



Project Information Document (PID)

Concept Stage | Date Prepared/Updated: 17-Jun-2021 | Report No: PIDC27996

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

Country Eastern Africa	Project ID P171243	Parent Project ID (if any)	Project Name Uganda-Tanzania Interconnector Project (P171243)
Region AFRICA EAST	Estimated Appraisal Date Feb 21, 2022	Estimated Board Date May 16, 2022	Practice Area (Lead) Energy & Extractives
Financing Instrument Investment Project Financing	Borrower(s) United Republic of Tanzania, Republic of Uganda	Implementing Agency Uganda Electricity Transmission Company Limited (UETCL), Tanzania Electric Supply Company Ltd. (TANESCO)	

Proposed Development Objective(s)

The Project Development Objective (PDO) is to establish regional transmission interconnector capacity between Uganda and Tanzania.

PROJECT FINANCING DATA (US\$, Millions)**SUMMARY**

Total Project Cost	545.00
Total Financing	545.00
of which IBRD/IDA	500.00
Financing Gap	0.00

DETAILS**World Bank Group Financing**

International Development Association (IDA)	500.00
IDA Credit	500.00

Non-World Bank Group Financing

Counterpart Funding	45.00
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Borrower/Recipient	45.00
Environmental and Social Risk Classification High	Concept Review Decision Track I-The review did authorize the preparation to continue

B. Introduction and Context

1. Regional energy trade has received increased political attention since the mid-1990s. The growing need to address national electricity supply-demand imbalances in the most cost-effective manner boosted interest in cross-border electricity trade and resulted in the establishment of the South Africa Power Pool (SAPP) in 1995 and the East Africa Power Pool (EAPP) in 2005 under the umbrellas of Southern African Development Community (SADC) and the Nile Basin Initiative (NBI), respectively. The objective of the SAPP and EAPP is to coordinate power pool operations and implement regional power trade in the respective economic blocs. The SAPP covers 12 countries with a population of 280 million people, with an installed capacity of 56 gigawatt (GW) and annual energy consumption of 400 terawatt hours (TWh). The EAPP covers a region with a population of about 550 million (2019), with an installed capacity of over 80 GW and annual energy consumption of 315 TWh (2019). Uganda is exclusively a member of EAPP while Tanzania is a member and the gateway to both EAPP and SAPP.

2. **The concentration of abundant and diverse renewable energy resources in a few countries underlie the significant potential benefits from regional energy sector integration.** The Federal Democratic Republic of Ethiopia (Ethiopia) and the Democratic Republic of the Congo (DRC) together account for over 60 percent of Sub-Saharan Africa’s hydropower potential. The Republic of Kenya (Kenya) has substantial geothermal resources and wind energy while Egypt and Tanzania have considerable natural gas potential. Regional power system integration can deliver significant benefits by harnessing and interlinking these diverse resources to increase supply security, lower average generation costs, meet previously unserved or underserved customers, reduce greenhouse gas (GHG) emissions, and increase resilience to climate events such as droughts, flooding, and seasonal fluctuations.

Country Context

Uganda

3. **The Government of Uganda’s (GoU’s) Vision 2040 aims to transform Uganda from a largely agrarian, low-income country to an upper-middle-income country by 2040.** Electricity is a vital element of Uganda’s Vision 2040 and the GoU has set a target of 80 percent electricity access by 2040. To achieve the required acceleration in economic growth driven by private sector participation and economic diversification, it is critical to remove fundamental bottlenecks, including insufficient infrastructure. Enhanced competitiveness of the economy requires lowering the cost of doing business and increasing productivity, and critically depends on access to reliable and affordable infrastructure services. Inadequate access to electricity poses a significant challenge for socioeconomic development to support the young and growing population. Improving access to electricity and enhancing reliability of electricity service are critical for Uganda’s plans for modernization and economic growth. For businesses with electricity, poor reliability of service delivery imposes high costs (including the capital cost of self-generation and loss of production), which is a constraint to competitiveness and undermines employment potential.



