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MINISTRY OF ENERGY AND MINERAL DEVELOPMENT

7TH UTILITIES GIS CONFERENCE UGANDA 2018
12TH - 13TH SEPTEMBER
Skyz Hotel, Kampala

OVERVIEW OF UGANDA'S POWER SUB-SECTOR

Presentation by

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12th September 2018

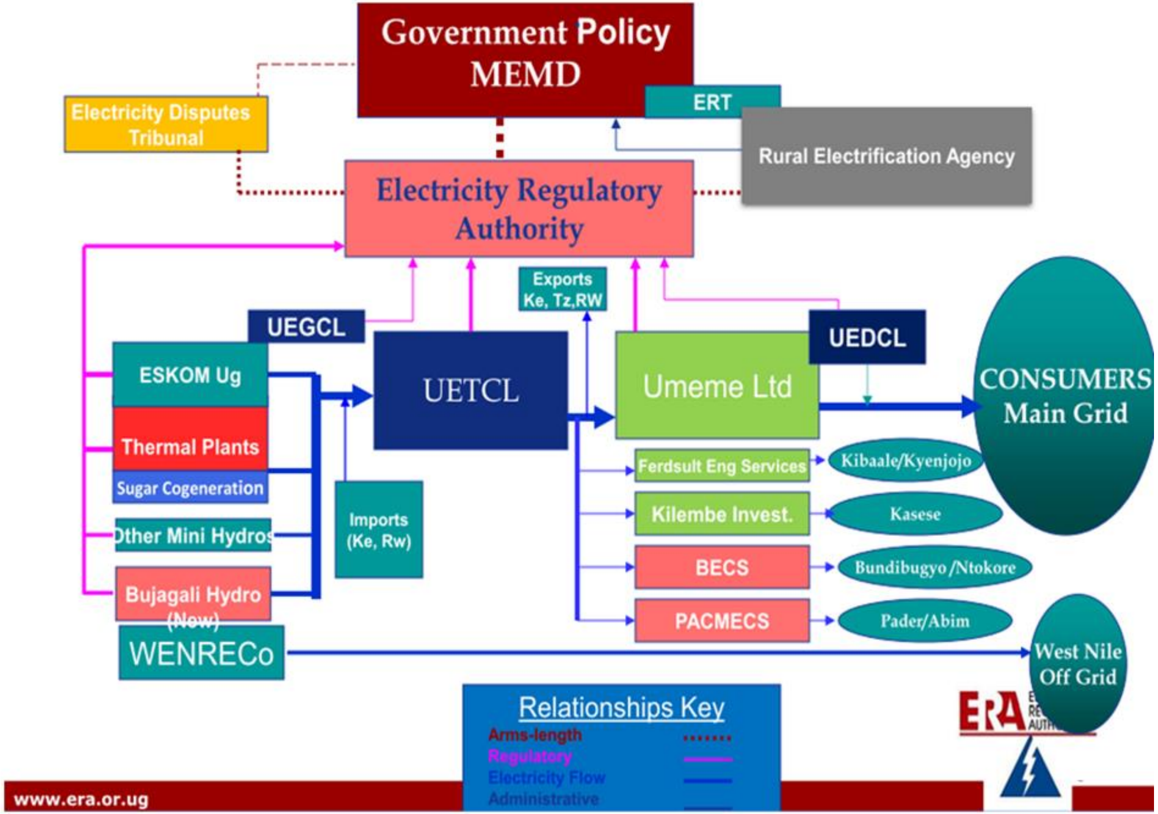
Outline of the Presentation

1. Background: Scope of Power Sub-Sector
2. Institutional Framework of the Power Sub-Sector
3. Policies and Regulatory Framework
4. Key Priorities in the Power Sub-Sector
5. Key Statistics
6. Key Projects in the Power Sub-Sector
7. Conclusion

