



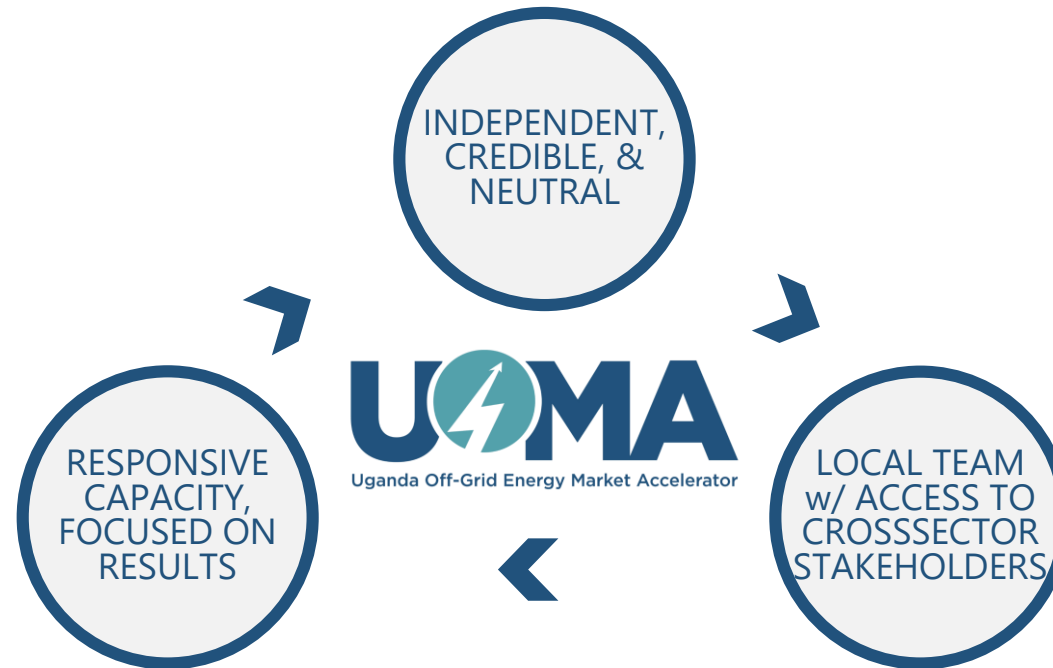
Uganda Off-Grid Energy Market Accelerator

Reaching unserved populations

Insights and strategies to increase access in Northern Uganda

March 2019

Uganda Off Grid Energy Market Accelerator (UOMA) is a dedicated and neutral intermediary, focused on scaling off-grid energy access



We accelerate the off-grid energy market in Uganda through:

- **Research & Insights:** providing data, analysis, and insights to businesses, investors, development partners, and policy-makers
- **Coordination:** coordinating industry actors and resources to increase efficiency; and
- **Direct Interventions:** catalyzing interventions where necessary to reduce barriers to off-grid energy access.

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One of the core accelerator initiatives is to analyze unserved populations and determine strategies to reach

UOMA is working on 5 high impact initiatives:

Expanding access to finance

Increase access to local currency debt finance for solar operators, bridging a critical working capital shortfall and currency mismatch and enabling operators to increase affordability of units

Reaching unserved populations

Reduce barriers to better target unserved populations in Uganda, improving access for some of the hardest to reach and most in need communities

Expanding productive use technology

Support industry to test and validate productive use technologies that can achieve economic benefits for off-grid Ugandans while growing energy demand

Strengthening the enabling environment

Support public sector to create effective policies and an effective enabling environment to increase off-grid energy uptake in Uganda

Facilitating communication & coordination

Enable more effective communication and coordination in the off-grid energy sector in Uganda, resulting in better resource allocation and accelerated progress in achieving universal access

Recall: This report is one in a series of insights shared based on our framework to segment unserved populations

What influences consumer decision to purchase and consistently pay for SHS?

Ability to pay

Willingness to pay

Level of income

Product pricing

Wealth levels

Changes in income

Pricing structure

Changes in pricing

Awareness

Perception

Value proposition

Trust

This report looks at how aspects of both ability to pay and willingness to pay have influenced access in Northern Uganda

Focus of our report is Northern Uganda as it has the lowest rate of access—HHs heavily rely on rudimentary sources of energy

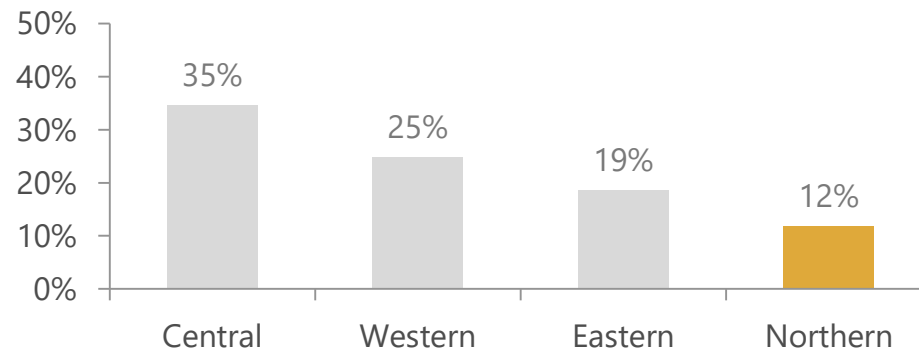
Northern Uganda has the lowest grid electrification rate in Uganda. Population predominantly reliant on rudimentary off-grid energy sources such as paraffin and firewood—solar usage not as common

