

Productive use of Energy

TOWARDS UNIVERSAL ELECTRIFICATION

Kenya Last Mile Connectivity Project

Samson Ondiek

Kenya Power & Lighting Company



Kenya Power

CONTENT

- ❖ Kenya's Electricity Sector Overview
- ❖ Summary of Key Statistics
- ❖ Electrification Plan
- ❖ Connectivity Projects
- ❖ Energy Consumption Growth Trends
- ❖ Last Mile Consumption Patterns & Behavior



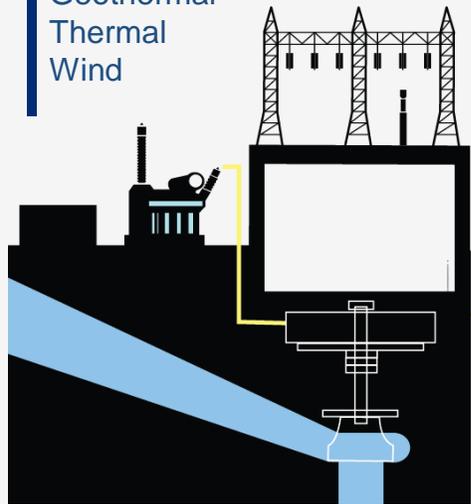
Regulation



Kenya's Electricity Sector

Power Generation

Hydro
Geothermal
Thermal
Wind

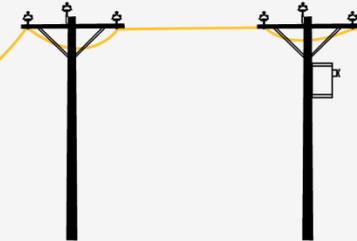


Transmission



Control
Sub-station

Distribution



Retail



IPPs



IPPs



GENERATION CAPACITY

Installed capacity **2,712 MW**

Effective capacity **2,638 MW**

Interconnected effective capacity **2,616 MW**



ELECTRICITY DEMAND

Electricity peak demand **1,882 MW**



CUSTOMER BASE

Total number of customers **7.1 Million**



ELECTRICITY GENERATION & SALES

Electricity generation **10,702 GWh**

Electricity sales **8,459 GWh**

Installed Generation by Type



826.23 MW



