

**PROJECT INFORMATION DOCUMENT (PID)
APPRAISAL STAGE**

Report No.: PIDA46681

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| Project Name | Uganda Grid Expansion and Reinforcement Project (GERP) (P133305) |
| Region | AFRICA |
| Country | Uganda |
| Sector(s) | Transmission and Distribution of Electricity (100%) |
| Theme(s) | Rural services and infrastructure (100%) |
| Lending Instrument | Investment Project Financing |
| Project ID | P133305 |
| Borrower(s) | REPUBLIC OF UGANDA |
| Implementing Agency | Ministry of Energy and Mineral Development |
| Environmental Category | B-Partial Assessment |
| Date PID Prepared/Updated | 21-Mar-2016 |
| Date PID Approved/Disclosed | 29-Mar-2016 |
| Estimated Date of Appraisal Completion | 21-Mar-2016 |
| Estimated Date of Board Approval | 31-May-2016 |
| Appraisal Review Decision (from Decision Note) | The chair authorized the team to proceed with appraisal, subject to clearance of the safeguard documents by the Regional Safeguards Advisor. |

I. Project Context

Country Context

With Gross Domestic Product (GDP) growth of five percent in FY2014/15, the Ugandan economy is back on the growth path following the economic slump it experienced between 2010 and 2012. The recovery, following a succession of negative shocks that include the global financial crisis, a prolonged drought, and a surge in election related public spending, has been driven by an acceleration in public and private investment. The value of public investments was equivalent to 6.3 percent of GDP in FY2014/15 (compared to 5.6 percent the previous year) and was accompanied by a strong increase in the total value of private investments. Continuing on the recovery path, Uganda hopes to achieve the robust growth trajectory it had for a couple of decades prior to the crisis, when it achieved an annual average GDP growth rate of 6.9 percent from 1987-2010.

Despite the recent slowdown, the robust growth in the previous decades has had a significant impact on poverty reduction. The proportion of households living in poverty—whether measured using the national poverty line or the international poverty line—more than halved from 1993 to 2013. The proportion of households living under the national poverty line declined from 56.4

percent in 1993 to 19.7 percent in 2013, while annual consumption growth of the bottom 40 percent averaged around three percent during this period, higher than most other countries in the region. The incidence of extreme poverty measured by the international poverty line of US\$1.90 per day declined from 68.1 percent in 1993 to 33.2 percent in 2013. Over the last ten years, Uganda reduced the proportion of households living under US\$1.90 per day faster than any other country in Sub-Saharan Africa (SSA).

However, the decrease in poverty between 2005 and 2009 remains fragile—for every three Ugandans who rose above poverty, two fell back into poverty. In 2013, 43 percent of the population was considered vulnerably non-poor. This implies that though these households were above the official poverty line, there is a high risk of them falling back into poverty subject to economic, political, weather, or other shocks. Inequality, too, has increased due to the relatively lower consumption growth of the bottom 40 percent of the population. The Gini coefficient increased from 0.36 in 1993 to 0.40 in 2013. In 2014, Uganda ranked 163 out of the 188 countries on the Human Development Index.

There are large and increasing regional inequalities, with most of the poor concentrated in the North and the East of the country. In 2006, approximately 60 percent of the poor lived in the northern and eastern parts of the country and by 2013 this proportion had increased to 84 percent. At the sub-regional level, most of the poor live in the Mid-North and the East, 20.7 percent and 22 percent respectively. The West Nile sub-region (along with East Central and North East) also has a double-digit percentage of poverty. Despite the growing urbanization, nearly 84 percent of the population and 90 percent of the poor lived in rural areas in 2013. The rural poor mainly derive their income from agriculture and are thus remain vulnerable to weather shocks.

Uganda has one of the most rapidly growing populations in the world, which is creating pressure on public service delivery and infrastructure. The country's average population growth rate, according to the 2014 census, was three percent per year between 2002 and 2014. Population growth has been steadily above the average for SSA, except for the period of peak prevalence in HIV/AIDS in the early 1990s. Based on current and projected growth, Uganda's population is expected to increase from about 35 million in 2014 to 47 million in 2025. Rapid population growth will continue to put pressure on existing infrastructure, requiring higher rates of investment to enhance capacity and efficiency of service delivery to sustain growth in the medium term.

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. 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 (energy, transport, water, oil and gas, and information and communications technology (ICT)). 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. Recognizing this, Uganda has committed to building the stock of physical capital, notably through investments in infrastructure, including transport and energy. Vision 2040 identifies the critical importance of front-loading investments in energy, transport, oil, and ICT in achieving the stated objectives of economic growth and poverty alleviation.