Region has lowest electrification rate

- Access to the grid at 12% (below national average of 14%)¹
- A sparse population and the presence of geographic factors such as the River Nile have made it costly for grid extension and as such the region lags behind in electrification rates

Grid electrification rates of HHs in Uganda¹

Percentage

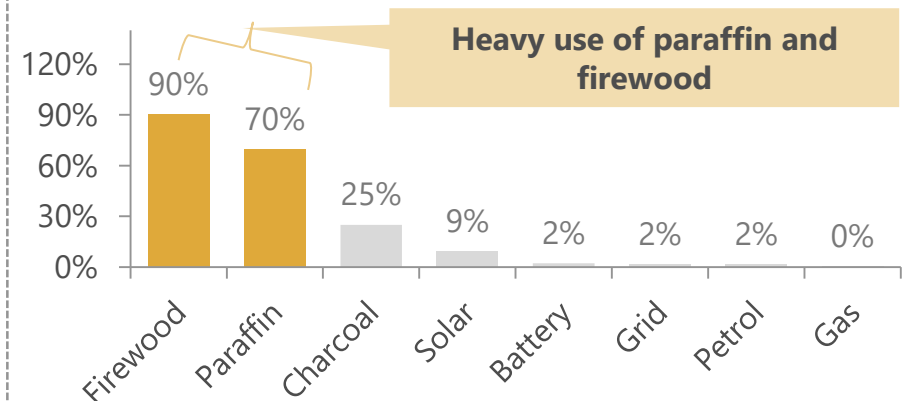


Firewood and paraffin most common alternative

- 90% of households depend heavily on firewood to meet their cooking needs
- 70% use paraffin to meet both their cooking & lighting needs¹
- Significantly lower adoption of renewables such as solar in the region

Sources of energy for HH in Northern Uganda¹

Percentage*



Source: 1. Uganda Bureau of Statistics. (2014) Uganda Rural-urban Electrification Survey, 2012. Kampala, Uganda

Footnote: *Percentage is over 100% as households use more than one source of energy per household

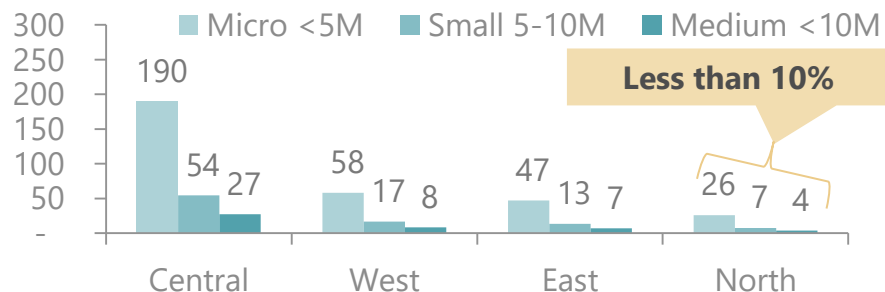
Prolonged conflict in the region has led to slow economic and infrastructural development in comparison to rest of the country

A history of conflict has caused limited economic growth & infrastructural development

- Region experienced two decades of civil unrest from mid 80's where people were displaced and lives lost. Consequently, region has lagged behind in development and today 87% of the population live in rural areas with majority practicing subsistence agriculture^{1,2}

Northern Uganda has the lowest number of registered businesses in the country

of registered businesses in UG, 2011³

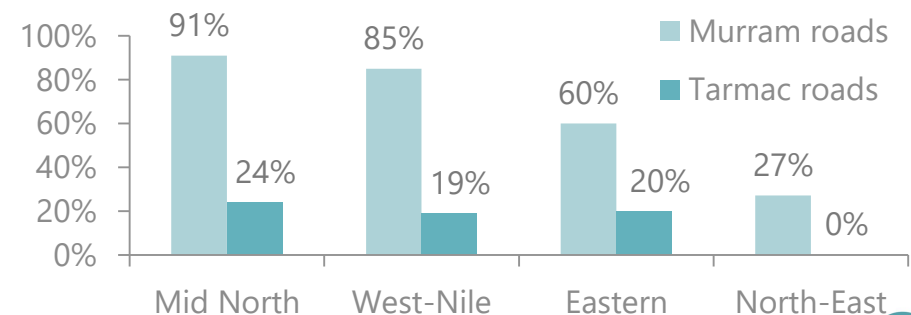


- Census survey conducted on regional distribution of registered businesses in 2011 found only 8% were located in the North³
 - Majority of businesses had annual revenues of less than UGX 5 Million

The region has poor road network with lowest level of access to tarmac roads in the country

- Most roads in Northern Uganda are murrām—sub regions like North East have no tarmac roads at all
- At 19%, region has least number of tarmac roads in the country compared to the national average of 29%⁴

Access to roads at sub-county level, Northern UG



Source: 1. "Uganda Northern". 2014. *Compassion Website*. <https://www.compassion.com/uganda/luo.htm>.