50.94 MW



663.00 MW



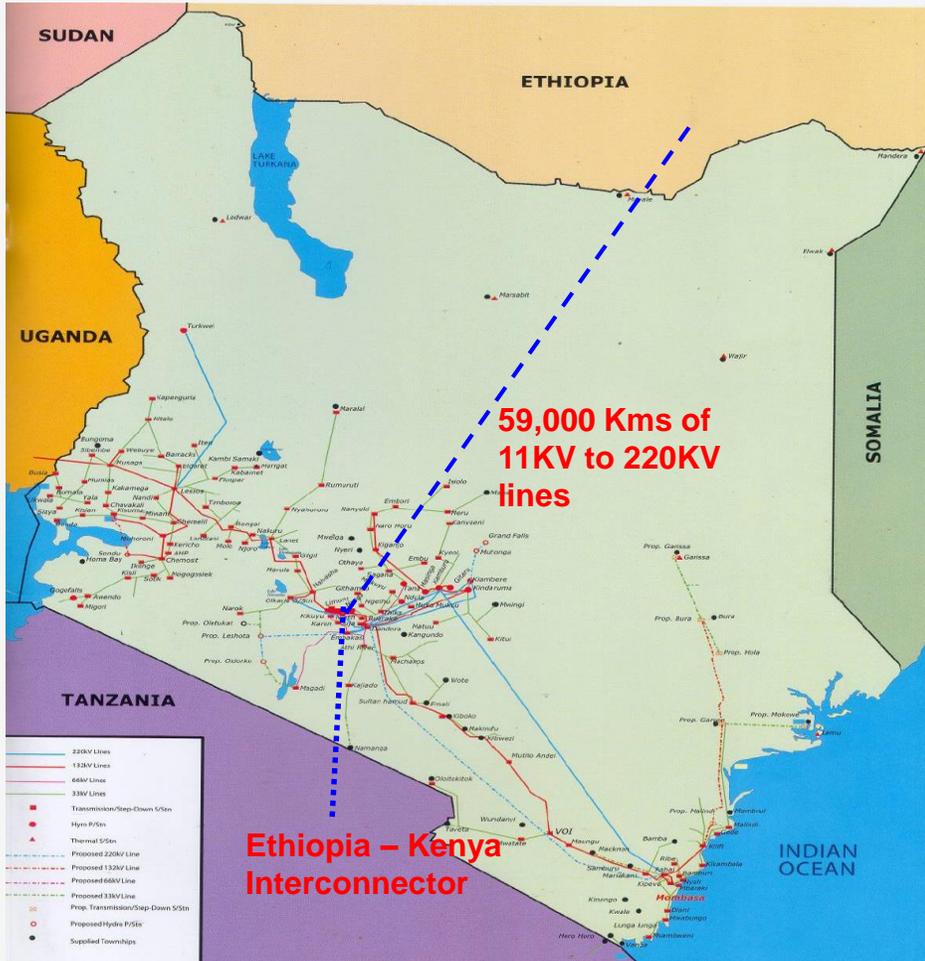
336.05 MW



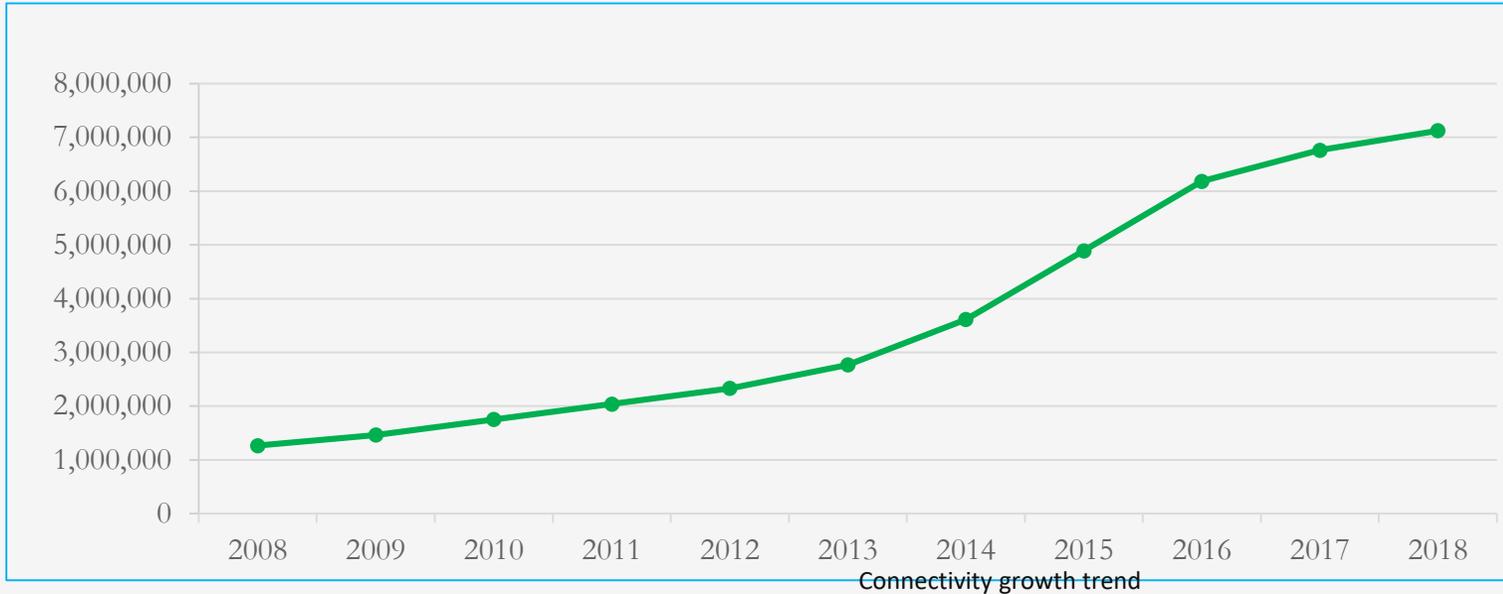
807.73 MW



28 MW



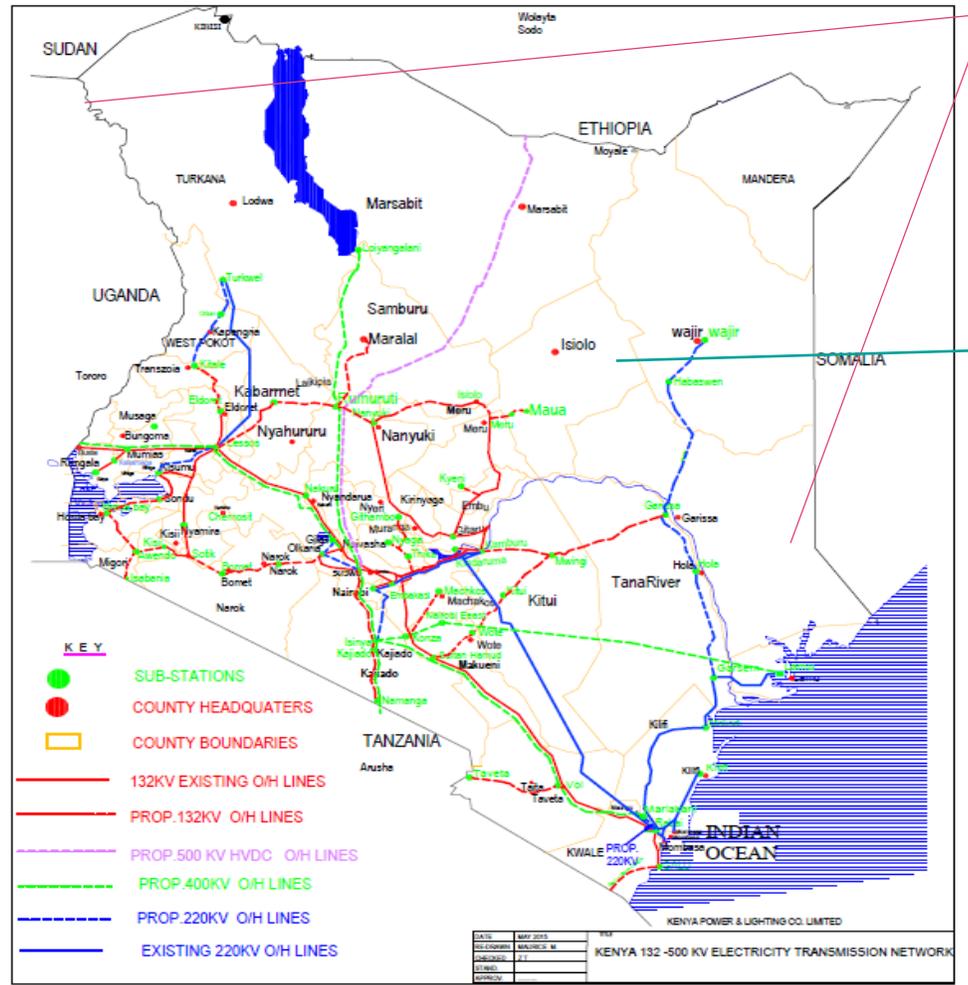
- ❖ The country's electrification strategy is outlined in the **National Electrification Plan of 2017** and is in line with our Vision 2030
- ❖ The strategy is geared towards universal electrification by 2022
- ❖ The national electrification strategy is supported by;
 - Least Cost Power Development Plan - 20 years plan
 - Distribution Master Plan – 10 years plan
- ❖ Rural Electrification Master Plan – 10 years plan



- Ambitious target of universal access by 2022

- ❖ Government introduced last mile program that has more than doubled the number of households connected to electricity
- ❖ This was through;
 - Global Partnership on Output-Based Aid. (GPOBA) – Informal Settlements
 - Last Mile Project – Households under grid or within reach of grid network
- ❖ These projects are implemented by KPLC & REA

- Kenya has a target of achieving universal electricity access by 2022.



Off-grid Zone Targeted for off-grid Mini grid electrification program

Examples of Off-grid Power Stations with mini grids

7.5 M Customers Connected. Over 0.5 M New customers to be connected annually.

Universal electricity access by 2022 through connecting 1.2million new customers yearly

Last Mile Project

- Funded by the Government with support from various development partners
- Targets customers living in rural and peri-urban areas
- Government has secured funding from development partners totaling **KShs 65 billion.**

KOSAP Project

- Supports development of solar hybrid power supply complemented by water projects in **14 least electrified counties.**
- Target Population is about **430,000 households** within off grid regions
- The project is being financed by the World Bank to the tune of **KShs.16 billion**

- Targeting connection of **1.2 million** customers over the next three years.
- Last Mile Connectivity Program aims to **provide 75-85%** of Kenyans with electricity