4. **Uganda's growth contracted in the wake of COVID-19.** COVID-19 pandemic and the Desert Locust invasion in the first half of calendar year 2020 have exacerbated a slowdown in the second half of the calendar year 2019 caused by heavy rains and flooding which led to an overall real GDP growth of about 2.9 percent in FY20. COVID-19 mobility restrictions have further affected domestic demand, while the global slowdown has reduced exports, tourism, remittances, and caused a sizable deceleration in foreign direct investment (FDI) inflows and government project financing. Real GDP growth is estimated at between 2 and 3 percent during FY21¹.

United Republic of Tanzania

5. **The Tanzanian Government's plans for socioeconomic development over the medium term and beyond are laid out in the Tanzania Development Vision 2025 (TDV2025) and the Five-Year Development Plans (FYDP).** The FYDP II, among others, emphasizes investing more in power and transport infrastructure. Reliable power supply is an impediment to job-creation initiatives—agro-processing in agriculture corridors, value-addition in tourism circuits and in industrial parks and thus increasing infrastructure links to regional markets is critical for Tanzania's continued growth.² Tanzania is geographically well-positioned to harness its potential; with a rich endowment of natural resources, a long coastline, port infrastructure and shared boundary with eight other countries – five of which are land locked – increased infrastructure linkages are critical to help Tanzania establish itself as a regional trade hub. Improved and expanded infrastructure in the border areas, which also happen to be amongst the poorest and most underserved regions of the country, would also bolster economic growth and reduce regional disparities within the country. Greater economic diversification and poverty reduction relies on availability of reliable and affordable electricity services. The expansion in public service delivery – health, education, water – also depends on electricity. A large investment effort is needed, across the electricity value chain, to expand electricity infrastructure to meet the needs of the growing population and the diversifying economy.

6. **COVID-19 has negatively impacted Tanzania's macroeconomic performance, decelerating GDP growth in 2020.**³ The global economic slowdown adversely affected Tanzania's export-oriented industries, especially tourism and traditional exports, and has caused a drop in foreign investment. The exception is gold mining which has benefitted from rising prices since the onset of the pandemic. Although the government did not impose a lockdown, the pandemic initially spurred precautionary behaviors that slowed down domestic economic activity. In early 2020, the Government of Tanzania (GoT) implemented critical measures aimed at containing the spread of COVID-19 and encouraged people to avoid unnecessary movements, practice hand hygiene and social distancing, and identified several public and private hospitals that would serve as isolation centers for people infected with COVID-19. The government reported COVID-19 cases up to April 28, 2020.

Sectoral and Institutional Context

7. **Uganda energy sector has achieved considerable results in the last 20 years.** Installed power generation capacity has increased from about 380 MW in 2003 to 1268.9 MW as at end of December 2020, of which about 80 percent is hydropower (Figure 1). This capacity is expected to rise to over 1800 MW by end-2021 with the commissioning of the 600 MW Karuma hydropower plant. On the transmission side, the network has expanded from about 1,165 km in 2003 to 3,000 km in 2020; transmission losses have remained relatively stable at about 4.0 percent. On the distribution side, there have been increased efficiency with distribution losses reducing from 38 percent in 2005 to about 17 percent in 2019 and

¹ World Bank, Uganda Economic Update 17th Edition May 2021

² World Bank CPF for Tanzania for the period FY2018–2022.

³ Tanzania Economic Update 15th Edition, 2021.



increased revenue collections from 80 percent in 2005 to over 99 percent in 2019. Electrification rates have also doubled from about 10 percent in 2006 to almost 50 percent in 2020. Despite recent gains, overall access to the national grid remains low (at about 23 percent).

8. **Excess generation capacity in Uganda may become a financial burden for the sector in the absence of increased demand and thus regional trade can potentially expand the revenues and consumer base for new renewable energy capacity.** The projected supply/demand balance assessments considering existing plants and committed additional suggest that available capacity will greatly exceed the demand expected⁴. Since most new projects will be subject to take-or-pay agreements, failure to absorb the power generated will directly affect the sustainability of the power sector in Uganda. Strategies are being implemented to increase electricity demand to mitigate the supply-demand imbalance, but these measures will need time to yield. Government is trying to provide dedicated support for industrial growth given the availability of electricity and scaleup access to about 300,000 new connections per annum so as to achieve a 60 percent grid electrification target by 2027. In addition, the country is prioritizing development of the transmission network interconnections with its neighbors to increase power interchanges – 220KV transmission lines between Uganda/Kenya and Uganda/Rwanda have recently been commissioned – whereas the feasibility studies for interconnections with Eastern side of Democratic Republic of Congo (DRC) and Southern Sudan are advanced. The proposed project – construction of the Uganda-Tanzania 400KV transmission interconnector – is thus part of the broader initiative to facilitate the country's increased transmission interconnection capacity to increase power interchanges.