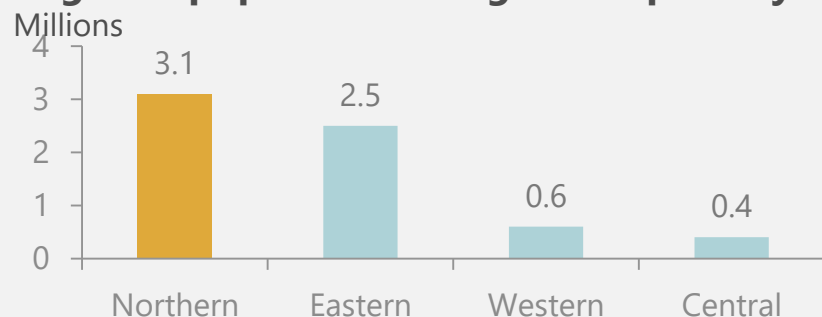
2. *National Population And Housing Census*. 2014. Uganda Bureau of Statistics. <http://www.ubos.org/onlinefiles/uploads/ubos/NPHC/NPHC%202014%20PROVISIONAL%20RESULTS%20REPORT.pdf>

Region has highest number living below poverty line—additional effort to serve vulnerable groups required

The region has over 3 million people living below the poverty line¹

- Poverty rate in the region is twice national average; approximately 43% compared to national average of 19.7%¹
- Cost of living high yet over 60% of the adults are unemployed²

Regional population living below poverty line¹



Given the high incidence of poverty, it is critical that vulnerable groups receive additional support

- **Refugees:** N. UG is bordered by conflict in South Sudan & DRC attracting an influx of refugees in the region; according to UNHCR, 1,800 refugees move into Uganda every day from South Sudan³
 - For example, Bidi Bidi refugee camp is home to ~270,000 people making it the largest refugee settlement in the world⁴
- **Youth:** Uganda has second youngest population in the world with over 78% below 30 years⁵
 - Conflict has affected the ability for those in N. UG to access social and economic capital to create wealth for themselves⁵
- **Women/widows:** Percentage of female headed households is highest N. UG with West Nile at 39% and North North West Service territory at 35%⁶
 - Women have less control over factors of productions such as land; ~98% of land in N. UG is held under customary tenure which follows lineage head approval and often favors men⁷

Source: : 1. http://www.ubos.org/onlinefiles/uploads/ubos/statistical_abstracts/Statistical%20Abstract%202015.pdf 2. <https://www.compassion.com/uganda/luo.htm> 3.

<http://www.unhcr.org/news/stories/2017/8/59915f604/south-sudanese-refugees-uganda-exceed-1-million.html> 4. <https://www.theguardian.com/global-development/2017/apr/03/uganda-at-breaking-point-bidi-bidi-becomes-worlds-largest-refugee-camp-south-sudan> 5.

[http://www.undp.org/content/dam/uganda/docs/Brochure%20for%20Youth%20Engagement%20and%20Employment%20\(YEE\)%20Convergence%20of%20the%20United%20Nations%20in%20Uganda.pdf](http://www.undp.org/content/dam/uganda/docs/Brochure%20for%20Youth%20Engagement%20and%20Employment%20(YEE)%20Convergence%20of%20the%20United%20Nations%20in%20Uganda.pdf) 6. <http://www.ubos.org/onlinefiles/uploads/ubos/pdf%20documents/2015%20NSDS%20report.pdf> 7.

http://www.landcoalition.org/sites/default/files/documents/resources/Securing%20Women%20Land%20Rights%20Report_with%20covers%20_0.pdf

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GoU and dev partners have led development efforts in N. UG across sectors including energy with limited private sector presence

In a bid to equalize development opportunities for vulnerable groups and more broadly Northern Uganda, there has been targeted investment across sectors by GOU and development partners