- Its estimated that about **1.5 million households** will be served by off-grid mini grids
- 120** potential mini and micro-grid sites (>100 structures per site) with roughly 28,000 customers targeted for **phase 1.**

1. Last Mile Project

Transformer maximization funding and targets to connect about 1.2 million new customers

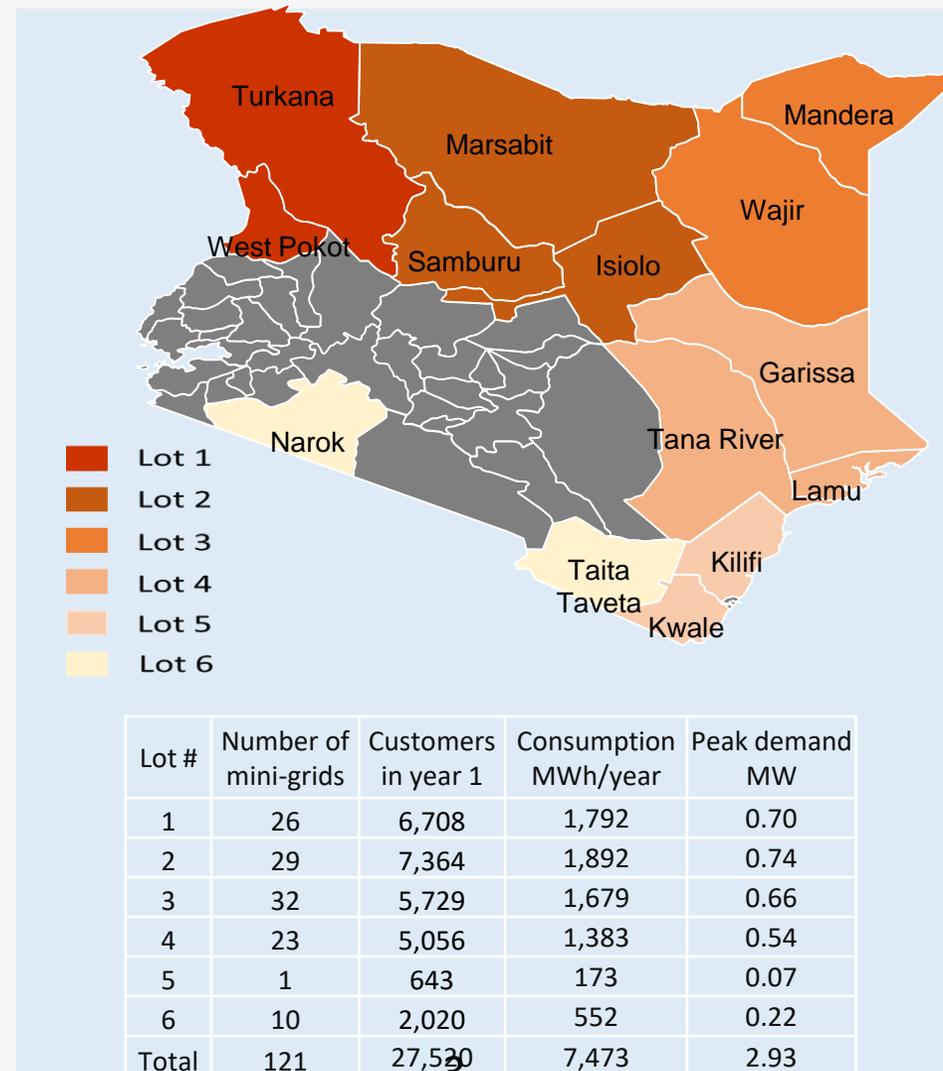
No	Project	No. of transformers/ schemes	Target no. of customers	Total Cost Ksh. Billion	Status	Target Completion Date
1	AfDB (phase 1)	5,320	243,682	15	110,234 Connected (49%)	Sept 2019
2	AfDB (phase 2)	4,763	266,000	15	Procurement of materials in progress	Oct 2019
3	WB	4,200	253,919	15	Design, procurement of materials	Oct 2019
4	AFD/EU/EIB	4,948	296,649	18	Design, and tendering of works in progress	Oct 2021
	Total	19,784	1,137,849	63		