Background: Scope of Power Sub-Sector

1. Power Generation
2. Power Transmission
3. Power Distribution / Rural Electrification

Institutional Framework



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Institutional Framework

Key Players in the Power Sector

The Power sector has gone through a process of reforms introducing several players:

- **Ministry of Energy and Mineral Development (MEMD)** responsible for overall policy framework and strategic planning.
- **Electricity Regulatory Authority (ERA)** regulates the electricity industry.
- **Rural Electrification Agency (REA)** is responsible for carrying out Rural Electrification.
- The **Uganda Electricity Transmission Company Ltd. (UETCL)**, owns and operates the transmission infrastructure operating above 33 kV,
  Single Buyer of Electricity from medium and large Power Plants

Institutional Framework

Key Players in the Power Sector cont'd

- **Electricity Disputes Tribunal** responsible for settling disputes in the power sector
- **Uganda Electricity Generation Company Limited (UEGCL)** responsible for concession monitoring of the Nalubaale and Kiira Power Plants at Jinja. It is the implementing agency for the hydropower projects of Isimba (183 MW) & Karuma (600MW).
- **Uganda Electricity Distribution Company Limited (UEDCL)** owns the distribution infrastructure from 33 kV and below concessioned to Umeme and other distribution companies
- **Umeme** is mandated to: Operate, maintain, upgrade and expand the distribution network within its concession area; retail electricity to its customers and to improve efficiency within the electricity distribution system.

Policies Framework

a) Energy Policy 2002

- This is the guiding policy framework in the Energy sector:
- The goal of this policy is to meet the energy needs of Uganda's population for social and economic development in an environmentally sustainable manner.
- The Energy Policy is under review realising that after 16 years new issues have now emerged.

Policies Framework con’d

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b) Renewable Energy Policy 2007

- The Policy aims to provide a framework to increase in significant proportions the contribution of renewable energy in the energy mix (from 4% in 2007 to 61% by 2017).

Strategies to Implement the RE Policy

- Feed-in tariffs to have been established to create a predictable business environment.
- A Draft Power Purchase Agreement for renewable energy projects of up to 20 MW is in place to reduce transaction costs.
- Tax exemption for renewable energy investments is in place.
- The Uganda Energy Credit Capitalization Company, a financial institution wholly owned by GoU, has been established to provide support in form of credit enhancement instruments to local financial institutions

Policies Framework con’d

c) Rural Electrification Strategy and Plan

- To achieve 26% rural electricity coverage by 2022.
- To achieve 51% rural electricity coverage by 2030, and 100% by 2040.

d) Electricity Connection Policy

The main Objectives of the connection policy are:

- Increase number of connections made annually from the current average 70,000 to 300,000 connections.
- Increase electricity demand on the main grid by 500MW by 2027

Regulatory Framework

e) Electricity Act 1999

The salient features of the Act include:

- Liberalized the electricity industry;
- Unbundled of the Uganda Electricity Board into three entities namely generation, transmission and distribution;
- The establishment of Electricity Regulatory Authority (the "ERA") to regulate the sector;
- The establishment of the Rural Electrification Fund (the "REF"), with the main objective of enhancing rural access to electricity; and
- The establishment of the Electricity Dispute Tribunal (the "EDT") that has jurisdiction to hear and determine electricity sector disputes which are referred to it.

Key Priorities in the Power Sub-Sector

1. To increase electricity generation capacity and transmission network;
2. To increase access to modern energy services through rural electrification and renewable energy development;
3. To promote the efficient utilization of energy and reduction of power losses.