Improving access to electricity and enhancing reliability of electricity service are critical for Uganda's plans for modernization and economic growth within the next 30 years. Lack of access to

electricity represents one dimension of poverty and poses a significant challenge for socioeconomic development to support the young and growing population. At the current rate of electricity access, about 86 percent of the population depends on expensive and polluting energy alternatives such as small gasoline and diesel generators, firewood, charcoal, candles, and kerosene to meet their household lighting and heating needs. 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. The 2013 enterprise survey in Uganda (January 2013-July 2014) shows that nearly 23.2 percent of the firms identified unreliable electricity services as the main obstacle for conducting business in the country.

Sectoral and institutional Context

The GoU initiated a series of power sector reforms in 1997 with the objective of creating a financially viable sector capable of supplying electricity efficiently and at reasonable prices. The role of competition and private sector participation was seen as central to improving supply reliability and sector efficiency. This resulted in the unbundling of the vertically integrated Uganda Electricity Board (UEB) into three separate government-owned corporate entities: the Uganda Electricity Generation Company Limited (UEGCL), the Uganda Electricity Transmission Company Limited (UETCL); and the Uganda Electricity Distribution Company Limited (UEDCL). An operation and management contract was awarded for the government-owned hydropower plants. Private investors were able to operate in Uganda as independent power producers (IPPs). On the distribution side, the management and operation of legacy distribution assets were leased to Umeme Limited, a private company, and subsequent distribution assets developed outside the Umeme concession area were leased to several smaller licensed distribution companies (LDCs). UETCL, given its central role as the transmission operator, remains a government owned company.

To support the implementation of the power sector reform strategy, the GoU passed the Electricity Act 1999 establishing the new regulatory framework and sector structure, including new agencies. The Ministry of Electricity and Mineral Development (MEMD) remained the agency responsible for overall sector coordination, planning and policy. The Electricity Regulatory Authority (ERA) was established in 2000 to oversee all sector activities with the responsibility for issuing distribution and generation licenses, tariff setting, and developing and monitoring performance standards for electricity service. A Rural Electrification Board (REB) was established in 2001, chaired by the Permanent Secretary of MEMD, to oversee the implementation of rural electrification activities, and the Rural Electrification Agency (REA) was created as the secretariat to the REB to support the day-to-day operations.

The MEMD is the primary GoU agency at the helm of the electricity sector, and is responsible for sector policy direction and coordination. It has a critical role to fulfill in policy formulation, planning and coordination of the expanding and increasingly complex electricity sector. Sector coordination is crucial to ensure operational efficiency and harmonization between various sector agencies. Policy formulation and planning functions are important determinants of sector strategy and help articulate government priorities and guide the definition of operational principles and required investments for the sector. As a part of its role in sector policy and coordination, the MEMD is represented on the Boards of key government-owned sector entities, including UETCL.

UETCL as the single buyer, electricity wholesaler, and the transmission system operator is at the center of Uganda's power sector. As the single buyer/wholesaler of electricity, UETCL buys

electricity from all generation plants (including IPPs and imports) and sells to the distribution companies (and for exports). Private sector operations in electricity generation (including distributed SIPPs) are supported by take-or-pay power purchase agreements (PPAs) that are signed with UETCL. In addition, in its role as transmission system operator, UETCL's mandate includes: (i) operation and maintenance of the high voltage transmission grid (66kV and above); (ii) dispatch of generation plants to meet the demand on the system on an on-going basis; (iii) planning of the expansion of transmission network; and (iv) preparation and implementation of transmission projects.

Considerable results have been achieved through the power sectors reforms. The current installed generation capacity increased from about 300 MW in 2002 to 879 MW in 2015, including 79 percent from hydropower, 15 percent co-generation, and the rest from thermal generation. Private sector capital was mobilized for investments in the generation sector, including Bujagali hydro (250 MW) and other small independent power producers (SIPPs). The transmission network has expanded from 1,165 km in 2003 to 1,627 km in 2014. In 2014, about 3,100 GWh of electricity was sold by UETCL (of which 167 GWh was exported to Kenya, Tanzania, Rwanda, and the Democratic Republic of Congo). The volume of sales has been growing in the past years, with growth in both domestic sales and exports – the compounded annual average growth rate between 2010 and 2014 was 6.45 percent per year. On the distribution side, Umeme, with more than 650,000 customers, remains the largest company, with a market share of around 95 percent in terms of both customers and electricity sales. Total distribution network losses decreased from almost 40 percent in 2005 to 21.3 percent in 2014 and the revenue collection rate improved from 80 percent to 100 percent in the Umeme service areas.