9. **Tanzania electricity generation capacity and electricity access has increased in the recent past years.** As of June 2020, the total grid connected installed generation capacity in Tanzania was 1,566 MW⁵ and the 2019 maximum demand was 1,120 MW in 2019. However, the development of new gas power plants has been progressing slower than planned, thus leaving Tanzania's electricity supply exposed to potential new disruptions related to seasonal variability of hydropower resources. Additional hydropower capacity is under construction – 2,115 MW Julius Nyerere Hydropower Plant (JNHP) – and scheduled for commissioning in 2022. Tanzania's electricity access rate has increased steadily over the last few years to 37.7 percent in 2020 from 32.8 percent in 2016). However, just under two-thirds of the population remain without access and a large disparity exists between electricity access rates in urban (73.2 percent) and rural areas (24.5 percent). The GoT aims to increase the country's overall electricity connectivity level to 50 percent by 2025 and at least to 75 percent by 2033.

10. **Tanzania is positioned to emerge as a gateway between Southern Africa Power Pool and Eastern Africa Power Pool.** The country has an ambitious objective to increase electricity generation capacity from 1,566 MW (2020) to 20,194 MW by 2040, through harnessing Tanzania's significant primary energy resources. Gas-to-power generation is viewed as one of the long-term solutions to increasing security of supply, using significant domestic untapped natural gas reserves. Hence, it is expected that the commissioning of 2,115MW JNHP will result in excess generation capacity, which could be traded with neighboring countries that may have a supply deficit. In addition, the ongoing construction of various interconnectors that will connect Ethiopia- Kenya- Tanzania-Zambia and other regional interconnectors, highlight the country's strategic location as an enabler for regional power trade between the EAPP and SAPP. The proposed project will support construction of a transmission line that will interconnect Uganda and Tanzania power grids and forms an integral part of the EAPP backbone transmission grid in addition to enhancing the reliability of the power interchanges with the SAPP.

⁴ Uganda Electricity Transmission Company Limited Grid Development Plan 2018– 2040.

⁵ Power System Master Plan Update 2020. Total grid connected generation capacity comprises of 573.7 MW hydropower, 892.72 MW natural gas generation, 88.8 liquid fuel based generation, and 10.5 MW biomass generation.