Key Statistics

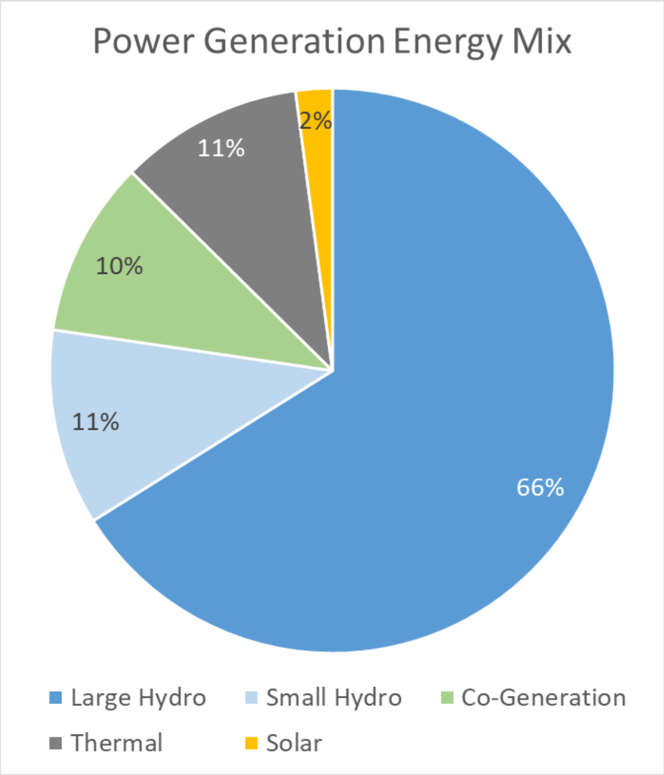
Electrification Level

- National: 23%
- Rural Electrification: 10%

Installed Generation Capacity

Total (2018): 955 MW

- Large Hydro: 630 MW
- Small Hydro: 107 MW
- Thermal: 100 MW
- Grid Solar: 20 MW
- Co-Generation: 96 MW
- Hybrid (Solar + Diesel): 1.6 MW



Key Statistics

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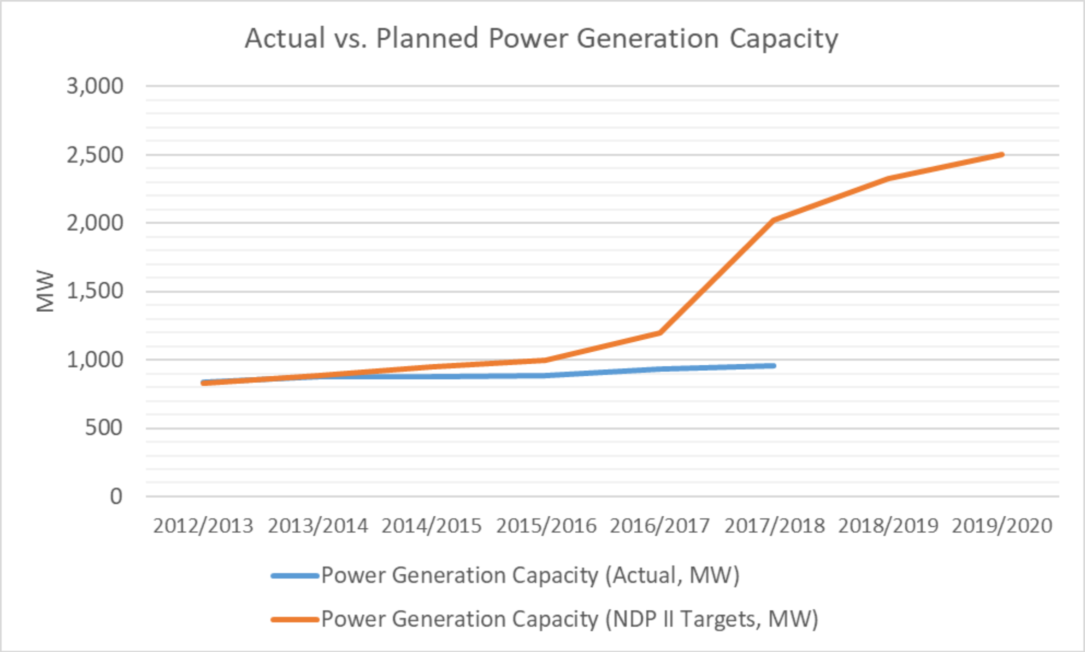
Actual Power Generation Capacity vs. NDP II Targets