Despite progress as a result of the reforms, access to electricity in Uganda is only 14 percent, which is below the average access rate of 24 percent for countries in SSA. In order to address the urgent need to increase access to electricity, the GoU has approved a Rural Electrification Strategy Plan (RESP) for 2013-2022, which provides a roadmap to increase access to 26 percent by 2022. The plan includes a series of investments in distribution and off-grid solutions required to achieve this target. The RESP also requires REA to work in collaboration with UETCL to extend the transmission network to meet rural and urban electricity needs. The Bank is supporting the implementation of the RESP through the Energy for Rural Transformation III (ERT-III, P133312) Project, which is financing grid and off-grid electricity connections. Other development partners are also providing financing for electrification in Uganda.

The current demand-supply balance may be strained in the short term due to demand outstripping available supply. Due to high population growth and several efforts in the sector to increase electricity access, demand for electricity is projected to surpass available generation capacity in the next few years. This supply shortage is expected to remain until the planned large hydropower plants of Isimba and Karuma are commissioned in 2018 and 2020, respectively. As a preventative measure in the short term, ERA has introduced a time-of-use demand side management program whereby tariffs for industrial customers are increased to incentivize a shift in consumption from peak to off-peak and shoulder periods. In addition, the GoU is promoting the development of the SIPPs that can be commissioned faster and could be developed simultaneously with Isimba and Karuma without imposing additional financial and managerial burden on the government. In the medium- to long term-term, there is an increasing need to extend and improve transmission and distribution infrastructure, in order to improve supply availability, reliability, and efficiency by bringing bulk electricity supply closer to existing and emerging demand centers.

Current policy and planning arrangements are not conducive to optimal system expansion. Current sector plans are often carried out through individual entities leading to uncoordinated investment decisions. This arrangement results in sub-optimal investments in generation capacity with respect to timing, location, and choice of technology. Likewise, transmission expansion planning has become much more complex as it tries to accommodate the interdependencies of generation and demand, including committed generation investments that are planned without the involvement of the transmission grid operator/planner. The MEMD formulated the Power Sector Investment Plan in 2011, but this plan was not updated and was never used to guide sector investment decisions. A system-wide planning arrangement can help address the interdependencies and improve the sequencing and cost-efficiency from the country's perspective. Capacity for overall coordination of sector activities also needs to be improved for this to be achieved.

The most recent Grid Development Plan of UETCL attempts to integrate the interlinkage of transmission requirements with future demand growth and generation expansion. It was developed and will be regularly updated by UETCL. The Grid Development Plan details the transmission grid investment requirements for Uganda for the period 2014-2030 to meet the projected national load growth, integrate new generation developments to the grid, and align transmission developments with government programs for increased electricity access and regional interconnection.

Substantial investments will be required in the transmission network in order to provide low-cost bulk electricity supply across the country. Considering the base scenario with a conservative growth demand for electricity under the Grid Development Plan, UETCL will require around US\$3.8 billion of investments in the transmission network from 2014 to 2030 (an average of about US\$225 million annually). These investment requirements for transmission network extension have, until now, been largely financed by government contributions and concessional loans from multilateral development banks and other development partners. In other years, investment requirements had been postponed until the resources became available.

The multi-year tariff and regular tariff reviews have helped manage sector financial sustainability, but UETCL's ability to finance its future investments remains a challenge. ERA sets tariffs through a multi-year tariff setting process (i.e., three year period) that is based on revenue requirements and is adjusted quarterly taking into account currency fluctuations, inflation, and fuel costs. ERA sets the BST that UETCL charges to distribution companies as the wholesaler of electricity, and the retail tariffs charged to end user customers by each of the distribution companies. In October 2015, ERA approved an increase of 15.5 percent for the BST, taking it to approximately US\$0.08/kWh and an increase of 18 percent for the retail tariff, which resulted in an approximately US\$0.16/kWh charge for residential end-user customers. The current BST adjustment methodology employed by ERA mainly considers the cost of purchasing power from the generators, leaving a small margin for UETCL to cover the cost of operating and maintaining the network. There are no provisions for future capital investments or for the provision for strategic spare parts, and the BST does not fully cover UETCL's debt service obligations.

Given the strategic importance of UETCL in the power sector, attention should be paid to its financial outlook and particularly to its financial sustainability in the short, medium, and long term. There are four main factors that should be monitored closely as they could impact UETCL's financial position: (i) supply and demand unbalance, e.g., the emerging situation of excess generation capacity that is based on take-or-pay contracts; (ii) large capital investment requirements

in the medium term (e.g., the following six years); (iii) withholding of payments by Umeme due to unpaid government bills (a remedy provided for in Umeme's concession agreement) ; and (iv) BST that is below cost recovery level.

The current capacity of UETCL to implement its infrastructure investment plans is inadequate. UETCL is currently structured mainly for operation and maintenance of the existing transmission system. The existing project implementation unit is not sufficiently resourced to manage the current and planned infrastructure projects. This situation poses challenges for UETCL to effectively implement its investment program. It is therefore necessary for UETCL's project implementation team to be augmented to enable increased efficiency and effectiveness in project and contract management.