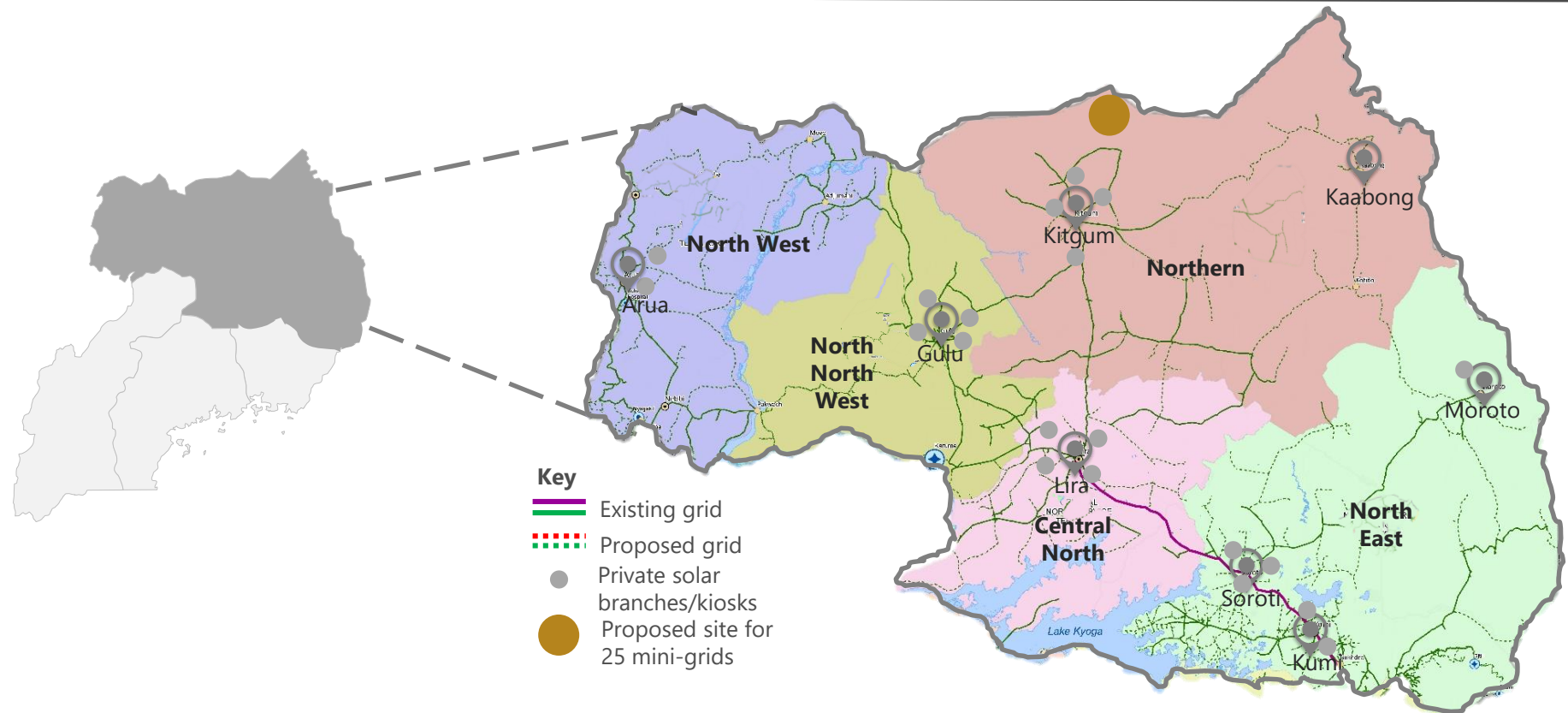
- For example, GOU has a long standing partnership with World Bank aimed at improving socio-economic opportunities for poor households including among others refugees & female led households in the region¹
 - Over USD 300 Million has been invested through three phases of Northern Uganda Social Action Fund Project (NUSAF) since 2002²
 - Phase 2 targeted education, health, water, agriculture and transport sectors³
- The Office of the Prime Minister under its special programs' division has 3 out of 5 programs targeted at development of Northern Uganda including ministries solely set up to support two sub regions in Northern Uganda – Teso and Karamoja regions⁴

Similarly, the energy sector has had a number of government & donor led initiatives

- Government has led majority of the energy efforts such as **ERT program** providing grid connection & solar off-grid subsidies⁵ and **rural electrification project** focusing on West Nile aimed at increasing rural energy from 7% to 22% that was launched in January 2017⁶
- Off-grid efforts have also largely been supported by donor programs like Teko-Wa project (EU, Barefoot Power, Church of Sweden) and PAMENU (GIZ) to disseminate off-grid solutions such as solar lanterns and cook stoves in Northern Uganda^{7,8}

However, access to both grid & off grid sources remains concentrated in the major towns leaving a number unserved

Northern Uganda service territories energy distribution^{1,4}



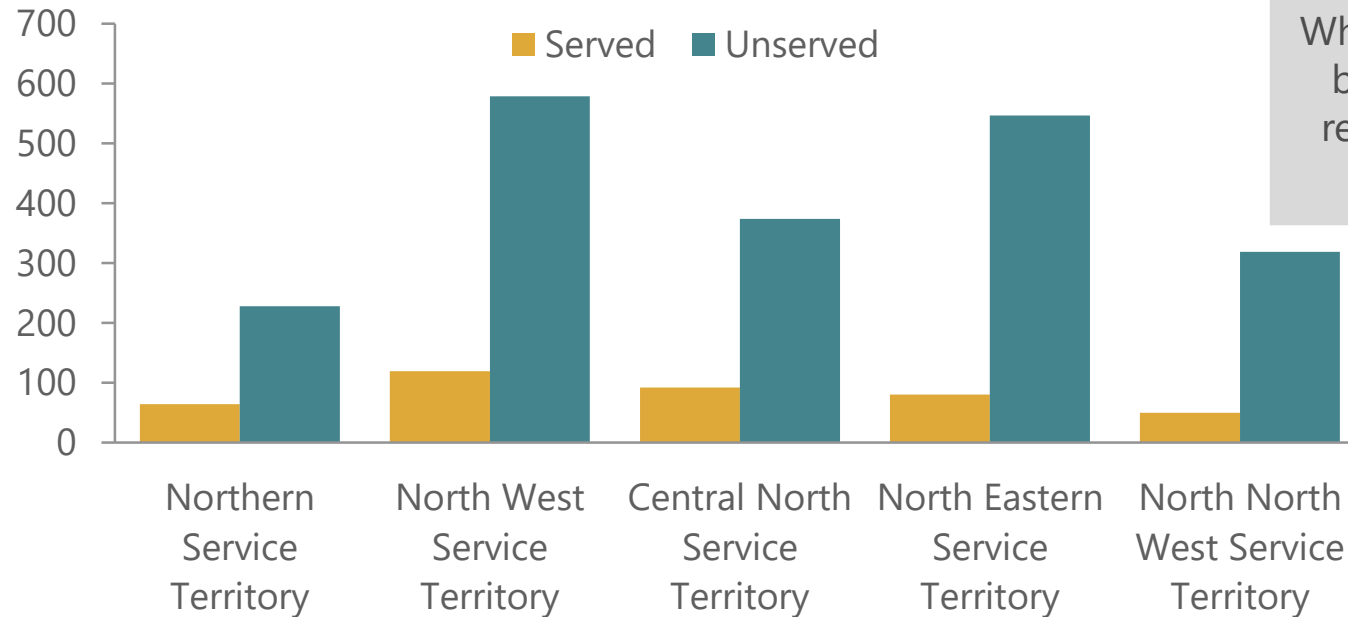
- Grid: Served by UMEME substations in Gulu, Lira, Soroti, Kitgum and Kumi² & WENRECo standalone station for Arua & surrounding towns in West Nile³
- Off-grid: Limited presence of SHS operators and no established mini-grids although some sites have been proposed & tendered