Relationship to CPF

11. The proposed project is aligned with the World Bank's Country Partnership Frameworks (CPFs).
 - a. **Uganda.** The proposed project is aligned with Uganda's CPF for the period FY16-21 that aims to assist Uganda to address its national priorities with a focus on ending extreme poverty and promoting shared prosperity in a sustainable manner. The project is aligned with the CPF objective five: "improving the business environment", with regards to supporting regional integration and connectivity, and options for creating a more conducive environment for industrial development, pursued together with support to climate proofing urban development and infrastructure. The project will enhance Uganda's electricity infrastructure to not only boost regional power trade but also climate resilience noting that Uganda's power system is mainly hydro based and thus vulnerable to hydrological variations.
 - b. **Tanzania.** The project is aligned to the CPF for the period for FY18-21 Focus Area 1 'Enhance productivity and accelerate equitable and sustainable growth' and its Objective 1.4: 'Increase access to energy services' and Objective 1.6: 'Enhance transport, energy and digital connectivity for improved services to rural areas'. The proposed project will increase access to reliable energy to enhance productivity in the region, improve connectivity in rural areas, and expand energy access to unserved and underserved areas, specifically, in the relatively poor northwestern regions of the country. The proposed project is also aligned with the 2017 Systematic Country Diagnostic (SCD) and its priority area 2 to improve the performance of the power sector.
12. **The Proposed project is aligned with the United Nations Sustainable Development Goal (SDG) 7 and Sustainable Energy for All (SE4ALL).** The activities under the project aim to address one of the key barriers to increased access with regard to affordability of electricity supply. Activities under the project aim at harnessing benefits of power trade and regional integration of power systems regarding minimization of aggregate supply costs by lowering operating costs through optimized dispatch and investment costs through sharing of reserves and coordinated planning. Reduced cost of supply will enable growth energy access which is a fundamental input for socioeconomic development, and will establish an enabling environment for long-term, sustainable, growth. The project will also contribute to the achievement of the broader SDG agenda.
13. **The proposed project is aligned with the goals and strategies of relevant regional and sub-regional organizations including the East African Community (EAC) and COMESA and supports the implementation of the EAPP's Strategic Roadmap for regional power pool development.** The project is consistent with EAC and COMESA development strategy toward regional integration of electricity networks, recognizing EAPP as a framework for integration. The project is also aligned with the priorities and the development plans adopted by the EAC. The EAC Treaty highlights the need for regional cooperation in infrastructure and encourages EAC members to prioritize coordinated energy investment in their policies and strategies. The EAC has identified the development of regional infrastructure as a priority for removing constraints along the regional value chain and facilitating a competitive, regional economy that attracts investment for economic growth, job creation, and poverty alleviation. The project aims to support the achievement of EAC Vision 2050 and the 5th EAC Development Strategy (2016/17 – 2020/21) that, among others, aim to strengthen mechanisms and strategies for ensuring enhanced investment in clean and sustainable energy production and access, as a driver and enabler of economic competitiveness and sustainable regional development. In addition, the project will support the strategic priority goals in the electricity sector, set out in the SADC Regional Infrastructure Strategic Development Master Plan, including (a) adequate generation and transmission capacity; (b) improved energy access; and (c) harmonized cross-border policy and regulatory frameworks.



C. Proposed Development Objective(s)

The Project Development Objective (PDO) is to establish regional transmission interconnector capacity between Uganda and Tanzania.

14. **The PDO-level results indicators are the following:**

- (i) Power transmission capacity established between Uganda and Tanzania (MW);
- (ii) Energy flows along the interconnector (GWh/year).

Intermediate Indicators:

- (i) Increased power transmission capacity along the Kyaka-Nyakanazi-Mabuki corridor in NW Tanzania (MW);
- (ii) Number of substation constructed or upgraded (number);
- (iii) Substation Capacity Constructed (MVA);
- (iv) Length of transmission lines constructed (km);
- (v) Compliance with minimum operation requirements for regional power trade achieved by UETCL (No/Yes).
- (vi) Number of female recruits hired as part of the recruitment/leadership/mentoring program (Number).
- (vii) Percentage of complaints resolved in line with GRM standards (Percentage)

D. Concept Description

15. The proposed 400kV Uganda-Tanzania transmission line will interconnect Uganda and Tanzania power grids to enable the interchange of power between the two countries as well as with the other EAPP countries and the SAPP region⁶. The proposed line will also enhance increase power transmission capacity and improve supply reliability in the north western regions of Tanzania. The investments expected to be realized through the proposed project are as follows: (i) Construction of approximately 80km 400kV transmission double circuit transmission line and associated 400kV substations at Masaka and Mutukula (Uganda) and (ii) Construction of approximately 525km 400kV double circuit transmission line associated 400kV substations at Kyaka, Nyakanazi and Mabuki (Tanzania).

16. The power market report (2011) for the Masaka-Mwanza transmission line included a review of the existing and planned power systems in four countries - Uganda, Tanzania, Rwanda and Kenya. Total forecasted power demand for all four countries was developed to optimize the prioritized and lowest cost power production for the system as a whole. The results of the assessment indicated an increasing trade potential from approximately 220 MW in 2020 up to roughly 560 MW in 2030. Based on these results, the then recommendation was construction of a 220 KV double circuit interconnection line (capacity of about 700MW). As part of the project preparatory activities, a new feasibility study is ongoing to define the preferred line route, substation sites, and technical and operational parameters of the proposed investments.