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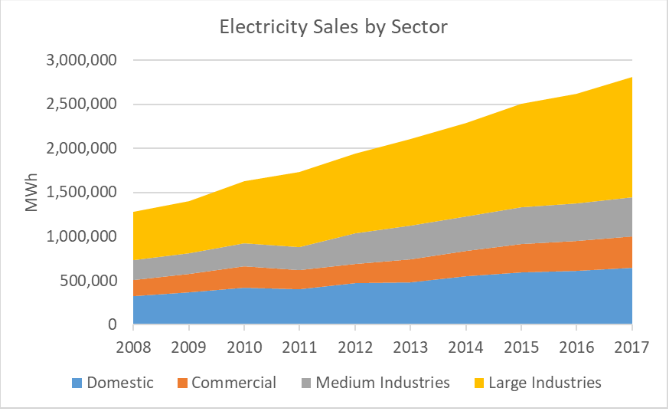
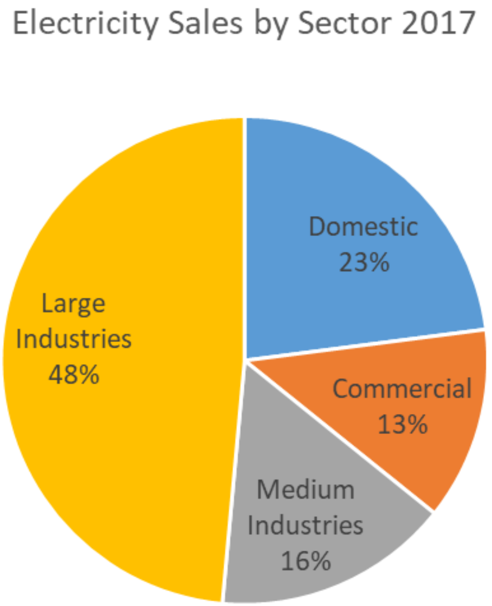
Electricity Sales by Sector

Electricity Sales by Sector in MWh											
ID	**Sector**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
2	Domestic	328,294	364,200	419,933	399,944	472,830	481,758	547,854	593,787	609,148	646,096
3	Commercial	179,501	210,401	243,903	216,781	219,482	261,642	290,025	324,008	340,106	360,023
4	Medium Industries	223,002	232,488	256,381	260,287	341,739	378,641	390,833	411,885	426,162	441,972
5	Large Industries	549,473	594,140	711,266	859,344	908,741	980,144	1,060,062	1,171,531	1,240,715	1,365,660
6	Street Lights	1,923	2,183	2,363	1,421	1,350	1,809	1,879	1,559	1,606	1,594
7	Not categorized	0	3,578	7,165	9,512	11,947	13,426	14,399	0	0	0
Total Electricity Sales		**1,282,192**	**1,406,991**	**1,641,012**	**1,747,289**	**1,956,088**	**2,117,421**	**2,305,051**	**2,502,770**	**2,617,736**	**2,815,345**





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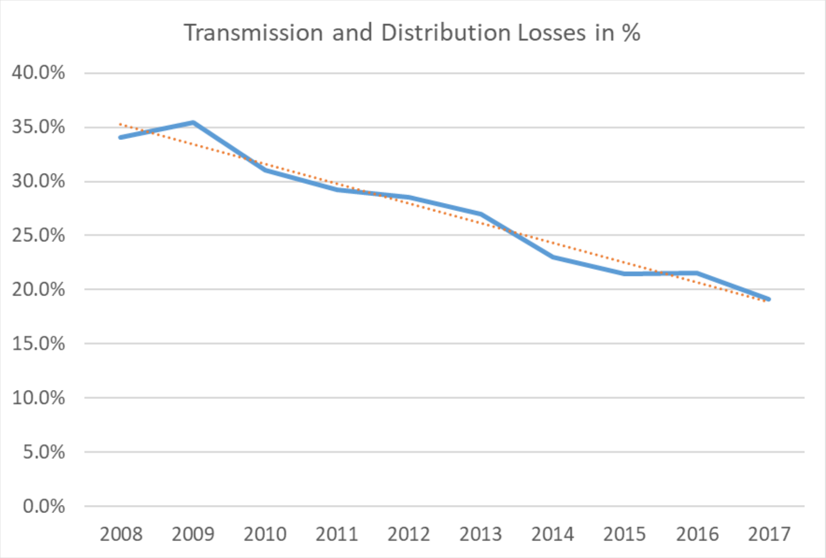
Key Statistics