Insights

Projections show by 2027, >400,000 additional households will be served by the grid leaving ~2M household unserved

Electricity access-Northern Uganda*, 2027

'000 people

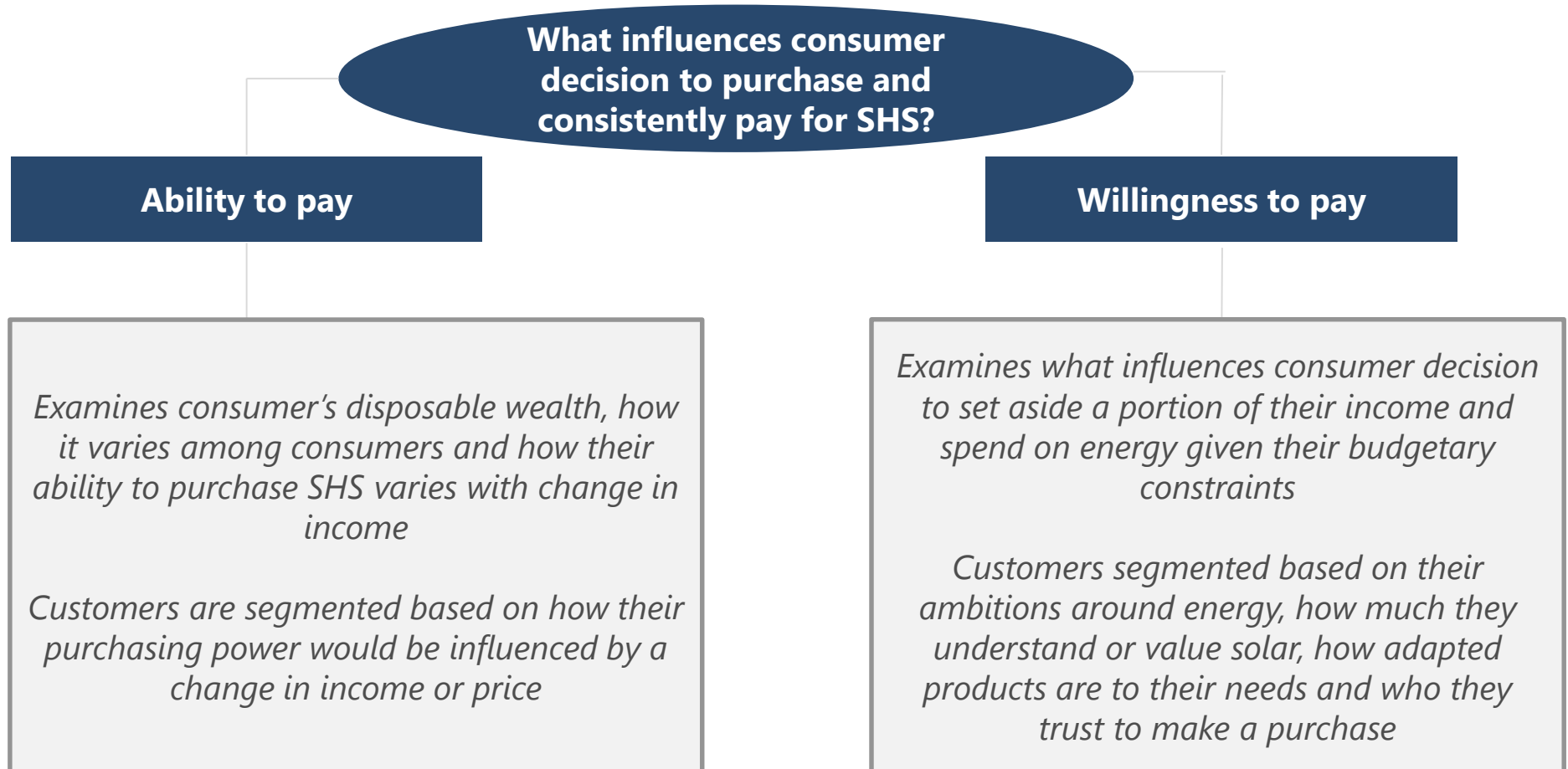


Opportunity for off-grid solutions to close gap. While some mini-grid sites have been identified, focus of this report is on the opportunities with SHS