The project contributes to the GoU's economic growth and poverty reduction objectives, outlined in Vision 2040, and is aligned with the Bank's twin goals of reducing poverty and promoting shared prosperity. The project areas in the West Nile and Northern Uganda are characterized by extremely low electricity access rates (between one and three percent, one of the lowest in all sub-regions of Uganda) and relatively high poverty rates (especially Northern Uganda, which is a post-conflict region). By increasing availability and efficiency of bulk power supply in these areas, the project will ease electricity supply constraints and lay the foundation for improving household electricity access and the development of income generating and productive electricity use activities.

The proposed project is also aligned with Uganda's Vision 2040 goal of improving electricity infrastructure. Improved access to and affordability of infrastructure services is central to the GoU's strategy and vision for accelerating equitable economic growth and reducing poverty to achieve middle-income country status. The proposed project will finance a crucial section of the transmission grid and will help to improve availability and efficiency of bulk electricity supply to the northern and north-western regions of the country while supporting the national transmission company to improve its overall operational efficiency. The supported investments are also in line with UETCL's medium-term investment plan.

II. Proposed Development Objectives

The Project Development Objective (PDO) is to increase availability and efficiency of bulk electricity supply in the project areas.

III. Project Description

Component Name

Construction of the transmission infrastructure

Comments (optional)

The objective of this component is to provide increased electricity transmission capacity to meet the power supply needs of Northern Uganda and the West Nile region and to interconnect the isolated West Nile distribution network to the main transmission grid. Currently, the demand for the entire West Nile area is supplied by a single small hydropower plant (3.5 MW Nyagak 1). It is projected that the available excess capacity will soon be exhausted by the connection of a medium-sized industrial load and the expansion of electricity access to households and enterprises through the ongoing rural electrification programs supported by the Bank (ERT III Project) and other development partners.

Component Name

Project implementation and operational support to UETCL

Comments (optional)

UETCL plays a central role in the electricity sector as the single buyer and transmission system operator. This component is proposed to support UETCL to enhance its project implementation capacity, contract administration, and operational effectiveness through technical assistance and modernization of management systems. This component is specifically intended to address the capacity constraints UETCL is experiencing due to its growing portfolio of transmission projects. Support under the component will include the following.

Component Name

Sectoral Strengthening Support

Comments (optional)

MEMD has a critical role to fulfill in policy formulation and strategy, planning and coordination of the growing and increasingly complex electricity sector. This component will thus provide technical assistance to support MEMD in fulfilling its mandate in sector planning and coordination. The component will provide financial support for capacity building and training in order to strengthen sector supervision (including sector finances and monitoring of the resettlement and compensation of project affected persons).

IV. Financing (in USD Million)

| | | | |
|---|--------|-----------------------|---------------|
| Total Project Cost: | 127.00 | Total Bank Financing: | 100.00 |
| Financing Gap: | 0.00 | | |
| For Loans/Credits/Others | | | Amount |
| BORROWER/RECIPIENT | | | 27.00 |
| International Development Association (IDA) | | | 100.00 |
| Total | | | 127.00 |

V. Implementation

The project will rely on the existing project implementation units (PIUs) at UETCL and MEMD, which have prior experience in implementing IDA-financed projects. Each PIU will have a project coordinator. The PIU for UETCL will need to be supplemented with additional staff given the size of the project portfolio it manages, including additional activities to be financed under GERP.

The UETCL will be responsible for the implementation of components A and B. Component A will be carried out in close collaboration with Umeme in the Gulu area, and WENRECO in the West Nile Region (Nebbi and Arua) for effective coordination of outages and service restoration with the distribution companies at the time of commissioning the transmission line. The existing PIU for UETCL that is implementing the ESDP will be responsible for GERP implementation. The PIU will comprise existing staff in the Projects Implementation Department of UETCL, supported by the other departments and specialist consultants (project management, contract management, procurement, social safeguards, environmental safeguards, and project accounting) who will be financed through the GERP. Appropriate technical assistance is included to support implementation, especially in the areas of procurement processing and supervision of construction works.

The MEMD will be responsible for the implementation of Component C. Some Component C sub-components are likely to require coordination with and active participation of the ERA, which

MEMD will facilitate.

Results Monitoring and Evaluation

Project monitoring and evaluation will be carried out by each implementation unit for their respective components and headed by the respective project coordinators.

The PIU in UETCL will include a dedicated Monitoring and Evaluation (M&E) Officer that will report to the project coordinator. The M&E officer will prepare a monthly progress report for discussion by the UETCL's senior management and on a periodic basis by the UETCL's Board.

VI. Safeguard Policies (including public consultation)

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

Comments (optional)

VII. Contact point

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