Transmission and Distribution Losses

Transmission and Distribution Losses in MWh

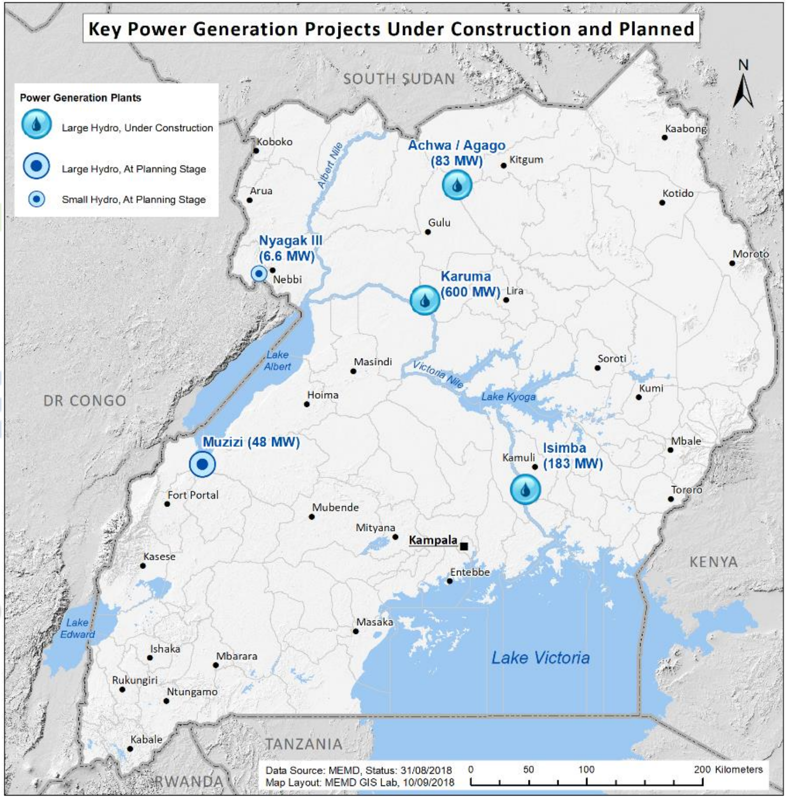
Year	UETCL Purchases	UETCL Losses	Distribution Losses	Total Losses	Total Losses in %
2008	2,048,894	31,964	665,559	697,523	**34.0%**
2009	2,295,072	61,564	751,800	813,364	**35.4%**
2010	2,485,502	72,898	698,624	771,522	**31.0%**
2011	2,593,042	97,313	661,483	758,796	**29.3%**
2012	2,862,946	120,602	696,992	817,594	**28.6%**
2013	3,039,170	107,131	712,565	819,696	**27.0%**
2014	3,197,659	101,539	633,118	734,658	**23.0%**
2015	3,323,629	104,600	607,397	711,997	**21.4%**
2016	3,525,738	133,760	625,396	759,156	**21.5%**
2017	3,863,144	147,443	591,381	738,824	**19.1%**



Key Power Generation Projects

Large Hydropower Projects

- **Karuma HPP (600 MW)**
  Planned Commissioning: Dec. 2019
- **Isimba HPP (183 MW)**
  Planned Commissioning: March 2019
- **Achwa/Agago HPP (83 MW)**
  Planned Commissioning: Nov. 2018
- **Muzizi HPP (48 MW)**
  Planned Commissioning: 2022
- **Nyagak III HPP (6.6 MW)**
  Additional Financing needed



Key Power Generation Projects

Karuma Hydropower Project (600 MW)

The Project is progressing well with the overall physical progress of works on the hydropower plant standing at about 80%. The project is scheduled to be commissioned in end of 2019.