	NST	NWST	CNST	NEST	NNWST
Grid connections	64,400	119,500	92,000	80,600	49,700

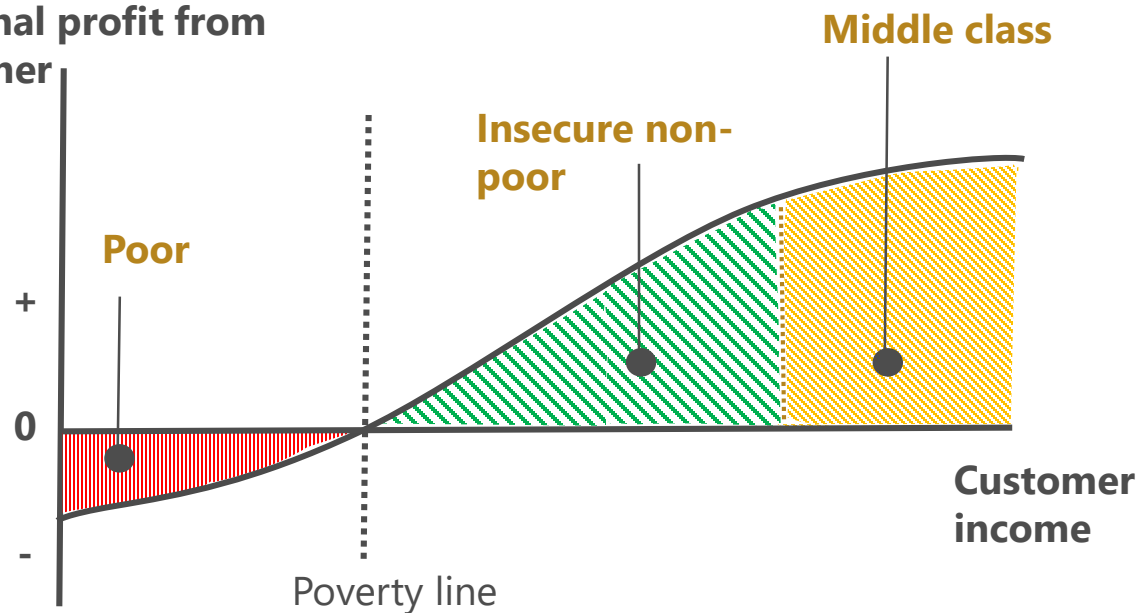
Source: Projections from draft Uganda REA Master Plan
 *Data currently does not include West Nile Service Territory

Recall: Insights explore themes around the ability to pay versus willingness to pay of populations in Northern Uganda



Recall: Three key segments exist based on wealth levels in the region

Marginal profit from customer



- Expanded look at poverty puts into context ability to consistently afford basics, real income and ability to acquire credit to improve living standards
- Important to note that this is not a static state and operators can take advantage of opportunity for change

Middle Class

Households earning over \$10-\$20 dollars a day and who have a low probability of falling into poverty¹

Insecure non-poor

Living above the national poverty line but on less than twice the national poverty line¹, these individuals are distinguished on account of the volatility of their incomes and the risk they face of becoming poor in the event of household shocks or economic hardship²

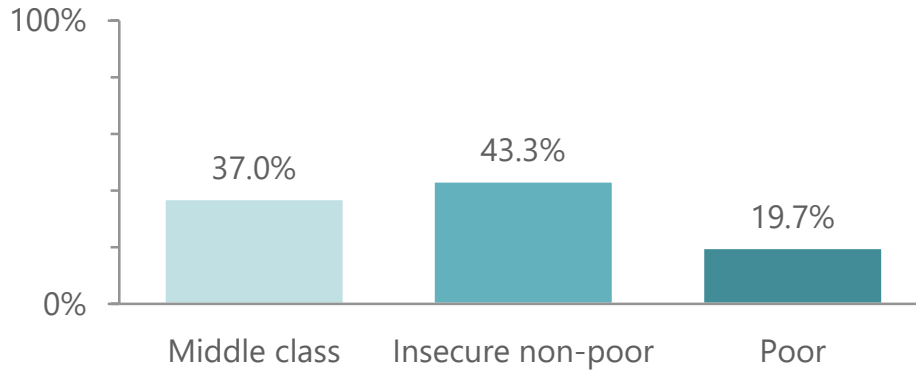
Poor

Households living on less than \$1.25 a day¹

Segments differ both at national level but also vary within the region—North East has biggest proportion of poor

