Webinar insights from Utilities 2.0 – Better Services, Better Connections – Lessons from Uganda and Nigeria Webinar hosted

Intro and Context to Webinar hosted

Utilities across countries with low energy access face a number of challenges in delivering on the mandates of affordable, reliable energy for all. As a result, the world is not on track to meet Sustainable Development Goal (SDG) 7, and roughly nine of every ten people living without electricity in 2030 will be in sub-Saharan Africa. Energy access is critical for building resiliency on the continent, including food security and disaster preparedness.

In recent years, new distribution models that combine traditional utility models with the learnings from over a decade of decentralized energy technology rollout have emerged, ushering in a new era for utilities: Utilities 2.0. Integrated energy approaches draw the strengths of both centralized and decentralized pathways into innovative business models for faster, lower cost and more reliable service delivery. Organizations such as Power for All, Konexa, and the Rocky Mountain Institute are working directly with utilities from across the continent, exploring viability and demonstrating the value proposition of novel integrated approaches. While these cutting-edge initiatives are necessary first steps, much more is needed to galvanize practitioners, donors, investors, and policymakers to accelerate integrated approaches to energy access at scale.

Key insights obtained from the webinar summarized as follow:

1. Challenges across Sub Saharan Africa

- There are only 2 profitable utilities in sub-Saharan Africa, with two common themes leading to low performance:
    - Inability to access affordable capital to invest in infrastructure upgrades
    - Low revenue collection rates due to a combination of factors such as bad billing practices and non-payments
- Transmission and Distribution losses in low energy access countries are 5-10 times higher than in developed countries
- Most countries suffer over 500 hours per year of service interruptions
- Average utility suffers from a deficit of $0.10 per kWh, such a loss can compromise up to 2% of a country's GDP
- Annual per capita consumption is 400kWh, compared to 8,000kWh in OECD countries
- Connections cost up to $2,000 which is more than the annual income of the un electrified
- Umeme even as a profitable utility, experiences the following challenges:
    - Financing
    - Reliability – strained networks and quality of supply
    - Affordability – Affordable tariffs vs project financing in tariffs
    - Growing Customer Demand – Uganda experiences suppressed demand country has an installed generation capacity of 1852MW vs peak domestic demand of 629MW

- In the case of Nigeria, utilities' value chain is broken and divided -- large private sector investment in generation, great effort by the transmission company to upgrade the network and the distribution sector recently privatized and struggling with high a degree of losses, poor management, under investment and lack of upgrade to their businesses model, great divide between the on-grid and decentralized renewable energy (DRE) community. On-grid players (the utility) feel that the DRE sector is encroaching their service territories.
- Nigeria's installed generation capacity is at 5GW, real consumption through diesel gensets indicate that consumption is over 25GW (5 times higher than the installed generation capacity).

2. Business Model Innovations

i. Nigeria business model innovation insights:

a) Konexa business model

- Konexa invests across the value chain to improve quality of service, including include DRE and other technologies to bring transparency and build a strong customer relationship.
- Productive use is a key component to the Utility business model, which is made up of the 80:20 rule -- 80% of the end-use consumption is driven by a small number of industrial and commercial customers; the remaining 20% of the consumption comes from rural household customers. The importance of large commercial and industrial customers is clear even to the traditional Utility.
- Konexa's business model brings the DRE technology, productive use of energy, generation and distribution network components together in its integrated business model and is able to attract the necessary long-term capital investment to de-risk the project.
- Konexa's business model aims to acquire better-paying customers, increase demand, improve billing practices, and attract long-term infrastructure capital.

b) RMI – Four business models for undergrid mini-grids

- Mini-grid operator led approach: the mini-grid developer leads and consults with utility and operating the systems. This model is the most straightforward, fastest option to deploy, due to the simplicity of the arrangement
- SPV model: A consortium of investors comes together to form an SPV to invest in one or multiple mini-grids. It's a vehicle that can attract large investment. development is led by the SPV. (The SPV is potentially formed by a DisCo's investors) and certain specialized functions are subcontracted to a mini-grid operator.
- Cooperative model: A cooperative formed by the community leads the mini-grid development. This model gives the community more ownership and control over the mini-grid, increases community buy-in, enables the ability to leverage alternative sources of capital and drives projects with lower costs.
- Collaborative SPV-led: This model is a combination of all the above. Ownership and operation functions are spread across the DisCo, mini-grid operator, and the under-grid community (via a co-op)

ii. Uganda business model innovation insights explored through U.2.0 project

- The U2.0 pilot includes the following key component: PV-based mini-grid built with grid standards, that allow for easy grid integration at a later stage; appliance financing to increase productive use of energy; partner with agro-processing experience to improve the value chain.
- These models are focused on each party's advantages. Utility has expertise to support with engaging the regulator; mini-grid and the private sector can focus on customer development and increasing productive use.
- Benefit for the utility: shorten the learning curve for mini-grid integration to understand the impact at scale.
- Direct and indirect opportunity comes from pulling together the strengths of public and private utility and decentralized renewable energy

<u>Utilities 2.0 Uganda pilot has developed the following business models:</u>
'Level 1' - 'Leverage Clear Comparative Advantages' Model
Approach: Partner with equal or better quality at lower cost
Current View: Utility builds the network, IPP (mini-grid developer) owns customer/stimulates demand
***Goal* –** Drive down OPEX without compromising customer satisfaction and demand
Sensitivity - A 20-25% Opex Reduction could yield a $0.30-$0.60/kwh power cost reduction

'Level 2' - Lowest Capex' Model
Approach: Drive down soft costs and hard CAPEX costs through standardization, leasing and mobility
Current View: Standardized, modular solar generation, lowest cost provider builds the network. Equipment is leased to reduce CAPEX Still need to find cheaper alternatives to battery storage
Goal: Drive down CAPEX by increasing efficiencies and by using standardized solutions
Sensitivity: A 50% Capex Reduction could yield a $0.40-$0.60/kwh power cost reduction

'Level 3' - 'Lowest Cost of Capital' Model
Approach: Leverage utility balance sheet and lower capital cost to purchase and finance at lower cost
Current View: Utility buys and finances the assets, IPP (mini-grid developer) owns the customer/builds demand
Goal: Drive down cost of capital by leveraging the utilities' balance sheet
Sensitivity: A 6% reduction in capital cost could yield at least a $0.50/kwh reduction in power cost

3. What is required to achieve scale using these innovative approaches:

- Enabling policy frameworks required: Frameworks under energy policy and regulation to encourage integration and innovation is required. This allows for de-risking for innovation in the sector and ensures the projects' scalability.
- Productive use is a key component to making these innovative business models attractive.
- Investors are excited about the approach but need to see support from governments.
- Investors are excited about the level of returns that are possible from productive use of energy of large commercial and agricultural anchor loads, which provides investors with the necessary level of comfort required to make an investment.
- In order to achieve scale, the sector needs to attract large agro-processing and anchor loads that will justify the investment and make it bankable. Anchor loads reassure investors and attracts the necessary capital investment.
- Good investment cases are not driven by household consumption, but by the commercial and industrial customers with energy-intensive activities. Finding the right mix of customers that will convince the investors and attract foreign direct investment and subsidies are required.

Webinar materials to support these insights can be found with the following links:

- <u>Webinar Video</u>
- <u>Webinar Q&A</u>
- <u>Webinar Presentation</u>

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