Karuma HPP under construction at the Intake

Key Power Generation Projects

Isimba Hydropower Project (183 MW)

The Project is progressing well. The project is scheduled to be commissioned in March 2019.

View at the Dam of Isimba HPP

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Key Power Generation Projects

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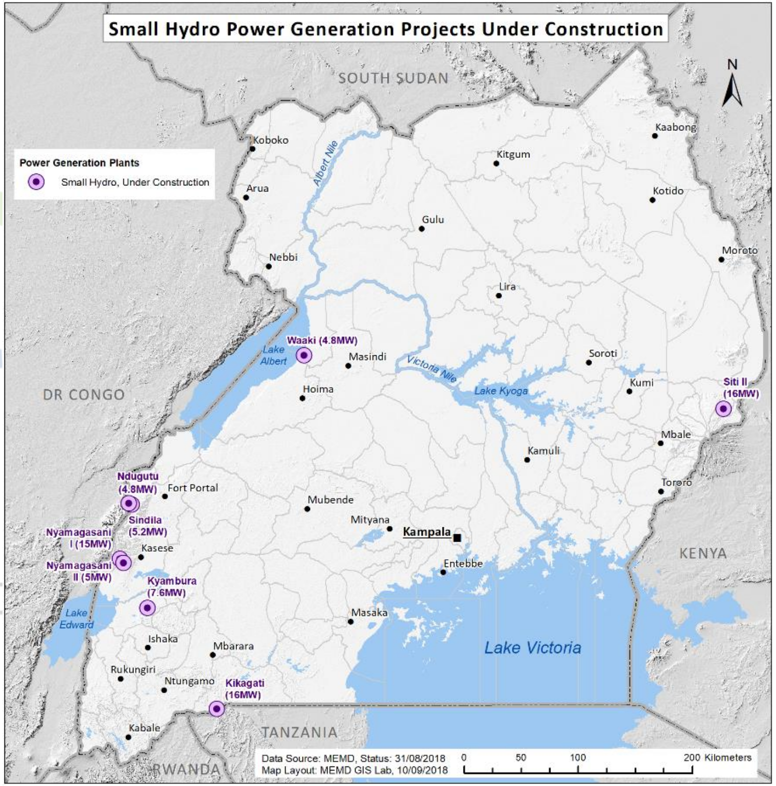
Small Hydropower Projects under construction in 2018

- **Waki SHPP** (4.8 MW) – Q4/2018
- **Siti II SHPP** (16.5 MW) – Q4/2018
- **Kyambura SHPP** (7.6 MW) – Q2/2019
- **Sindila SHPP** (5 MW) – Q2/2019
- **Ndugutu SHPP** (5.9 MW) – Q2/2019
- **Nyamagasani I** SHPP (15 MW) – Q2/219
- **Nyamagasani II** SHPP (5 MW) – Q2/2019
- **Kikagati SHPP** (16 MW) – Q2/2020



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Key Power Generation Projects