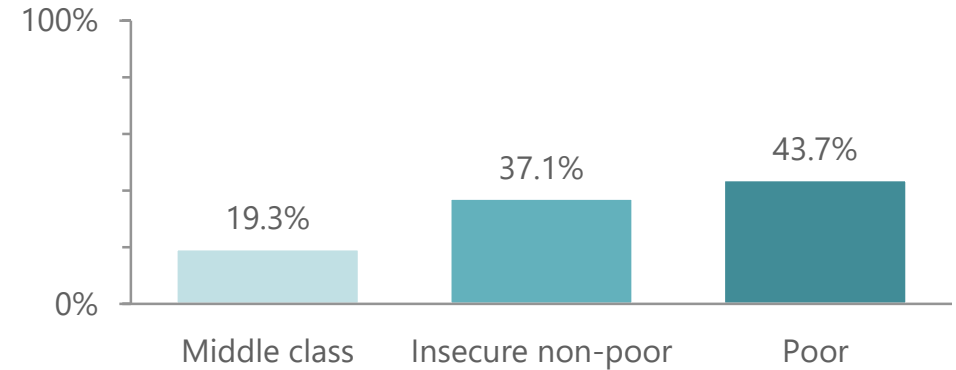
Poverty status-Uganda, 2014

Percentage



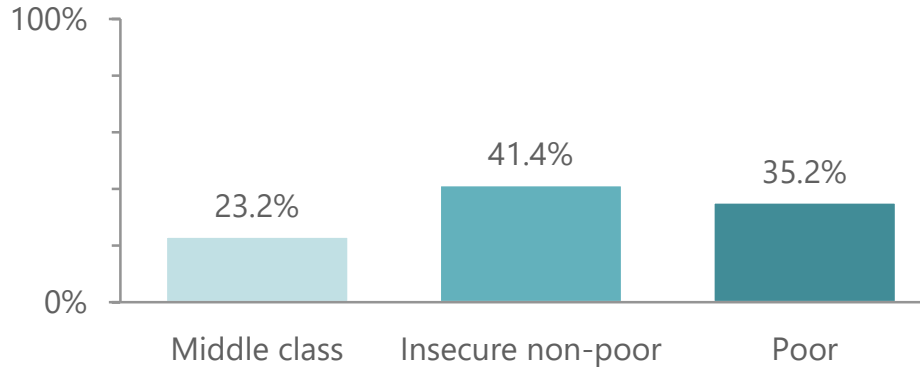
Poverty status- Northern Uganda, 2014

Percentage



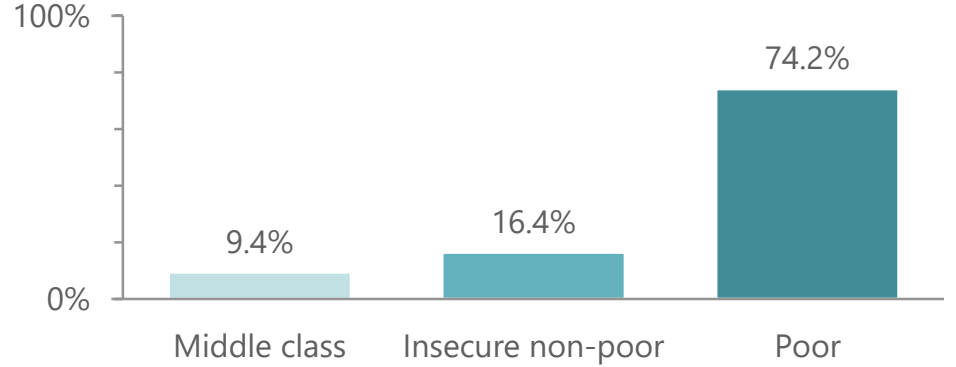
Poverty status- Central North Uganda, 2014

Percentage



Poverty status- North East Uganda, 2014

Percentage

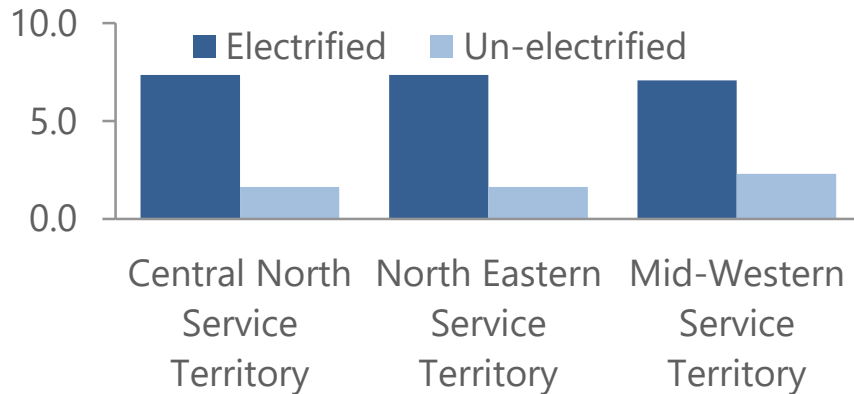


Important to understand wealth dynamics in order to design strategies to serve

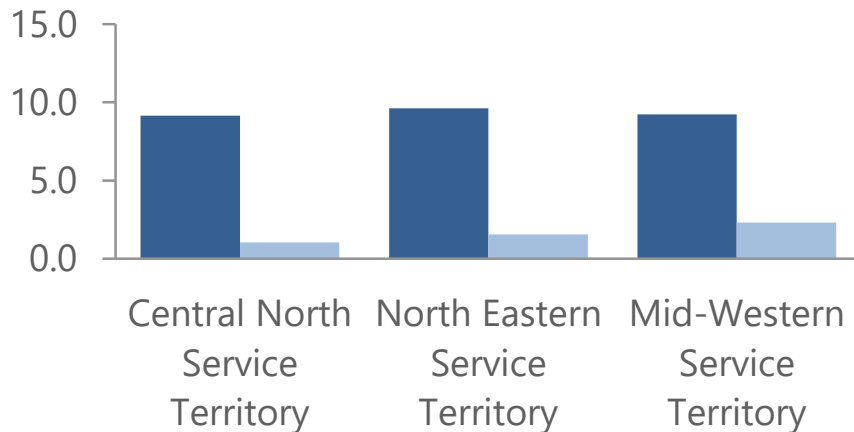
- Segments influenced by type of economic activity engaged in, distribution of resources and intergenerational mobility

