UETCL at 20

Background

The birth of Uganda Electricity Transmission Company Limited (UETCL) was a result of the Energy Sector reform implemented by the Government of Uganda which sought to transform the sector into a financially viable industry. This was achieved through the Electricity Act of 1999 which aimed to regulate the generation, transmission, distribution, sale, export, import and distribution of electrical energy in Uganda. The Act split the Uganda Electricity Board (UEB) into a number of successor institutions. These include;

- Electricity Regulatory Authority
- Uganda Electricity Generation Company Limited (UEGCL)
- Uganda Electricity Transmission Company Limited (UETCL)
- Uganda Electricity Distribution Company Limited (UEDCL)
- Rural Electrification Agency (REA)

UETCL was established as a public utility company mandated to own, operate and develop the High Voltage Transmission Grid (HVTG) above 33 kilo volts (kV). In accordance with 1999 Act, UETCL was given licenses for;

- Bulk Power supply
- Operation of the High Voltage Transmission Grid (HVTG)
- Power System Operator
- Power import and export

Based on the licenses given to UETCL, the company's role after it started operations on 26th March 2001, was to buy power in bulk from the power generators, transmit it and sell the power in bulk to distributors. UETCL is responsible for extending the national power grid across the country to ensure access to the power network by all people. This makes the company a key national player in the power sector.

Where we started

UETCL inherited a transmission system that comprised of 1,166km of 132kV and 66kV transmission lines which included;

No.	Transmission Line	Year of Energizing
1	132kV Owen falls-Kampala North (68.8km)	1954
2	132kV Owen Falls-Tororo-Malaba (126.4km)	1954
3	132kV Kampala North-Mutundwe (8.9km)	1959
4	132kV Mutundwe-Kabulasoke (84.5km)	1963
5	132kV Kabulasoke-Nkenda (216km)	1963
6	132kV Kabulasoke-Masaka West (59.5km)	1963
7	132kV Tororo-Opuyo (119.5km)	1963

8	132kV Opuyo Lira (141.2km)	1963
9	66kV Owen Falls-Lugazi (35.2km)	1963
10	132kV Masaka West-Mutukula (85km)	1964
11	132kV Masaka West-Mbarara North (129.6km)	1995
12	132kV Lugogo-Mutunudwe(10.4km)	1997
13	132kV Lugogo-Kampala North (5.5km)	1997
14	132kV Owen Falls-Lugogo (75km)	1998

Despite the already established transmission grid, Uganda's power sub sector still had a lot left to be desired especially due to power unreliability and prolonged power outage times. The transmission network was in dire need of an upgrade due to the wear and tear of aged transmission lines and equipment.

The company's first course of action was to upgrade already existing projects to cater to the increasing national power demand which had climbed to 280MW by December 2001.

Within its first year, UETCL had rehabilitated the 132kV Owen Falls-Tororo-Malaba, Mutundwe-Kabulasoke-Masaka-Nkonge-Nkenda and Tororo-Opuyo-Lira transmission lines. UETCL has also installed grid metering points between UEGCL & UETCL and UEDCL & UETCL. Optic fiber had also been installed and rehabilitated on the 132kV Owen Falls-Tororo-Malaba transmission line.

UETCL started trading in bulk power and energy sales increased by 4% from 366.5GWh in the second quarter of 2001 to 381.2GWh in the last quarter of 2001. This increase is attributed in part to increased generation and also UETCL's improved billing efficiency.

Where we are now

Currently, the company's transmission network consists of 2,989.2km of high voltage lines with 1,008km of 220kV, 1,946km of 132kV and 35km of 66kV transmission lines which means the length of the transmission grid has more than doubled over the past 20 years. There are currently 25 substations with a total transformation capacity of 2829.5MVA.

UETCL plays a vital role in the implementation of the Government's development policies as the Transmission System Operator. UETCL's is guided by the National Development Plan II (2015/16 – 2019/20) which was launched in 2015 under the theme "Strengthening Uganda's Competitiveness for Suitable Wealth Creation, Employment and Inclusive Growth." The NDP aims to propel the country to middle income status. UETCL is also basing its projects on the Government's Vision 2040 which aims to transform Uganda from a predominantly peasant society to a low income and finally competitive upper income country.

In its overall planning, UETCL reflects on the latest information on Government policy, strategies and stakeholder requirements to provide a harmonised sector planning. The company is implementing power evacuation, grid reinforcement and grid extension and

regional power trade and exchange projects to establish a network that will improve reliability, security and quality of supply, which will in turn contribute towards the energy needs of Uganda's population for social, economic and industrial development.