23. **The proposed project promotes climate change resilience in the region in several ways.** First, further investments in transmission capacity between the countries will help exploit the complementarities between demand patterns and cost differences between various electricity systems to significantly reduce the fuel costs and improve the security of supply in the system. Second, the countries' comparative advantages and complementary energy resource endowments improve the collective ability to withstand shocks by strengthening the resilience to climate variability. Third, a more

⁶ The SAPP countries will be interconnected with Tanzania through the ongoing World Bank financed Tanzania-Zambia Transmission Interconnector Project).



reliable and connected grid will improve the financial stance of the national utilities, as it will reduce the need for public subsidies and better utilization of scarce public funds. Fourth, increased regional trade can lead to creation of a conducive investment environment and development of a competitive electricity market. An integrated, regional transmission network is a pre-requisite for catalyzing investments in large-scale, transformative regional generation projects.

24. **The proposed interconnector between Uganda and Tanzania will significantly reduce GHG emissions in the region.** In the recent years, several countries in the EAPP region have experienced electricity supply shocks due to various factors (e.g. shortage of natural gas in Egypt, low hydrology in Tanzania, Uganda, Zambia and Kenya). The recently concluded SAPP-EAPP interconnection study highlights the increased climate resilience of the interconnected EAPP and SAPP electricity supply systems. The study findings highlight that in case of droughts (low hydrology), the interconnection between Uganda and Tanzania could help countries like Uganda, Rwanda, and Ethiopia access power from thermal based power generation from the SAPP countries. This would save the countries high economic costs associated with the alternative of having to deploy high cost thermal based emergency generation or rolling blackouts and thus help improve climate resilience of these countries’ power system and their economies . Under the normal hydrology conditions, the SAPP region would be able to benefit by importing from the EAPP countries which are dominantly hydropower, which would not only reduce the cost of supply, but also reduce GHG emissions from power generation, among others.

Legal Operational Policies	Triggered?
Projects on International Waterways OP 7.50	No
Projects in Disputed Areas OP 7.60	No

Summary of Screening of Environmental and Social Risks and Impacts

Summary of Screening of Environmental and Social Risks and Impacts

17. On the environmental side, the construction of transmission and substation infrastructure will involve clearing of vegetation, bring about impacts on flora and fauna, construction traffic, construction waste, soil erosion, noise and fugitive dust emission, disturbance to local communities, and visual impacts on surrounding landscape etc. Part of OHTL will cross over protected areas (e.g. Kimisi Game Reserve and Burigi Game Reserve) and may result in damage of woodland, wildlife disturbance, and loss of aesthetic/touristic value of landscapes. Permanent impacts on the natural environment are expected both under conductors and towers and in the corridors of access roads to be built/improved and retained as service roads during operation. During operation, the transmission and distribution infrastructure may pose potentially fatal risk to birds through collisions and electrocutions; and occupational and community health impacts/risks on workers and local communities such as electrocution during maintenance works, exposure to high electromagnetic fields (EMF).

18. Other key potential risks and impacts of the project during construction stage include: (i) health & safety of workers, host communities, and other disadvantaged and vulnerable groups along the transmission lines ROW where works will be carried out but also along transport routes of construction supplies, materials and equipment; (ii) cutting of trees during construction, (iii) exposure of population along the ROW and transport routes to noise, dust, vibrations, air pollution and traffic-related risks; (iv) land acquisition along the ROW; (vi) physical and economic displacements along the ROW; (vii)



increase risks of gender-based violence from labor influx and social issues that come with it may pose risks to the project. The project might also entail acquisition and operation of supporting facilities such as workers' camps and storage/disposal sites, etc.

19. On the social side, It is anticipated that a significant number of persons and institutions, especially in Tanzania, will be directly impacted by the planned works (Transmission line and associated facilities construction) which will encompass a 80 km corridor in Uganda and 525 km in Tanzania, while noting that both TANESCO and UETCL have had recent challenges in completing these processes in a timely and satisfactory manner. Moreover, a significant influx of labor is also to be expected in the project areas (Urban, Semi-Urban, and Rural) that hosts a wide array of PAPs that would include vulnerable persons (children/women, persons with disabilities etc.). Specific project related risks include (i) delayed/inadequate compensation processes, (ii) inadequate stakeholder engagement, and (iii) social exclusion, and Gender Based Violence (GBV)/Sexual exploitation and Abuse (SEA) of minors. Specifically, funds to compensate PAPs might not be available to both implementing agencies (TANESCO/UETCL) during RAP implementation because of the cyclical nature of their release by the relevant ministries. Moreover, District compensation rates for crops might not be adequate, as they do not always reflect market rates.

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