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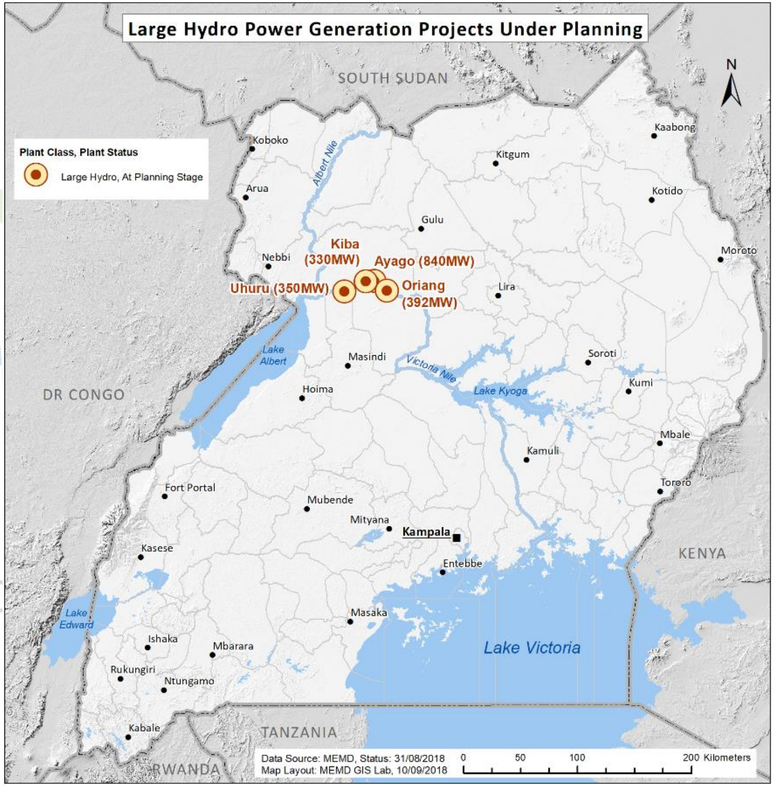
Planned Large Hydro Projects

The projects are at various stages of development namely feasibility study and finance sourcing.

- **Kiba HPP (330 MW)**
- **Oriang HPP (392 MW)**
- **Uhuru HPP (300 MW)**
- **Ayago HPP (600 MW)**

Government intends to develop them on a Build, Own, Operate, and Transfer (BOOT) arrangement.



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Planned Transmission Projects

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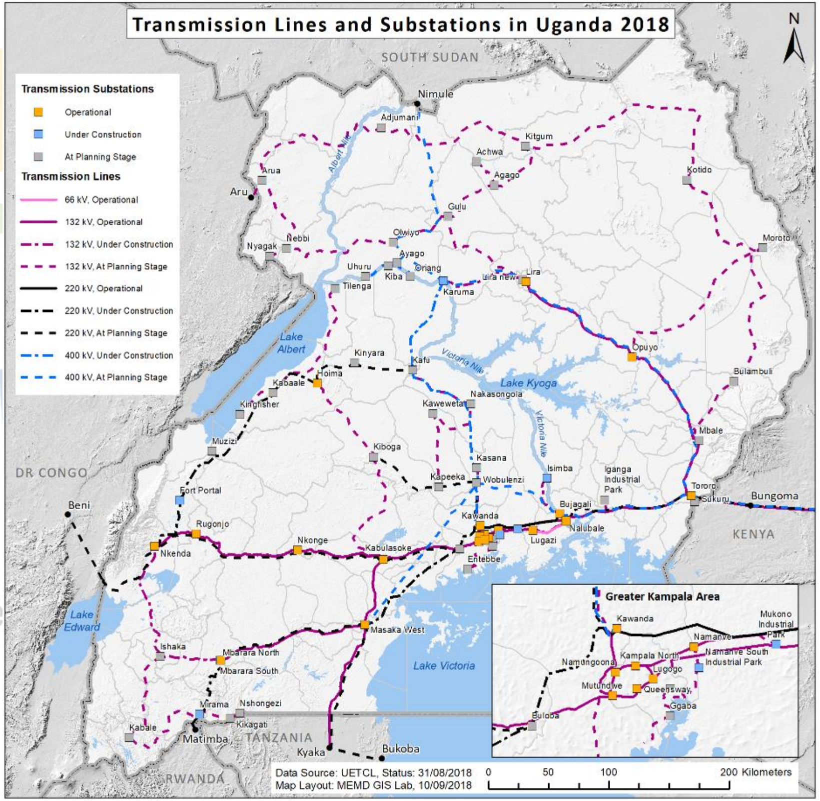
- Nkenda – Mputa – Hoima (132 kV, 254 km)
- Karuma – Kawanda (400 kV, 264 km)
- Karuma – Olwiyo (132 kV, 60 km)
- Karuma – Lira (132 kV, 80 km)
- Karuma – Gulu (132 kV, 70 km)
- Isimba interconnection (132 kV, 40 km)
- Kawanda – Masaka (220 kV, 142 km)
- Mutundwe – Entebbe (132 kV)
- Mirama – Kabale (132 kV)
- Hoima – Kafu (132 kV)
- Lira – Gulu – Nebbi (132 kV)
- Opuyo – Moroto (132 kV, 200 km)
- Tororo – Opuyo – Lira (132 kV, 260 km)
- Mbarara – Nkenda (132 KV, 160 km)
- Lira – Kitgum (132 KV, 125 km).