132/33kV Gas Insulated Substation

Completed projects

No.	Project	Objectives	Completion
1	Supply, installation and commissioning of one 132KV transformer bay, 15/20MVA 132/11kV transformer and associated facilities at Namungoona substation.	Upgrade of the 33kV line Kampala North-Mutundwe to its designed voltage level (132kV) and increase transformation capacity at Namungoona substation.	2012
2	Supply, installation and commissioning of one 32/40MVA 132/33kV transformer and associated facilities at Kampala North Substation.	Improvement of reliability of 33kV supply at Kampala North Substation.	2012
3	Supply, installation and commissioning of Kahungye Permanent Solution 132/33kV, 2 x 20MVA.	Improvement of availability, reliability and quality of power supply.	2012
4	Supply, installation and commissioning of one 132kV transformer bay, 32/40MVA 132/33kV transformer and	Improvement of reliability, availability, and quality of power supply at Tororo Substation.	2012

	associated facilities Tororo Substation.		
5	Mutundwe-Kabulasoke Restringing 132kV (84.5km).	Improvement of quality, reliability and availability of	2014
6	Bujagali Interconnection Project. • Bujagali-Kawanda 220kV, 75km. • Kawanda-Mutundwe 132kV, 17km. • Bujagali-Nalubaale 132kV, 5km. • Bujagali-Tororo 132kV, 8km. • Kawanda S/S 132/33kV, 32/40MVA. • Mutundwe Substation Extension. • Switchyard upgrade to 220/132kV substation	Provision of adequate transmission capacity to evacuate power generated at Bujagali Hydro Power Station (HPS) to the existing National grid.	2016
7	Upgrade of Queensway 132/33kV substation	Improvement of power supply, reliability and quality in the Kampala Business Central Areas	2017
8	Purchase of 50MVA 132/33/11kV Mobile substation	To be used during refurbishment, upgrade, routine maintenance of un-firm substations and will also be used as an emergency spare in the case of catastrophic failures	2018
9	Nkenda-Hoima-Fort Portal 220/132kV transmission project	Evacuation of power from the upcoming thermal power plant located at Kabaale as well as power generated by mini hydros and co-generation power stations in the project area including Buseruka Hydromax (10MW), Muzizi (40MW), Waki (5MW), Kinyara (40MW)	2018
10	Kawanda Masaka 220kV transmission project	Reinforcement of the capacity of the western transmission line to cater for increased demand in Masaka, Mbarara, Kasese, Fort-portal, Kabale, Bushenyi and the environs	2018
11	Mbarara Nkenda 132kV transmission line	Improvement of reliability, availability and quality of power supply to the western region and surrounding areas	2018

12	220kV Mbarara-Mirama transmission line and associated substations	To improve access to electricity in the Nile Basin Initiative (NBI) countries through increased cross-border sharing of energy and power and overall improve on the reliability and quality of power transmission across the country.	2019
13	Isimba Bujagali 132kV transmission project	To provide adequate transmission capacity to evacuate power generated at the Isimba Hydro Power Station (HPS)	2019
14	Kawanda-Kapeeka 132kV transmission line and associated substations	To improve power supply quality, reliability and security of power supply in the area to facilitate industrial activity growth and rural electrification in the area.	2019
15	Iganga Industrial Park substation and related transmission line	To provide adequate, reliable and efficient power supply to small, medium and large scale industrial loads in the Iganga industrial park	2019
16	Mukono Industrial Park substation and related transmission line	To provide adequate, reliable and efficient power supply to small, medium and large scale industrial loads in the Mukono industrial park	2019
17	Namanve-Namanve South transmission line	To provide adequate transmission capacity to cater for projected demand within industrial areas	2021
18	132kV Opuyo-Moroto transmission line	To extend the transmission power grid to support government rural electrification programs and provide quality, sufficient and reliable power supply to Karamoja sub region.	2021

Fort Portal 132kV transmission power lines

Ongoing Projects

UETCL is implementing new power transmission projects which UETCL catergorizes into three groups as shown below;

i) Power Evacuation

No.	Project	Status
1	Karuma Interconnection Project • Karuma-Kawanda 400kV transmission line and associated substations • Karuma-Lira 132kV transmission line and associated substations • Karuma-Olwiyo 400kV transmission line and associated substations	 • Construction is at 98% • Construction is at 74% • Construction is at 98%
2	Gulu-Agago 132kV transmission line and associated substations	Procurement of contractor is in final stages
3	Mbale-Bulambuli 132kV transmission line and associated substations	Technical feasibility study has been completed.

ii) Regional Interconnection

No.	Project	Status
1	Nkenda-Mpondwe-Beni/Bunia 220kV transmission project	Feasibility and ESIA studies completed
2	Bujagali-Tororo-Lessos 220kV transmission lines and associated substations	Commissioning projected for 31st December 2021

iii) Grid Expansion and Reinforcement

No	Project	Status
1	Kole-Gulu-Nebbi-Arua 132kV transmission line and associated substations	Ground breaking occurred in October 2020. Site clearance and soil investigation is ongoing.
2	Mutundwe-Entebbe 132kV transmission line and associated substations	Construction works are ongoing
3	Masaka-Mbarara 400kV transmission line and associated substations	Procurement of contractor is ongoing
4	Mirama-Kabale 132kV transmission lines and associated substations	Procurement of transmission line contractor has been completed

Ongoing works at 132kV Olwiyo substation

UETCL expects to achieve the objective of maintaining a reliable grid backbone by focusing on the company's **5 Focus Areas** for the implementation of projects and future plans over the period of 2019 – 2024. These are;

i. Security of power supply and regional cooperation.
ii. Sustainable financial growth
iii. Robust human capital development
iv. Efficient business processes.
v. Accelerated grid infrastructure development and stimulation of demand