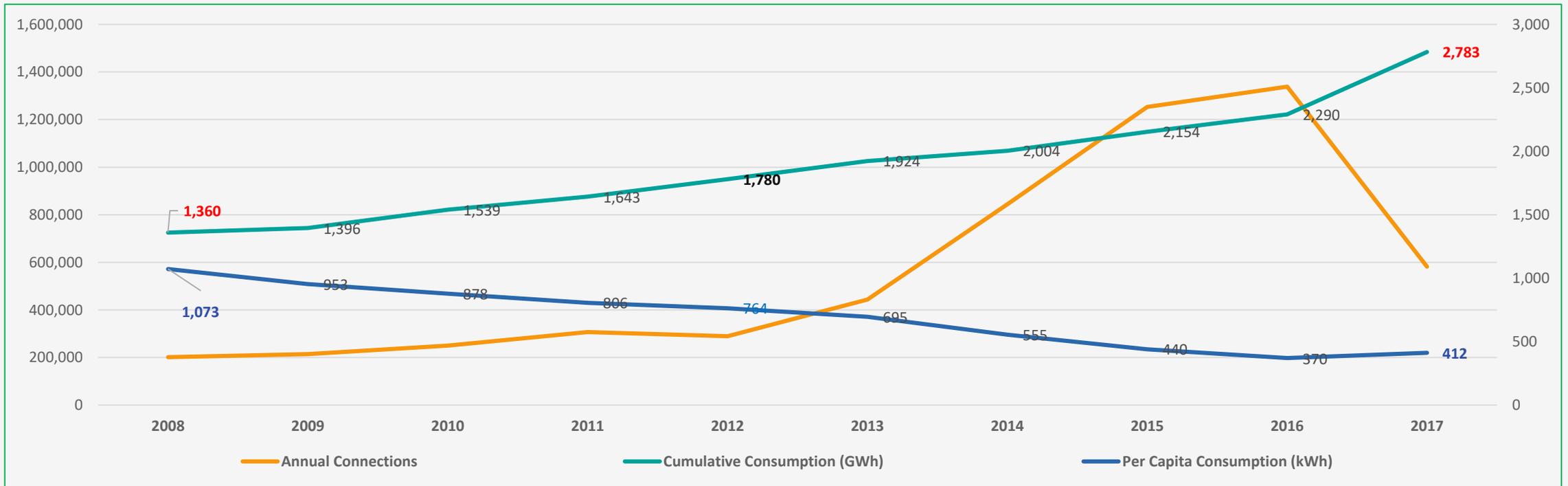


Kenya Power

Kenya Off-grid Solar Access Project – K-OSAP

- \$150 million World Bank Funded Project to the 14 Counties identified by the Commission of Revenue Allocation (2013) as marginalized.
- National Government project with County Government partnership: Counties involved in project concept development and implementation.
- Comprises of:
 - About 120 Minigrids to be developed (KPLC, REA)
 - Stand alone solar solutions for institutions (KPLC)
 - Solar water pumping
 - Stand alone solar for households
 - Energy saving Jikos (Turkana, Marsabit, West Pokot and Samburu Counties)
 - Requisite capacity building for Counties.