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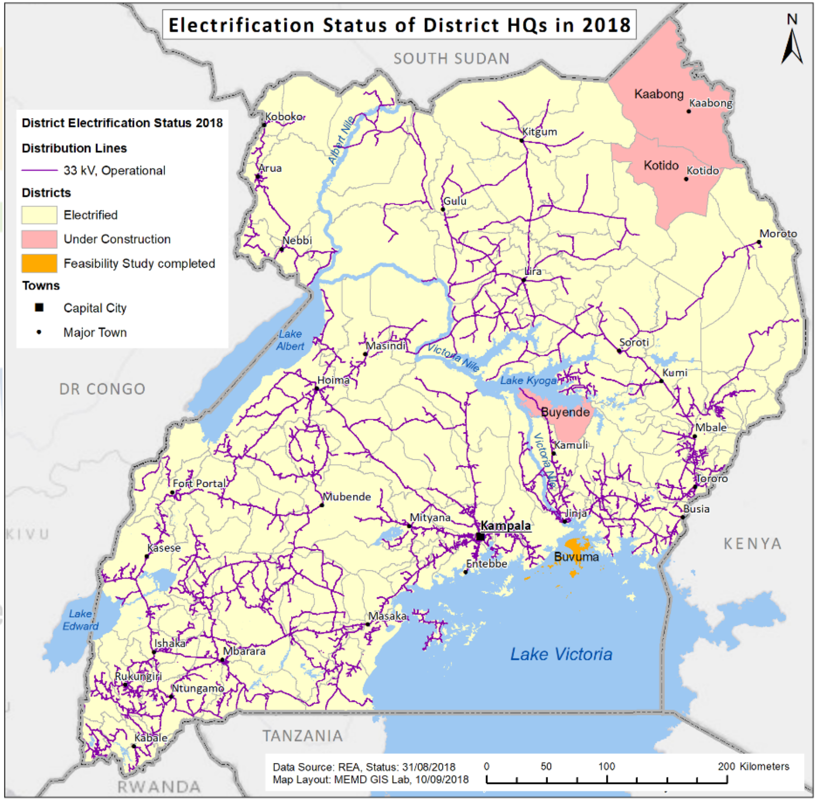
Distribution / Rural Electrification

- Since 2001 a rigorous rural electrification program has been implemented
- Main targets for rural electrification: district headquarters, production areas and communities
- Presently out of 117 districts 113 district headquarters connected to the electricity grid, works are ongoing for the remaining four
- Current focus: electrification of sub-counties
- REA has embarked on a programme to electrify the remaining 287 sub-counties
- Delivery mode includes grid extensions, decentralised grids and solar PV for schools, health centres, water supply and households



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Conclusion

- Realizing that Government has now prioritized Energy Development as a high level issue for the country.
- We need to take advantage of the GIS technology to improve the way we plan and implement energy projects.
- This will save time and money when determining how and where the different energy services will be provided.
- The future is about smart energy solutions.

Thank you !

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