Surveys showed households in Northern Uganda were willing to spend significantly less on energy than other regions

Willingness to pay at 50% average, Households \$USD/month



Willingness to pay at 50% average, Commercial \$USD/month



Survey methodology

- WTP surveys conducted from November 2016 through January 2017 by NRECA for Uganda REA Master Plan
- Covered population of ~1,000 respondents for the households and ~250 commercial enterprises in each service territory
- Results explored *willingness to pay* looking at energy spending patterns to predict future spend

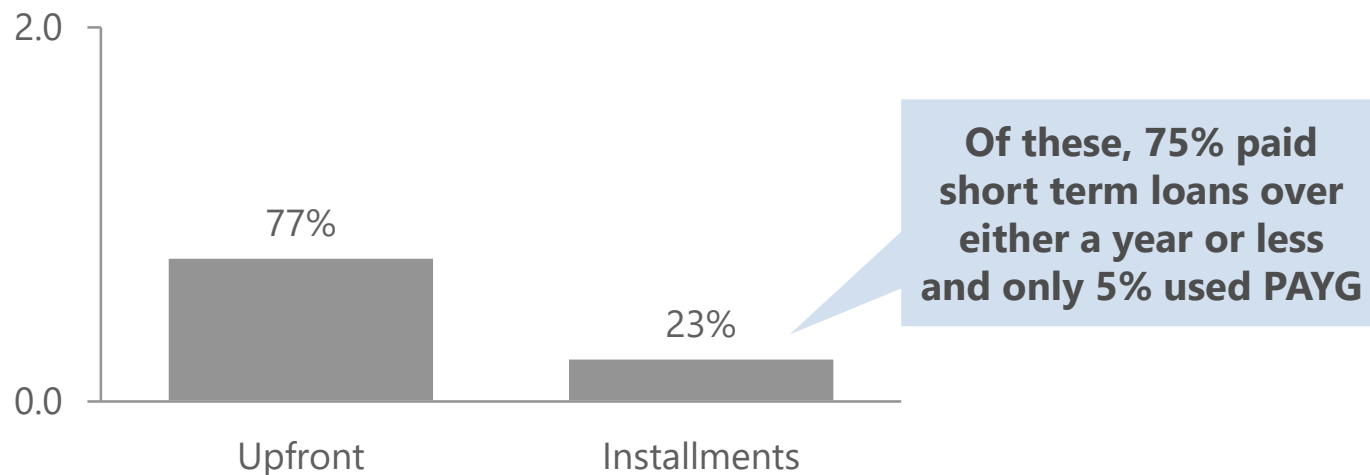
Results

- Midpoint showed energy spend was below \$2.50 for UG generally and even lower in territories of the North like \$1.04 in CNST
- Max market penetration rate with no user-facing subsidies would be ~15% for lowest price PAYG SHS
- **There is need to consider subsidies and stimulate productive use to address affordability and increase energy demand**

Case study: Farmer surveys in N.UG showed they preferred to pay upfront costs to installments but recognized credit benefits

An independent survey on the use case of DFS for small holder farmers showed that more farmers preferred to pay upfront costs than pay in installments

- Of the close to 100 farmers interviewed, only 55% owned solar systems and viewed it as a necessity
- Of those who had purchased, 77% had paid upfront for the products versus paying in installments



- For most responders there was hesitation to take on credit given their farming seasons and the uncertainty of income to make monthly payments
- However, some also recognized that having a financing option would enable them to save for other assets and also improve their standards of living without compromising on the other
- Some farmers also preferred to pay through SACCOs and credit unions

Next steps

UOMA in 2019 is looking to test pilots on key themes in order to develop strategies to further reach Northern Uganda



Partnerships

- Previous pilots have shown success partnering with farmer groups, SACCOs, etc to provide financing to members
- ***How can these be scaled with operators and remain sustainable for the community groups?***



Productive use

- Region has low willingness to pay and requires stimulation through economic activity to increase incomes and stimulate demand
- ***What value chains, actors and business models will have most traction?***



Gender trade-offs

- Surveys and research have shown payments were met by reducing women's budgets and purchasing power in the day to-day household budget while purchasing decisions made by males
- ***How can this be leveraged for product design and credit management?***



Credit structuring

- Survey results show that due to wealth dynamics people in North are less willing to take on a loan and would rather save up for an asset
- ***How can we explore other structures such as layaway payments with trusted community groups?***

Do contact us if you have any feedback or interest in partnering on these



Thank you

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