M&E framework provided little information on M&E implementation, including on the extent to which indicators in the results framework were actually measured and reported.

a. Quality of ICR Rating Modest