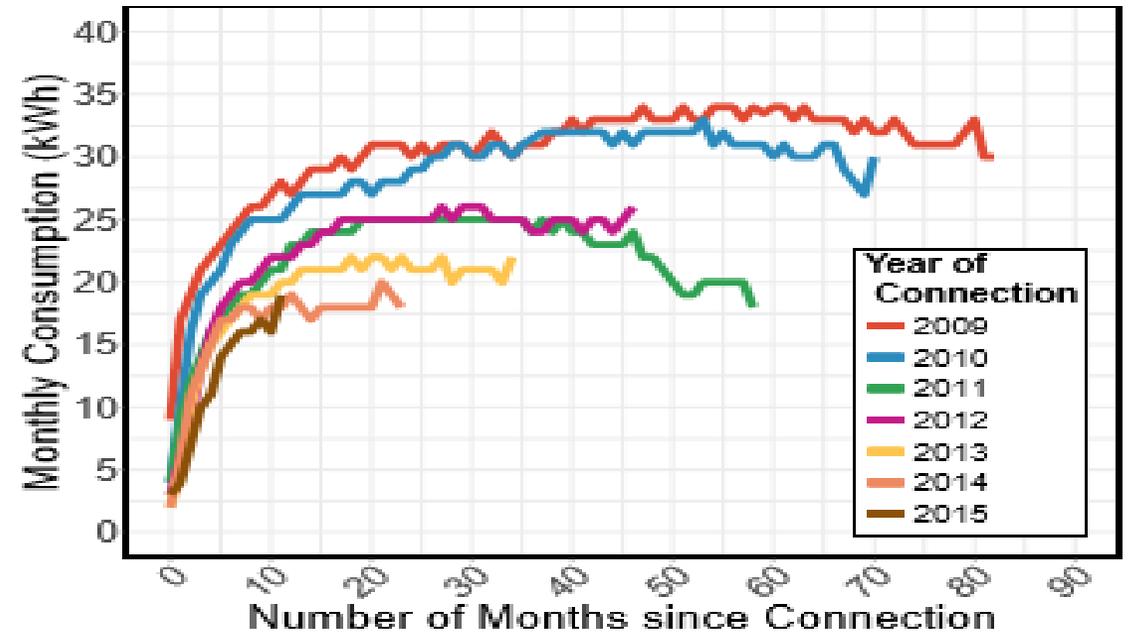
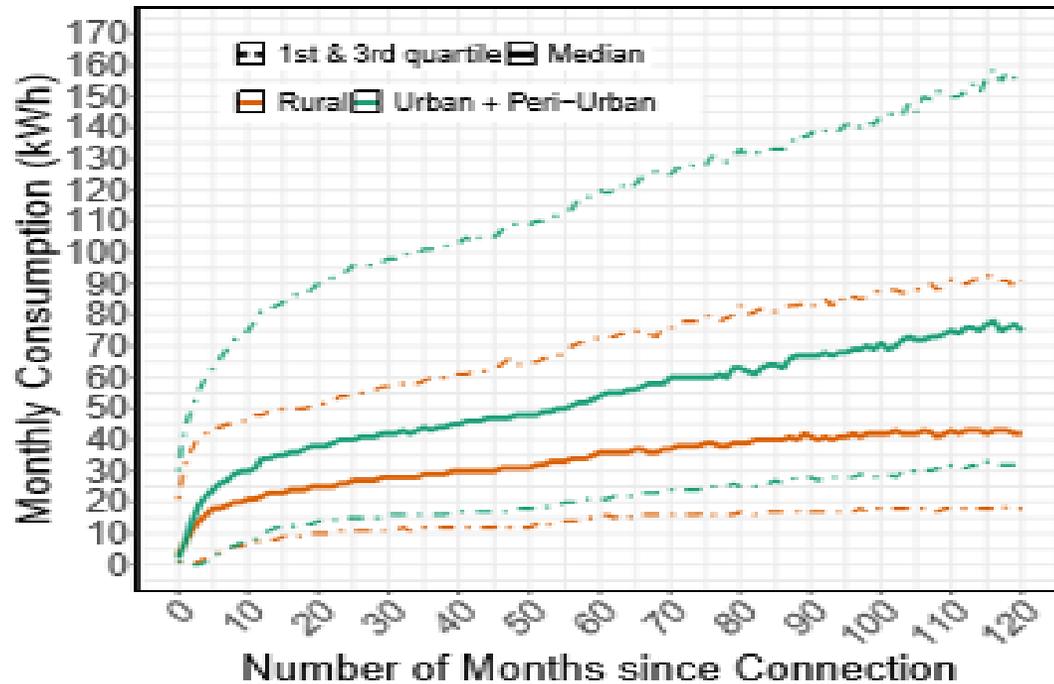


The average per capita consumption for domestic customers is declining with **increased** connections.

- The average cumulative consumption has increase with the new connections
- Average per capita consumption within this category dropped from 764 Kwh to around 412 Kwh

Last Mile Consumption Patterns & Behavior

- Median monthly electricity consumption during the first decade of access, by urbanization level.



- Median monthly electricity consumption for customers in the rural category, separated by electricity connection dates

- Customers exhibit lower growth rates in electricity consumption over time compared with those customers who were self-sponsored and those living in cities and other urban areas
- Customers achieve a lower steady consumption levels that are arrived faster than the other customers

4. Financial Sustainability of Grid/Mini grid

The results;

- The customers peak faster and earlier than expected explaining the lower consumption levels registered by the groups.
- A consumption of between 8-13kWh per month compared to between 40-50kWh for the urban households.

- Challenge Now

- How to increase demand among the last mile customers to make it viable and as well improve the customers well being.

Thank you



Kenya Power

